

# Issues pertaining to recruitment and retention of rural and remote optometrists in Australia

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# **Issues Pertaining to Recruitment and Retention of Rural and Remote Optometrists in Australia**

**Robyn Main**

A thesis submitted in partial fulfilment of the requirements for  
admission to the degree of Master of Science by Research



School of Optometry and Vision Science

University of NSW, Sydney, Australia

March 2012

# Statements

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# Abstract

## **Issues Pertaining to Recruitment and Retention of Rural and Remote Optometrists in Australia**

The awareness of a gap in eye health care between the rural and urban populations of Australia became obvious in the 1990s and continues today. Optometrists are the main providers of primary eye health care and therefore the question of who practises optometry in rural and remote areas is of major importance to address this problem.

The aim of this research is to find out what issues face rural and remotely located optometrists in Australia. Some of the questions that were investigated were: how can the maldistribution of optometrists in rural areas be addressed? Is there a profile of the type of optometrist who practises in rural or remote places? How far do patients and optometrists travel to access eye care/offer services? What are the issues concerning the geographical availability of rural and remote eye care services?

A literature review was conducted of studies done in the area of rural health care and the supply of optometry services in rural and remote locations. A quantitative questionnaire was developed for the purpose of discovering who successfully practised in these areas, along with retention and support issues. Optometrists who had worked in Australian rural and remote areas for at least five years and those who offered services to Aboriginal, mining and agricultural communities were targeted. Fifty questionnaires were sent and a response rate of 24/50 (48%) was obtained. Four case studies were also conducted to examine themes, similarities and differences to supplement the data qualitatively.

Demographics of the respondents showed that rural raised male optometrists ranked highly in the numbers of those practising in areas with populations of less than 25000 people. The other optometrists who practised in rural areas who didn't have rural backgrounds tended to be married to partners who did. Most respondents cited lifestyle reasons for staying, rather than financial incentives. Secondary schooling opportunities for their teenage children were the main issue for considering moving to a larger centre. A third of this rural optometry workforce sample is planning to retire within the next five years. Solutions are discussed that can reduce the existing gap in the demand and supply of the primary eye care practitioners who are fighting visual impairment "at the coalface" of rural Australia.

## Acknowledgements

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## Dedication

To my father,

Of true, rural pioneering spirit.

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# Chapter 1: Introduction

Eye care for all Australians is of utmost importance. The gift of sight is one that must not be taken for granted. If we can't see well, we can't work, play, learn or live well. Good vision is essential for workplace efficiency and safety (1). Optometrists are the principal providers in this area of health care (2). The emphasis of this project is on the providers of this care in rural and remote communities. Exploring how to attract them to these areas, how to keep them content and fulfilled in these areas and how to best serve those communities that are not able to support a full-time optometrist are aims of this research.

The candidate's personal interest in this research began as a result of practising as an optometrist in rural areas for ten years. Having a rural background and having practised as a locum in rural areas in many states of Australia, these experiences have allowed the candidate to contribute to this significant and necessary field of the optometric profession and the wider audience of Australia's rural population.

Optometrists are defined as "primary health care providers who are experts in the optics of lenses, eye health and visual performance. They are able to assess, diagnose and manage ocular diseases, injuries and disorders across a wide range of patients. Where clinically necessary, optometrists prescribe spectacles, contact lenses and devices for the visually impaired" (3). Recently, the states have legislated for optometrists to prescribe a range of therapeutic drugs used in the treatment of some common eye diseases (4).

Australians have benefited from ready access to university-trained optometric graduates since inclusion of optometric vision care into the public health system through Medibank (now known as Medicare Australia in 1975) (5). In Australia, optometry can be studied as a five year university degree program at The University of New South Wales, (UNSW) and Queensland University of Technology (QUT). The University of Melbourne now offers a postgraduate four year program but has still to graduate students from its 5 year program. Approximately 140 students graduate per year in total from these three institutions

. Only those students who have undergone this training and obtained their university degree in optometry from Australia and New Zealand may apply to be registered to practise. Overseas trained optometrists may apply for registration only if they have passed the competency based

examination set by The Optometry Council of Australia and New Zealand (OCANZ) (6). Australia's new national health practitioner registration and accreditation scheme has just been instituted to streamline this process and replace the previous system of existing state based registration requirements with mutual recognition of registration (7). Only registered optometrists who have signed a common form of undertaking (a participating agreement) are eligible to claim payment for optometric services through the Health Insurance Commission (Medicare Australia).

Currently, there are about 2700 Full Time Equivalent (FTE) optometrists practising and, therefore, responsible for providing primary eye care to the nation's 21 million people. This gives a working FTE ratio of 1:7414, one of the highest per capita ratios of optometrists in the world (8). As a consequence of this ratio and the distribution of the workforce, being generally well dispersed over Australia, optometrists can be seen as primary eye care providers offering their services to most of the population (3, 8). The referral pathway shown in Figure 1.1 demonstrates the inter-relationships to optometrists with other health professionals, particularly ophthalmologists and general practitioners (GPs), in the context of referral pathways. The model is based on a service level map for people with diabetes mellitus in the Scottish Highlands (9).

Ophthalmologists are medical specialists who spend approximately four years of postgraduate training specializing in surgical and therapeutic skills. Referral of patients, who present with disease related problems, to these specialists, represents good teamwork in which the optometrist and ophthalmologist use their skills appropriately and efficiently for the benefit of the patient. Currently there are approximately 750 ophthalmologists in Australia (10).





**Figure 1.1** Flowchart Diagram of Optometric Referral (9).

## 1.1 Rural and Remote Health

Australian Commonwealth government reports have compared the health of Australians living in rural and remote areas with those in metropolitan areas. They found that proportionately more Australians living in non-metropolitan areas suffered poorer health than those in the cities (11, 12). The greater the distance from urban areas, the higher are the rates of mortality, injury and morbidity. The health of indigenous people was even poorer. Life expectancy varies with geographic location, as those who live in cities can expect a longer life than those living in the country. It was found that those in rural areas had less access to health care services and that nurses provided a higher proportion of health care and there was a sharp decline in medical specialists (11, 12).

In view of these findings, the government has seen the need to look for ways to reduce this “gap” in health and health care. With the higher incidence of diabetic retinopathy in Aboriginal populations (13, 14), optometrists are needed to contribute to close this gap with skills of early detection and referral to appropriate sources to prevent visual impairment and associated mortality. The issue of how to attract and retain more optometrists to the areas that require more services to close this gap is one of the main reasons for the candidate’s research.

This thesis examines the optometrists who service the rural areas of Australia. The definition of “rural” and “remote” uses the Rural, Remote and Metropolitan Areas (RRMA) classification system (15). This is a population based system used by government departments such as Medicare Australia (16). By defining population centres by numbers of residents in an area, seven zones are defined, which distinguish between metropolitan, rural and remote. For the purposes of this research, which utilizes Medicare Australia statistics, the RRMA was seen as the most appropriate system to employ. There are other systems which may be argued as being better for other purposes. Optometrists who currently serve in rural and remote categories in populations of  $\leq 25000$  people were targeted for this research. There are four categories in the RRMA classification system that fulfil the criterion of “rural and remote”, namely Zones 4, 5, 6 and 7. Zone 4 is a small sized rural centre, through to Zone 7 which is an area of  $\leq 5000$  inhabitants. This is described in more detail in Chapter 2.1 on pages 12-14.

## **1.2 Sustainable Services: Benchmarking, Recruitment, Retention and Models of Service Delivery.**

Workforce issues have been identified in studies of the need to maintain sustainable health services in rural and remote areas (9, 17-20). Recurrent themes include benchmarking of health professionals personal and professional demographics (8, 21), recruitment and retention of particular health professionals (22-25) and the different models of service delivery (9, 26-28). These themes are central to the thesis and will be researched and discussed accordingly.

### **1.2.1 Size and Distribution of the Optometry Workforce**

Recent studies show that a maldistribution of optometrists is occurring. There are more than sufficient optometrists in metropolitan and large urban areas and not enough in small rural centres or remote regions (8, 29, 30). Optometrists are not alone in this trend. Other health professions suffer the same problem, making it a rural health workforce dilemma (18, 19, 23, 24, 31, 32). This area of public health is of widespread national concern.

The **Optometrists Association Australia (OAA)** “Directory of Members” 2007 edition listed a total of 165 optometrists who practise in RRMA 4-7 (33). Although the directory does not list all optometrists in the profession or all the secondary practices that members may deliver services to, the number of optometrists who practise in the rural and remote areas falls far short of the expected number required for an equitable distribution of the workforce. This information is represented in **Table 1.1**.

**Table 1.1** Distribution of Optometrists by RRMA Category (n=2700) (33)

RRMA Category	RRMA 1-3	RRMA 4-7
% Australian Population	78	22
Expected Number of Optometrists if equally distributed throughout the population (total=2700).	$2700 \times 78\% = 2106$	$2700 \times 22\% = 594$
Actual Number of Optometrists.	2535 (94%)	<b>165 (6%)</b>

As shown by **Table 1.1**, there is a workforce issue of maldistribution occurring in rural and remote areas of Australia.

Work undertaken by the OAA, has shown that there will be an adequate supply of optometrists for Australia's population up to the year 2031(32). This was determined by obtaining data from the Australian Bureau of Statistics on optometrists working at the time of the 2001 census and projecting this to 2031, assuming that the current levels of service utilization are maintained. The authors, however, identify a maldistribution between the states.

**Table 1.2** shows data from the same study of the 2005 Australian optometry workforce composition, by state and territory, of Equivalent Full Time Optometrists (EFTOs) ratios comparatively and also, the number per 100000 population. South Australia is shown as highly deficient (9.7) compared with NSW (15.4). Optometrists tend to stay in the states with optometry schools. Horton et al found this is likely to be because students recruited from these states, stay in these states and do not relocate to states with need. Therefore, this is a recruitment issue needing greater research to establish how optometrists choose their practice location (30).

**Table 1.2** Number and Ratio of Optometrists per State and Territory of Australia (2005).

State/Territory	ACT	NSW	NT	QLD	SA	TAS	VIC	WA	AUSTRALIA
Population per EFTO	8526	6495	9339	6956	10263	8561	7877	8945	7414
No. of EFTOs per 100000 population	11.7	15.4	10.7	14.4	9.7	11.7	12.7	11.2	13.5

Similar data for EFTOs practising in the RRMAs has not been published, but one could speculate that those states with low EFTO rates would show an even greater deficiency in their rural and remote areas.

### **1.2.2 Recruitment Issues**

The success and failure of an effort to attract health care workers to a rural work place is the focus of constant appraisal by funding bodies, such as federal, state and local governments, as they grapple to close the gap between health care in rural and urban areas. Recruitment of undergraduates from rural regions is one recent intervention that the Schools of Medicine have applied with promising results (34). This is discussed further in Chapter 4.2, on pages 77-80.

Schools and departments of Optometry are in Queensland, NSW and Victoria where 79% of Australians live. These states have been found to have an oversupply of optometrists, reaching “saturation point” in particularly inner metropolitan regions, using the current threshold population ratio (29). On the other hand, states without optometry schools, especially WA, NT and South Australia, have a deficiency. This can be seen as a recruitment issue because, clearly, the supply of graduates to areas of need is not occurring.

Therefore, there are at least two kinds of recruitment issues:

1. Understanding whether students from rural and remote areas will return there to practise, and
2. Finding ways of making employment in rural and remote areas attractive to prospective optometrists.

### **1.2.3 Retention Issues**

The aim of rural practice is to provide eye care to rural residents. Retaining optometrists to provide this care may present a challenge. A major aim of this thesis is to document and discuss the problems that rural optometrists report and to elicit proposals on how to eliminate or reduce their impact.

The difficulties encountered by optometrists in rural and remote areas may be divided into professional and social areas. Problems faced may include their excessive workload, travel to secondary practices, locum availability, professional isolation, access to continuing education, competition from other optometrists, support from ophthalmology and other health professionals and remuneration from Medicare Australia (21). Social problems may arise from family issues such as education of their children and employment and educational opportunities for their spouse (19).

### **1.2.4 Models of Service Delivery**

Many rural and remote optometrists travel long distances to bring their eye care services to centres that cannot sustain a full-time optometrist (21). This is a defining characteristic of the rural optometrist, which distinguishes them from their urban counterpart. Annual travel distances to offer optometric services and travel by patients to access these services are other factors that have not been assessed. Road conditions, mode of transport, health expectations, severity of symptoms and economic feasibility may all influence travel choices to give and receive eye care. In a country such as Australia, with vast areas of unpopulated land, the rising cost of fuel and the time taken to access a community may both play a part in the practitioner's decision whether or not to offer a service and, from a patient's viewpoint, whether or not to seek attention for a symptom or sign. No data have been published on the cost effectiveness of travelling to provide optometric care.

Current service models include optometrists corporately or individually establishing their practice in rural and remote locations, travelling in a “hub and spoke” arrangement from their primary practice to outlying smaller centres and/or accessing the Visiting Optometrist Service (VOS) Commonwealth funding. Restrictions apply to VOS and it is only available for some remote locations. Further details are provided in Chapter 3.3.2 on page 69-70.

In even more remote areas where there is no optometry service, vision care may be limited to basic vision screening provided by general practitioners, remote area nurses and trained Aboriginal health workers. Outreach visiting services may involve a local administrator regulating visits and appointments and liaising with an optometry provider who visits at, possibly infrequent, intervals. The new and innovative use of Telehealth, using advanced technological advancements to consult and diagnose eye health problems is another model which has enormous future potential. This is further discussed in Chapter 2.2.2 on page 25-26.

Recurring issues arise in this important topic. These are:

- Are there enough optometrists to meet the present and future needs and demands of Australian rural areas?
- If not, what recruitment strategies are required?
- If not, what retention strategies are required?
- In areas that cannot sustain a regular optometrist, what other models of service delivery might be employed?

### **1.3 Outline of the Thesis**

This thesis explores the workforce issues faced by optometrists in rural and remote Australia and suggest strategies to address current and projected shortages.

Chapter 2 reviews the classification system of Australia’s regional zones. This chapter quantifies the definitions of “rural “and “remote”. Rural communities are then further defined in this chapter as they are found to be loosely organized into three socio-economic categories: agricultural, mining and indigenous based centres. The characteristics of these communities are explained in relation to eye health needs.

Chapter 3 is a literature review of rural eye care. In connection with the studies showing the gap in rural and urban eye disease, the primary eye care workforce that can address this gap is also

reviewed.

Chapter 4 is a literature review of broader rural workforce issues in other health sciences, such as medicine, nursing, pharmacy and dentistry. These professions have already conducted research in issues relating to workforce recruitment and retention. Useful insights from these disciplines are covered here. The search for answers in countries such as Canada, Scotland, USA, India and New Zealand is included in this section. The research questions addressed in this thesis are posed at the end of this chapter.

Chapter 5 describes the methodological basis of the study. It outlines the rationale of a survey which has been completed by optometrists of relevance to this topic. It also explains the methods used in a qualitative selection of case studies derived from the sample. These case studies were the basis of data collection from personal interviews with a cohort of practising rural optometrists who completed the survey.

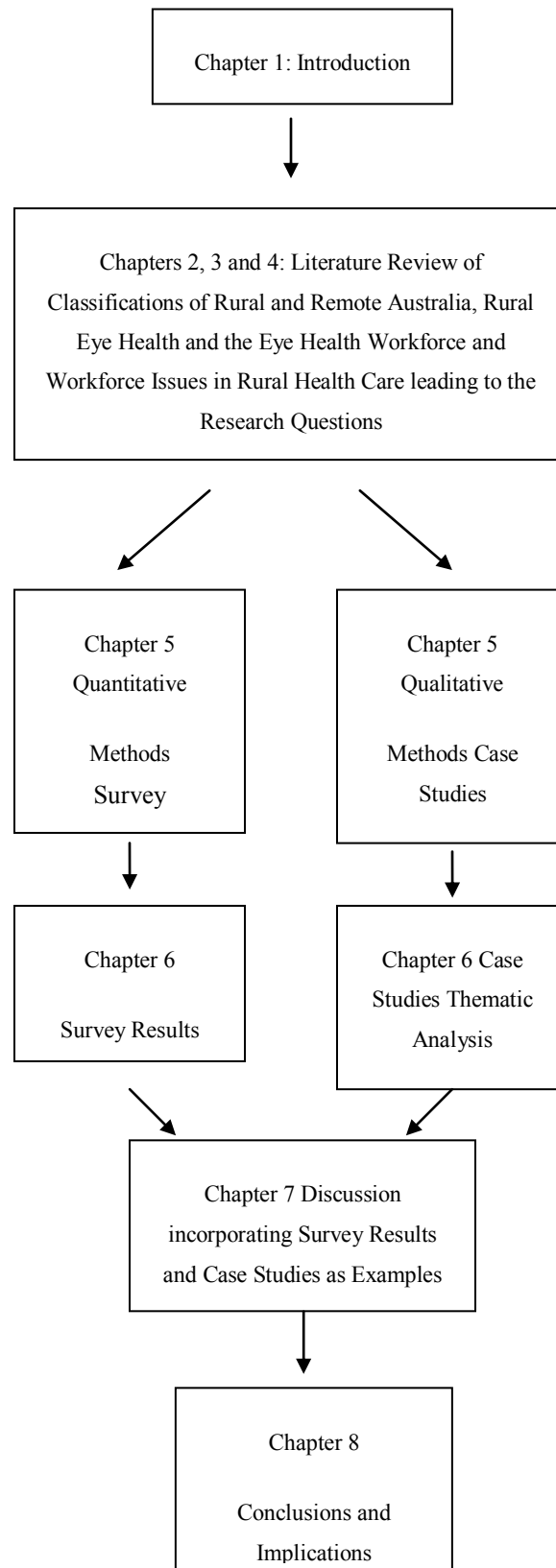
Chapter 6 presents the study results in terms of a description of the optometrist participants and the stress factors that they were experiencing and combines the case studies as illustrations of these factors. Chapter 6 also presents the results of four case studies. These case study vignettes assist in giving the data of the previous chapter “flesh” as their stories of rural practice are analysed and key themes are highlighted.

Chapter 7 is a discussion of the results. It answers the research questions and draws conclusions from the data derived from the survey findings, which are substantiated further with the analysis from the case studies. The requirements for growing the next generation are also covered in this chapter as the results can be used to determine future workforce needs. By exploring who provides these services and whether there are links to previously discovered factors of recruitment and retention by other health professions, one can see if trends are occurring. By learning from the research and applying this information to the optometry profession, service demands in areas of need should be met.

Chapter 8 concludes the thesis with a critical appraisal of the methodology, recommendations required for an optometry workforce to continue to be sustainable in rural Australia and predictions of what the future holds.

In summary, the thesis explores the process as described in **Figure 1.2**.





**Figure 1.2 Thesis Logic**

## Chapter 2: Classification of Rural and Remote Areas

### 2.1 Population Classification Systems

In chapter two, explanations of the different systems used to grade Australia's population are provided. The demographics of rural and remote areas are shown using these. Rural Australia is further classified by the candidate as having communities, which have been formed for socio-economic reasons. The nature of these communities is described from a historic and a health viewpoint. In doing so, eye health requirements and the optometric workforce population necessary to serve these communities is explored.

Since the early 1990s, three different geographical classifications have been developed to illustrate the concept of remoteness. These are the Rural, Remote and Metropolitan Areas (RRMA), Accessibility/Remoteness Index of Australia (ARIA) and the Australian Standard Geographical Classification (ASGC).

The RRMA classification system is of prime importance to this thesis because Medicare Australia statistics and other government health groups have used this system. It is the oldest statistical population classification system, developed in 1994 by the Department of Primary Industries and Energy and then the Department of Human Services and Health (15). For this reason, the candidate uses the RRMA classification system for the methodology of the thesis.

Appendix 1 shows Australia's populated localities mapped by RRMA category.

The RRMA classification system allocates each Statistical Local Area (SLA) to a category based on population numbers and an index of remoteness. This index was calculated by adding a personal distance score which related to the SLA's population and distance indices relating to the nearest urban centres in each of four categories. The SLA was then allocated a class (*e.g.* "small rural centre") within the zone, based on the population of the urban centre within the SLA (35). RRMA classifies SLAs under three broad zones of metropolitan, rural and remote and seven finer classes (15). **Table 2.1** shows how the zones are defined and the population for each zone.

**Table 2.1 Population Distribution of Each RRMA Class. (5).**

RRMA	1	2	3	4	5	6	7
Zone	Capital cities	Other metro-politan centres	Large rural centres	Small rural centres	Other rural areas	Remote centres	Other remote centres
Population Size		>100000	24999-99999	10000-24999	<10000	>5000	<5000
% RRMA population	64	8	6	7	13	1	2

The Australian Bureau of Statistics (ABS) decided not to use the RRMA Classification for their population studies. Instead, they use the ASCG structure of remoteness. It measures the remoteness of a point on the road to the nearest ABS defined Urban Centre which is classified into six population size scores instead of the RRMA 7 zones. These are: major cities; inner regional; outer regional; remote; very remote and migratory (35).

The use of two different scales makes it difficult to observe trends. For example, **Table 2.2** shows the population distribution by state across Australia using the ASCG Classification system of five zones. In 2006, there were 20.7 million people living in Australia. The ASGC shows that nearly 70% were located in major cities. The rest were mainly in inner and outer regional areas (29%), with only 2.3% in remote and very remote areas. This shows a combined total of 11.8% in the Outer Regional to Very Remote areas. Whereas the RRMA classification system (**Table 2.1**) shows that the Small Rural centres to Very Remote centres combines to a total of 23% of Australia's population. This difference of over 10% between the two systems amounts to over 2 million people being in the "grey area" of rural coverage. It is difficult and confusing to compare the two systems using geographical data and statistics that are suited to one system or the other. The RRMA Classification system is now under review by the Department of Health and Ageing (11).

**Table 2.2 Population Distribution Using ASCG Classification (36).**

<b>ASGC zone</b>	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote	Total
<b>Population %</b>	68.4%	19.7%	9.5%	1.5%	0.8%	100%

The third classification system is the Accessibility/Remoteness Index of Australia (ARIA), developed in 1997 and used by the Commonwealth Department of Health and Ageing. It is based on a continuous measure of remoteness from the closest service centre using road distance. The advantage of this system is it can be updated over time as the population changes. It uses five categories which are based on levels of access to goods and services. Categories are: highly accessible, accessible, moderately accessible, remote and very remote (15). This is shown in **Table 2.3**.

**Table 2.3 Population Distribution of Each ARIA Category (15).**

<b>ARIA category</b>	<b>Highly Accessible</b>	<b>Accessible</b>	<b>Moderately Accessible</b>	<b>Remote</b>	<b>Very Remote</b>
<b>Population Size</b>	>250000	48000 to 249999	47000 to 18000	5000 to 17999	Less than 5000

In summary of the differing classification systems in Australian population studies, the candidate has had to choose the RRMA system for the statistical basis of this thesis because Medicare Australia uses this system at present. It is possible to determine the need for optometrist services

in the RRMA zones for Australia, proportionally, using the Medicare Australia data obtained. This information will be explained further in the methodology, chapter 5.

## 2.2 Classification of Areas due to Service Needs

In researching the rural and remote areas of Australia, the candidate found literature related to rural health care covered three distinct socio-economic catchment populations. These demographic catchment populations are agricultural, mining and indigenous based. Differing eye health care needs were found in these populations and different models of health care delivery were found to be required. Literature regarding all three population groups will be explored further.

Why do Australians live in rural and remote communities, thus creating a service need? One reason researchers have identified is socioeconomics.

“Socioeconomics is research that identifies, measures and compares the costs and the clinical, economic and humanistic consequences of diseases and healthcare interventions” (37). In light of this definition, it is necessary to look at the social and economic history of rural Australia.

Australia is a country rich in natural resources. Historically, rural areas had a strong agricultural basis for their *raison d'être*. More recently, the mining boom has caused a huge change in migration due to employment opportunities. Gross Domestic Product (GDP) is the key economic measure chosen for analysis and **Table 2.4** highlights these trends.

**Table 2.4 Major Rural Industry Contributors to Australia's GDP (38).**

Year/Industry	1900	1950	2000	2009
Agriculture	19.4%	30%	3.7%	2.5%
Mining	12%	2.6%	5.6%	8%
Manufacturing	10%	22%	11%	10%
Services*	31%	25%	49%	51%

Note: \*Services include retail, communications, business and community services.

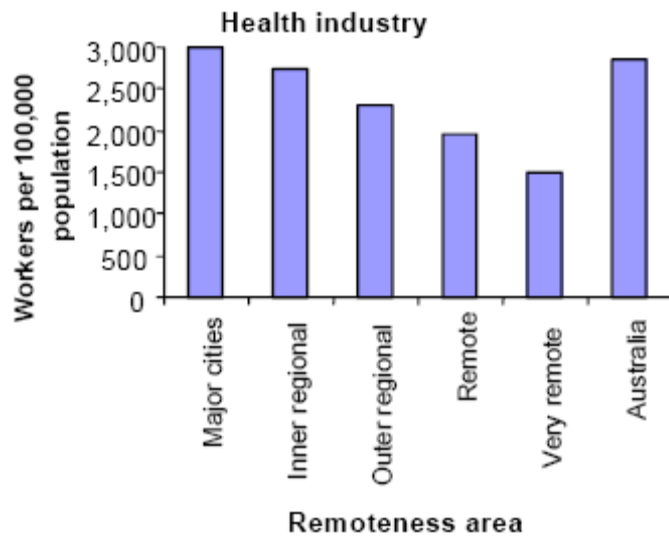
Agriculture's fall in the last fifty years can be attributed to changes in global markets and technology leading to larger and more capitalized, intensive farms (38). The 1950's saw an inflated growth in agriculture due to the post World War II period. Recently, drought and changing climatic conditions due to global warming are having economic effects on this area and there may be a continued reduction in GDP from this sector. Mining, on the other hand, is growing exponentially particularly due to the expanding Chinese and Indian economies that require iron ore and coal for their building and energy requirements (39{ANZ Economics and Market Research, 2009 #232, 40).

Arising from these changes, a corresponding shift in populations serving these communities is expected. In agriculturally based communities, populations are decreasing and in mining communities populations are increasing. Agricultural communities still occupy a greater share of employment in Australia's rural regions, shown by **Table 2.5**.

**Table 2.5** Employment by Various Industries Across the Regions by Percentage **(38)**.

Region/Industry	Rural, Regional and Remote Australia	Total for Australia
Agriculture	14%	6%
Mining	3%	1%
Manufacturing	11%	14%
Services	42%	52%

The lower proportion of health care workers in outer regional and remote areas is shown in **Figure 2.1**. Comparisons between the population zones use the ASGC System. Chapter 4 discusses the implications of this reduced health workforce further.



**Figure 2.1 Employment in the Health Sector by Population Zones (2003) (38).**

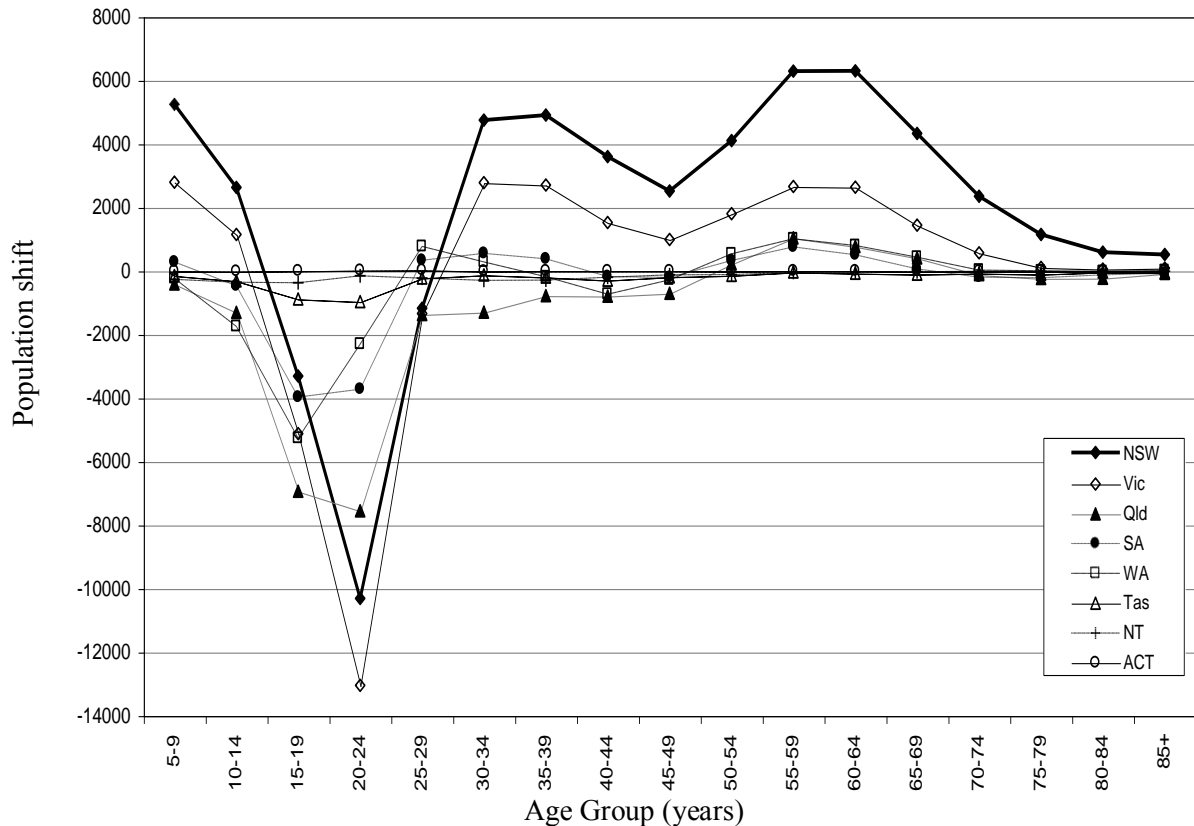
While shifts in GDP will tend to draw populations to centres, the perceived quality of the support networks will also influence an individual's decision to move there. The quality of the social networks that they find will influence their decision to stay or leave. Support networks from relationships or social demographics are difficult to measure as they are seen as a subjective measure. A recent study has tried to make that quantification. Cummins et al (41) asked people how generally satisfied they are with their life. They surveyed 2000 Australian people in a nationally representative sample in an attempt to develop our nation's "wellbeing index" and found that people in the country were more content on a personal level than city dwellers.

Related to this level of rural contentment is the recent "tree change/sea change" phenomenon where city dwellers are moving to coastal rural centres. **Figure 2.2** illustrates this dynamic which shows migration to rural areas prevalent in the over 40s age group. This group is also the highest per capita users of optometry services (28).



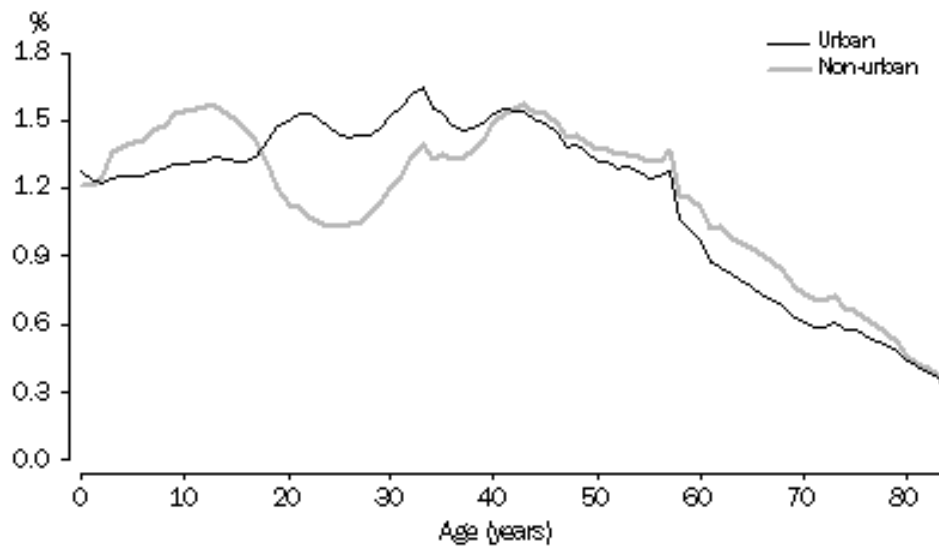
# Age Profile of Net Migration From Non-metropolitan Areas To State Capital Cities, 1996-2001

Source: Unpublished data from Australian 2001 Census of Population and Housing



**Figure 2.2 Age Profile of Net Migration from Non-Metropolitan Areas to State Capital Cities Year 2005-2006 (28).**

**Figure 2.2** shows a migration of older Australians to rural areas; it also shows the migration of the 20-30 year age group away from the rural areas. At June 2004 urban residents accounted for 15.1 million people, three quarters (75%) of the Australian population. Australia's eight capital cities were home to 12.8 million of these urban dwellers. The remainder of the population accounted for 5.0 million people, or one quarter (25%) of the total population. The urban population increased by 192,100 people in 2003-04 while non-urban Australia increased by 46,500 people, which was less than a quarter of the total population increase of 238,700 people. These statistics indicate the rural population is declining in number but increasing in age as shown in **Figure 2.3** (42). Eye care needs are greater with advancing age so the needs for eye care in the rural areas will, inevitably, increase.

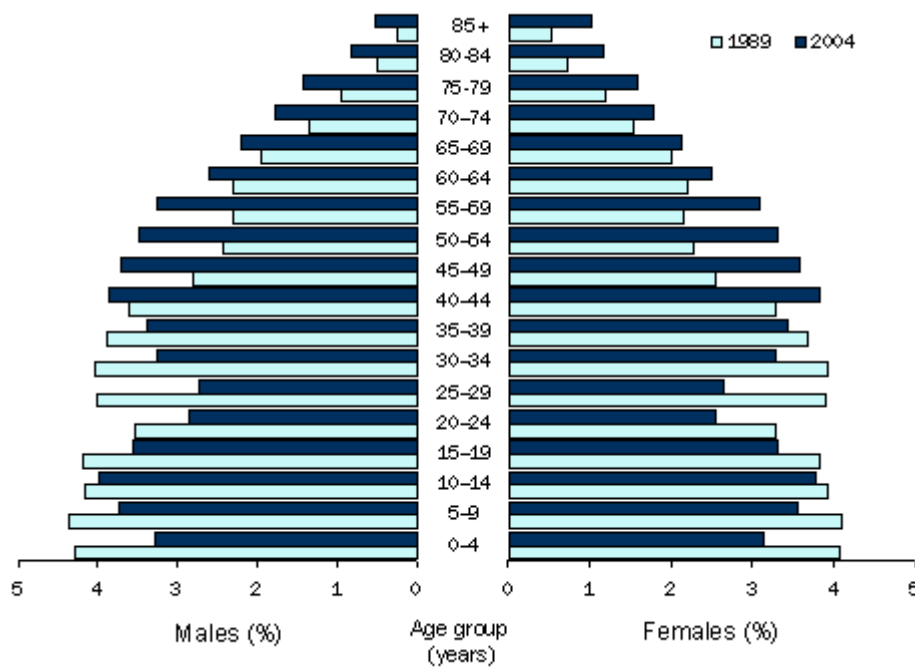


**Figure 2.3 Age Distribution by Percentage - Urban and non-urban (43)**

In **Figure 2.3**, the age distributions of urban and non-urban Australia in 2004 show variations in three distinct age groups. The urban population has proportionally fewer people in two age groups, those aged 2 to 17 years of age and those aged 42 years and over. Conversely, non-urban Australia has proportionally fewer people aged 18 to 41. The largest differences between urban and non-urban populations exist for young adults aged 21 to 25 years, as a result of the movement of many young people from non-urban to urban Australia. Much of this movement can be attributed to the life cycle stage where young adults move from home to continue their education, for employment opportunities, independence or a change of life style (43).

The age structure of non-urban Australia has changed over the past fifteen years, as shown by **Figure 2.4**. Between 1989 and 2004 the proportions of all age groups 40 years and over increased. These age groups include the majority of the baby boomers (persons born in the period 1946 to 1966). Conversely, the proportions of all age groups under 40 years have decreased reflecting Australia's declining fertility rate. Over the past fifteen years the largest decrease in the non-urban population was in the proportion of persons aged 25 to 29 years, which decreased from 7.9% in 1989 to 5.4% in 2004 (44, 45). These statistics again indicate that rural Australia is ageing. Coupled with the higher need for optometry services in the older age groups, more optometrists are therefore required in this area as the incidence of eye disease and presbyopia

increases with age.



**Figure 2.4 Age structure - Non-urban Australia, June 1989 and 2004 (46).**

Larson reiterates that these older rural populations will require more health services accordingly. She also finds, in contrast, that the rural and remote Aboriginal and Torres Strait Islander population is growing due to high fertility rates and lower rates of moving to cities. The higher morbidity rates in this group will add to the strain of health professional resources (43). The above information justifies that the population in rural and remote Australia will therefore require more optometry services in areas where people populate, these being agricultural, mining and indigenous regions. The characteristics of these areas will now be explained.

### 2.2.1 Agricultural Areas

Historically, regional and remote Australia was controlled by agriculture and mining with agriculture as the dominant land use. Up to 60% of land use is related to farming agriculture and \$39 billion is generated annually in gross value (47). As with other OECD countries, Australia is now moving away from production agriculture as the best land use and is moving towards other industries such as forest protection, water supply, clean, organic food production and biodiversity

with ecosystem protection (38).

Social changes such as the ageing of the rural population, smaller families, and greater opportunities for the young in urban areas and increasing technology in farming procedure will all contribute to change demography in agricultural regions, as discussed in Chapter 2.2.

Climate change due to global warming caused by increased greenhouse gases is predicted to change rainfall, temperatures and create more storms and cyclones. Already, the Murray-Darling Basin is suffering from reduced runoff and stagnating water problems which is affecting plant, animal and human populations. Fuel prices are increasing adding more pressure to the economics of farming.

Types of farming are dependent on climatic conditions and geography of an area. Livestock grazing is most popular with beef cattle, sheep and dairy farming predominating. Crop growing contributes 50% to the value the agricultural GDP. Sugar cane and fruit growing are dominant crops in Queensland and the southern states respectively (47).

People in agricultural areas access health care and, especially, optometry by travelling to conventional practices conveniently located in local towns. The OAA Directory showed that most optometrists in rural areas are serving agricultural communities, so agriculture is the predominant labour force that needs assessment for maintenance of the level of service (33).

Novel ways to attract some groups of the rural population are being found. An example is agricultural shows, which are an annual event at many country towns across Australia. These events allow those in agriculture to exhibit their products and to promote tourism in the area. Recently, these field days have been found to be a useful venue to promote health check-ups both for the exhibitors and visitors using an initiative that combines fun with education (48). Men's Health "Pit Stops" are a new way of attracting a section of the population that is renowned for not attending to medical issues and checking their health.

In conclusion, Australia's agricultural areas are changing in population structure due to increased ageing and therefore, greater health needs will result. This provides a challenge to recruit and retain a health workforce to meet this growing need.

### 2.2.2 Mining Areas

Currently, Australia is experiencing a booming economy due to its mining sector (40). This is causing changes in population growth in rural and remote areas of Australia as the industries surrounding mining need labour and technology to keep up with the surging demand placed on the nation by the expanding development of, in particular, China and India.

This movement comes at a cost to these rural communities who do not necessarily have the infrastructure required to support this fast growing population. Professional medical workers have been identified as an example of a human resource that is not meeting demand. The high cost of living, spiralling rents, the poor working conditions and the professional isolation make small mining towns an undesirable location for many doctors and health care workers (49). Also, the nature of mining work for many small communities is a rostered system where miners fly in/fly out (FIFO), returning to their home base for rest and recreation and, in all probability, eye care and other health care in larger centres. It is questionable whether optometry services are required at small mining locations. The barrier of affordable accommodation in mining towns is a case in point. Rental accommodation is exceeding \$2000/week at present for a three bedroom, two bathroom home in Port Hedland, WA as shown in **Figure 2.5** .



**Figure 2.5** Port Hedland rental property.

Rental comparisons between RRMA's in **Table 2.6** show that high rents in these mining remote areas could be a barrier to offering a continual, sustainable optometry service.

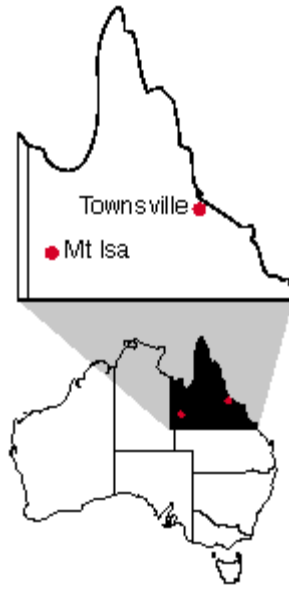
**Table 2.6 Weekly Rental Comparisons in Various RRMA's Across Australia(50).**

Area	Sydney	Perth	Brisbane	Port Hedland	Roma	Mareeba	Triabunna	Temora
RRMA	1	1	1	6	6	6	5	5
Weekly rental for 3x2 home	\$850	\$675	\$410	<b>\$2,000</b>	\$380	\$265	\$210	\$155
Weekly rental for 65m commercial property	\$800 Pyrmont	\$700 Subiaco	\$700 Fortitude Valley	<b>\$900</b>	N/A	N/A	N/A	N/A

Alternative methods of practice are being investigated to cope with this dilemma. The latest, which has great promise for rural and remote areas, is telehealth. A definition of “telehealth” is

health care practised at a distance using technological means (51). It encompasses diagnosis, treatment and medical education. The benefits involve the access to health services and medical information regardless of time and place. Therefore, it has application in rural communities. Telehealth application in optometry is by the delivery of health service information. Eye health data, such as retinal photography can be communicated from trained rural and remote health workers to an optometrist or ophthalmologist in a larger centre where diagnosis for referral can be made.

The first pilot study of telehealth in ophthalmology was trialled in Mt Isa, Queensland in 1997 at the emergency department of the Mt Isa Base Hospital, shown in **Figure 2.6**. Patients who presented with acute ophthalmological problems had trained nursing staff perform high resolution slit-lamp imaging. The images were sent to an ophthalmologist in Townsville where diagnosis, treatment advice, referral and follow-up decisions were conducted. In the past, these patients would need to be transferred to the larger centre using the costly Patient Transit Scheme for the level of consultation administered. The results showed that the patients needing urgent transfer (at high cost of time and money) for the assessment period dropped from 17 to 4 patients and 41 to 30 for non-urgent transfers. The conclusion was that ophthalmology is well suited to telehealth for the diagnosis and management for acute conditions and postoperative assessment of patients in remote areas (52).



**Figure 2.6 Teleophthalmology Pilot Study (52).**

The other relevant teleophthalmology study reported on the installation of a telemedicine link from a Port Hedland general practitioner (GP), located 1800km away, to Royal Perth Hospital Eye Clinic. Mine workers in this remote location presenting with eye injuries were photographed using a retinal camera and slit lamp camera. These images were linked by videoconferencing to an ophthalmologist who was able to diagnose and recommend management for the patients. It was found that over a two year period, one-third of injuries to miners were eye related and of these 75% avoided expensive transfer to Perth due to the teleconsultations (53). This study quantified the high amount of mining injuries that were ocular in nature. “Prevention is better than cure” though, highlighting the importance of safety eye wear in these locations being of paramount importance (54). Occupational Health and Safety guidelines are enforcing such specifications to reduce the unfortunate occurrence of problems such as corneal foreign bodies and welding burns with the Formby use of eye protection, which meet Australian Standards Specifications. In the event of these occurrences though, optometrists are trained to diagnose and manage these conditions, without the need to transfer patients to the larger centres. Telehealth is discussed further in Chapters 3.3.2 (page 64) and 7.8.2 (page 161).



In areas where the sustainable population of the mining centre is lower than the threshold for a full time optometrist, large optometric companies are seeing the opportunity of servicing these mining communities by tending to offer a FIFO practice method (55). The cost-effective strategy is of concern to share-holders and company budgets, so it is sound business principle to analyse the economic value of such visits.

To summarize, mining areas represent a different section of the population to agricultural areas in that they are prone to economic market cycles dependant on other nations' economies and they have a high proportion of males in the working sector (56). The FIFO nature of the work, means that this workforce often has a home base located in areas where health care is more accessible. In the event of traumatic eye injuries, the new invention of teleophthalmology is allowing more immediate care than previous models. Issues such as expensive accommodation and rents are barriers to health professionals being retained in these locations.

### **2.2.3 Indigenous Areas**

To illustrate the demographics of Australia's Aboriginal people, the following statistics from the 2006 census show that Aboriginal and Torres Strait Islander peoples comprised an estimated resident population of 517200 or 2.5% of the total population. In terms of absolute numbers, NSW (148200) and Queensland (146400) had the largest indigenous estimated resident populations followed by WA (77900) and the NT (66600) (57).

Among the indigenous population in 2006, 463900 or 90% were estimated as being of Aboriginal origin only, 33100 or 6% were of Torres Strait Islander origin only, and 20200 or 4% were of both Aboriginal and Torres Strait Islander origin. Almost one in three people in the NT (32%) were estimated to be of indigenous origin. In all other states/territories less than 4% of people were estimated to be of indigenous origin. Victoria had the lowest proportion of people of indigenous origin at 0.6% of the total state population.

Between 2001 and 2006, the Australian indigenous estimated resident population increased by 58700 or 13%. The states with the highest growth rates were WA (18%), the NT (17%) and Queensland (16%). The majority of the indigenous population (69%) lives outside the major urban centres (57).

Evidence suggests that Aboriginal and Torres Strait Islander people do not have the same level of access to many health services as other Australians and this has had an adverse affect on their health (58). In the period 1996-2001, the life expectancy at birth for indigenous Australians was estimated to be 59 years for males and 65 years for females, compared with 77 years for all males and 82 years for all females for the period 1998-2000. This is a difference of approximately 17 years for both males and females (57). This poor health status and resultant high mortality and morbidity rates point to a need for more health services, including optometry and ophthalmology and a greater per capita investment of health resources for these people. The indigenous population faces a number of barriers in accessing health care, including language, cultural practices and beliefs, distance to services and cost of services. The impact on indigenous health has also been reported (57). The percentage of indigenous people in each ASGC category determines the impact of indigenous health on health differences between the zones. It varies widely, as shown by these findings in **Figure 2.7**.



### Geographical Region

**Figure 2.7 Indigenous Proportion of Estimated Resident Population, 30 June 2006 (59).**

Taylor reported that traditional Aboriginal people have better distance visual acuity than non-Aboriginal people. Presbyopia is their main refractive need (60). Urban Aboriginals and Torres Strait Islanders have vision and refractive errors closer to that of the general population, where

diet, genetics and environmental factors may have changed their refractive status (61).

In rural and remote areas, primary eye care services such as optometry and ophthalmology are provided in a range of settings including community health centres, doctors' and specialists' rooms, hospitals and Aboriginal Medical Service centres. Usually, the state, territory and federal governments fund these services. Taylor reports that the most effective way to deliver eye care services is to have an optometrist who works regularly in a given community (62). These visits may be coordinated with a visiting ophthalmologist or held independently. The frequency of the visits might vary widely. In some towns visits on a regular monthly basis occur, whilst in other smaller communities they are on an annual basis. The optometrists' examinations are covered by Medicare Australia and in some instances receive a subsidy to cover travel, accommodation or lost revenue (The Visiting Optometry Scheme). This is discussed further in Chapter 3.2.2 (page 64).

A review of eye health programs in each state was conducted and found to have several that addressed different needs at different levels of service (10).

For example, the National Aboriginal and Torres Strait Islander Eye Health program aims to improve access to eye health services for indigenous Australians in rural and remote areas. It has 25 regional eye health coordinators appointed that establish regular ophthalmological and optometrical visits.

NSW has an Outback Eye Service that provides eye health services with particular emphasis given to screening indigenous people funded through a major Sydney hospital. It also has the ICEE program, (73) described later in Chapter 3.3.2 (page 64).

In South Australia, there is the Visual Impairment Prevention Program that aims to assist in the prevention of eye disease as a consequence of diabetes. It trains Aboriginal health workers in order to fulfil the outcome of reducing diabetic retinopathy.

In NT, there is the Medical Specialist Outreach Program that conducts regular visits to remote communities and larger rural centres. This activity includes both optometrists and ophthalmologists.

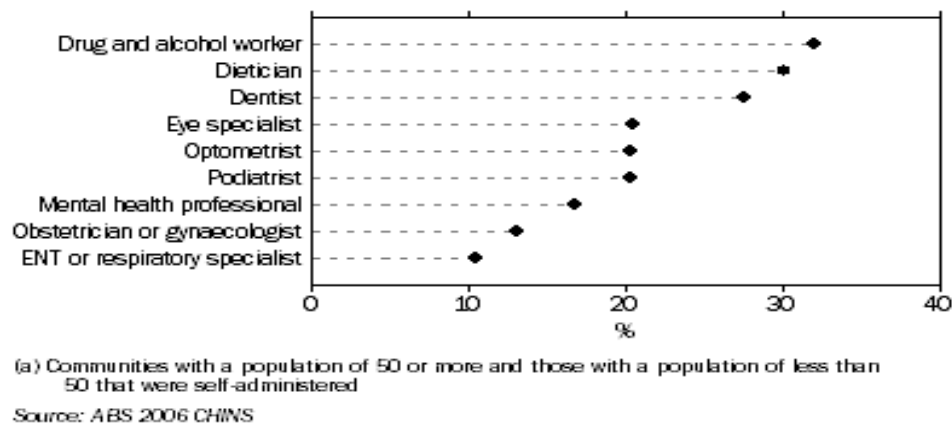
Finally, there is the Telehealth scheme in WA and Queensland, which is state and federally funded. This scheme has remote outposts where trained operators can use the technology for

referral to major centres for diagnosis. There are also visiting teams of ophthalmologists and optometrists who regularly visit remote areas of Queensland (13).

Criticism has been made of the ad-hoc arrangement of services to indigenous communities in Australia and the participation of Aboriginal people in health programs by Taylor. He proposes a delivery of services that are distributed on a regional basis which would be coordinated by a National Information Network (61). This resource service would provide current information about best clinical practice for the delivery of eye care. It would also collect and collate data to be used for the documentation of program outcomes and assist in planning eye care services to areas of need. Progress is underway on this collaboration that would streamline and deliver eye care appropriately.

The question of travel distance to various health services is one that looms large in the remote communities where many Aboriginals reside. The 2006 Census provided information about this measure of access. It also raised the point of lack of transport being a major impediment to service utilization. The proportion of indigenous households that did not have access to a motor vehicle was 21% compared with 9% for other households. This discrepancy was most marked in the very remote regions: 50% of indigenous households were without a motor vehicle, versus 8% of other households.

In the 2004-05 National Aboriginal and Torres Strait Islander Health Survey (NATSIHS), difficulty with transport distance was reported as the main reason that indigenous Australians did not visit the health services when needed in the previous 12 months. This finding influences access to optometrists and ophthalmologists in up to 20% of Aboriginal communities, as shown by the Figure 2.8 where discrete indigenous communities were surveyed by the ABS. The major repercussion of this lack of access to eye health workers will be the lack of the monitoring of eye conditions such as diabetic retinopathy, cataract, glaucoma and trachoma: all of which will have adverse long term affects.



**Figure 2.8: Access to Selected Health Professionals in Discrete Indigenous Communities (62).**

Eye disease studies in Aboriginal communities have been reported for many years. Trachoma, normally a disease in developing countries, was found to be prevalent in remote Aboriginal communities with incidences of up to 30%. Widespread eye health programs such as single dose azithromycin were used to eradicate it (63, 64). Stocks et al found that there were reductions in the incidence of trachoma in communities when these programs were implemented (65). Conditions such as limited access to water and overcrowding still exist within some remote communities. These conditions encourage the breeding of the flies that act as carriers and inhibit the ability of people to maintain personal hygiene such as face washing. Reduction of trachoma incidence and prevalence is continuing with positive results shown in the study of remote WA school children who had a prevalence of trachoma of 44% in 1993 which was reduced to 1% by 2003 (66). Unfortunately, increased incidence has also been reported in some communities such as the Alice Springs town camps and some Pilbara communities documented in the 2008 National Trachoma Eye Health Program (67).

The next problem experienced in indigenous communities is diabetes mellitus (Type 2). This is taking on epidemic proportions in the Aboriginal populations, affecting up to 30% of adults in some areas. The Katherine Region Diabetic Retinopathy Study (KRDRS) was carried out in the Lower Top End of the NT of Australia between 1993 and 1996 as part of the NT Eye Health Program. It investigated diabetic eye conditions and its determinants in the Aboriginal Australian population of the region. The prevalence of retinopathy was 18% in 1993 and grew to 21% in 1996. In 1993, the prevalence of diabetic retinopathy was 18% in the four major centres compared with 16% in the smaller communities. The findings for 1996 were 25% and 13%, respectively. This increase in diabetes retinopathy represents a growing challenge for all health

carers (13). Poor access to primary eye carers adds to the problem, so the aim of implementing and sustaining a culturally appropriate program to screen for this chronic disease and provide effective continuing care is part of the challenge.

Murray et al reported a remote area partnership program in the Kimberley region of WA. Aboriginal local health workers were trained in the use of retinal cameras, screening for diabetes mellitus, then monitoring and following up with the treatment required. This resulted in better health outcomes, including reduced vision impairment (68). By training and employing local Aboriginals to carry out eye care services, this model which has been utilized in optometry specific programs such as the ICEE /AHMRC NSW Aboriginal Eye and “Visioncare” Program, Australia is proving to be successful (69). This is explained further in Chapter 3.2 (page 66).

New developments in teleophthalmology will have a significant impact on indigenous communities. The invention of the automated visual acuity testing unit invented by the Lions Eye Institute in WA will be a useful tool for mass screening in remote communities (70). Its application will mean residents will not have to travel for unnecessary eye examinations and it may be easily administered by semi-skilled ancillary staff. In combination with the retinal cameras based at Aboriginal Medical Health centres, diagnosis and referral will be more appropriately managed.

The importance of continuing screening, care and follow-up was re-iterated in the study, "Aboriginal versus non-Aboriginal ophthalmic disease: admission characteristics at the Royal Adelaide Hospital," which showed that Aboriginal patients were more likely to be from interstate, more likely to have diabetes mellitus and more likely to be admitted for cataract surgery and lid disorders than non-Aboriginal patients in the Ophthalmology Unit of a metropolitan hospital (71). The Aboriginal population was younger in age and had longer admission times than non-Aboriginal patients. This has important implications for health care planning. Targeting health education programs to younger Aboriginal populations, where possible, should reduce the burden on Australia's health system.

In summary, the state of indigenous eye health in Australia remains unacceptably poor. Diabetes is up to eleven times the rate of non-indigenous Australians. Despite the evidence of improvement in some aspects of eye health, such as trachoma, a great deal more needs to be done. It is a huge challenge that requires a “whole-of-government” approach, including co-ordination between local, state and federal government departments. Links between government, Aboriginal

and Torres Strait Islander communities and organizations in the not-for-profit sector, the wider community and the private sector need to be strong so that indigenous Australians can achieve equal health.

Finally, this review indicates that Australia's population classification systems should be standardized for better understanding of demographics and resultant health needs. The RRMA classification standard is used for Medicare Australia, so this is the system which the candidate has used for the purposes of this thesis. Also, rural Australia has different socio-economic populations which influence health and eye health needs. Three defining demographic communities were distinguished by characteristics such as history, economic basis and health need. In conclusion, Australia's rural population is ageing and in conjunction with this, eye care services are a growing need.

## **Chapter 3: Rural Eye Health and the Eye Health Workforce**

Chapter three first describes the causes and prevalence of eye disease and refractive error and then, gives evidence of discrepancies between rural and urban populations in Australia. Access to eye care providers, namely optometrists and ophthalmologists, is the key to addressing this “great divide” in eye health. By reviewing literature relating to the workforce distribution of these professions, specifically relating to any rural imbalance, historical trends can be seen that alert us to issues affecting rural and remote optometrists. Gaps in the literature will then show what questions need to be asked and what research is required to lead to equity in rural eye health and the ensuing workforce to meet this demand.

### **3.1 Vision Impairment in Rural Australia**

The following sections discuss the evidence of a rural and urban gap in eye health and its possible causes. Rural and urban health discrepancies in eye care have been studied widely in Australia by the AIHW since 1998 (45).

Rural and remote residents experience occupational and environmental risks that may adversely affect their general and eye health. Farming and mining are hazardous occupations that can increase risks of eye injury and disease (54). The ageing demographic of the rural communities brings with it the inevitable consequences of deteriorating eye health (42). With a higher percentage of indigenous people living outside urban areas, their poorer general health has led to poorer eye health as part of a greater complex social, cultural and spiritual nexus of problems.

#### **3.1.1 Causes, Prevalence and the Role of Optometry**

Prior to 15 years ago, there were few studies showing how the vision of Australians was faring. Since then, three major studies have been carried out so that there now is a representative picture of Australians’ eye health, even though it is a dynamic and ever-changing health issue.

In 2001, the National Health Survey found that 9.7 million Australians, 51% of the population, had at least one sight problem. This information was gathered from key eye health sources that were relevant at the time and included 62 different national and regional studies, projects and surveys. A possible limitation is that duplication has occurred because of the large number of



studies. Mention was made in the initial report that there is no comprehensive information framework that was able to assess the utility of the data sources (42).

Results showed that the most commonly reported disorders were uncorrected or under corrected refractive errors. Uncorrected vision deteriorates rapidly with age, reaching 87% of the population having a sight problem by ages 45-54 and 96% by age 75 years and over. Females suffer from more vision problems (55%) compared with males (47%). The predominant causes of blindness and vision loss are macular degeneration, diabetic retinopathy, cataract, glaucoma, uncorrected and under-corrected refractive error, retinitis pigmentosa, eye injuries and trachoma (72). These are all eye health problems that optometrists can detect and manage. Management includes appropriate referral.

Taylor et al found that 76% of low vision (visual acuity of  $<6/12$ ) is caused by uncorrected refractive error (64%) or cataract (14%) (73). These problems are remedied by correction with spectacles and surgery, respectively. This accounts for approximately 480000 Australians. Age related macular degeneration accounted for 10% of low vision but half of all blindness (visual acuity  $<6/60$ ). The prevention and management of this disease is a challenge for Australia's clinical and research community. The fact that the population is ageing means that these figures are projected to double by 2024. The low vision services that optometrists are trained to provide may be beneficial to the sufferer in allowing them to continue living independently for longer.

By combining data from two cross-sectional population based cohort studies- the Blue Mountains Eye Study (74) and the Melbourne Visual Impairment Project (VIP) (75), Taylor et al extrapolated these results to the Australian entire population. Unfortunately, only a small cohort from the Victorian based study was rural; therefore, these figures are not fully representative of rural Australia's vision problems. More research is needed for a representative sample that includes rural eye health in Australia as a whole.

In May 2007, the AIHW compiled a list of key data sources that collected information regarding vision disorder prevalence and utilization of eye health care providers in Australia. There were 53 local and national databases collected. This report pooled all data to show that 9.4% of Australians over 55 years of age are visually impaired and 1.2% are blind (42). Over 51% of Australians have significant long or short-sightedness, requiring correction by spectacles alone.

With the ageing of our population, these statistics are expected to rise. Some groups of people are particularly pre-disposed to eye disease. Diabetics, Aboriginal and Torres Strait Islanders, the elderly and people with a family history of eye disease are vulnerable groups in society and need additional health care (61). Diabetes mellitus affects 3% of the general Australian population but this rate escalates to upwards of 30% in indigenous communities and there are signs of it increasing. This risk also increases with age (42).

In 1999, the topic of diabetes as a public health issue was addressed in a themed issue of the journal, “Clinical and Experimental Optometry” (76). Many contributors emphasized the importance optometry plays in the detection and management of this blinding eye disease that has escalated since 1999. Optometry is now recognized as a strategic player in overcoming the consequences of this disease.

Diabetic retinopathy is the ocular manifestation of diabetes mellitus. It is one of the earliest diagnostic signs to be revealed in the body. Optometrists are skilled at the diagnostic technique of direct and indirect ophthalmoscopy whereby they examine the retina of the eye with pupil dilation and are able to see small developments in blood vessel formations. These tiny irregularities in the circulatory system indicate the presence of diabetes mellitus and are often the first physical signs clinicians can non-invasively observe. Optometrists usually check the retinas of every patient in their initial consultations for these signs, screening routinely for the disease (77). Recently, the introduction of the digital retinal camera to optometry practice and some Aboriginal Medical Service communities has meant that retinal photography is an added diagnostic tool for screening for the disease. Minimal training is required to operate the cameras, and the resulting images are sufficient to determine if a patient has diabetes threatening to cause blindness. Early intervention by ophthalmologists who are trained in retinal laser surgery can alleviate blindness by ablating proliferative blood vessel growth (68).

### **3.1.2 Rural versus Urban Eye Health “The Great Divide”**

Research, details below, shows there is a gap in eye health and eye care services between rural and urban Australians. These are inter-related fields that have had only limited attention in the studies undertaken. Rural eye health has been documented in few studies since the 1970’s and, since then, has continued to be an issue on our national health agenda. Continuing studies that show progression in eye healthcare are discussed below. By looking at the population based studies that provide this information, a picture of Australia’s eye health and service status

becomes clearer.

Eye health in rural areas has been documented in several major studies that are population-based. The first is the Visual Impairment Project (VIP) which collected data from 4944 adults from rural and urban Victoria. The rural area surveyed was an agricultural area in relatively close proximity to a regional centre, as opposed to mining or indigenous areas. Regardless of this fact, it remains the only large study that uses “urban” and “rural” as determinants.

Several papers from this study show that rural residents have higher rates of eye injury (42% versus 30%) (78), pterygium (10% versus 2%) (79), posterior subcapsular cataract (6% versus 4%) and nuclear cataract (16% versus 10%) (80). Glaucoma was also found to be of higher incidence (2% versus 1%). **Diabetes was reported at a lower rate in the agricultural area than the urban area (81).** From this large study, the need for the primary eye care skills of optometry was reinforced. Wang suggested that this section of rural Victoria was probably not representative of typical areas of rural Australia that are being considered in this thesis, (that is, RRMA 4-7) but it does serve a purpose as being the first study to make that comparison (82, 83).

The VIP did show data regarding the services of optometry compared with ophthalmology. The finding was that rural residents were 1.7 times more likely to have seen an optometrist than urban residents. It was suggested that this difference may be related to poorer access to ophthalmological services in rural regions (84). This result highlights the importance of providing optometry to rural residents. By finding what support optometrists need to stay in the rural areas, optometrists are serving their rural communities better and therefore, the residents better.

The Blue Mountains Eye Study (BMES I) was conducted in 1996 with 3647 participants in this outer, urban area of Sydney (74). Although not rural by definition, its size of sample allowed the indicators of age and gender to show an increase in visual impairment to be evident. The five-year follow-up (BMES II) verified the link between age and vision impairment (85). Rural demographics are showing that there is an increase in the age of people living in the rural areas, so this will have an impact on eye care services required in the future (44) .

The most recent study that highlights the rural-urban eye health gap reviewed literature written on rurality and ocular health. The economic consequences of vision loss accentuated the need for a program in which optometrists provide the bulk of eye and vision screening in order to reduce the potential for blindness and visual impairment. The higher proportion of males in rural areas, the

higher amount of exposure to damaging UV radiation and the consequential higher rate of eye disease and eye injuries were all given as reasons for suggesting an increase in numbers of optometrists required in rural areas (54).

### 3.1.3 Indigenous Eye Health

Research in the 1990s and earlier suggested that indigenous Australians in traditional communities in Central Australia had good visual acuity (65). Hollows came to a similar conclusion (60). Stocks et al found that low vision (where vision is  $<6/12$ ) and blindness (where vision is  $<6/60$ ) occurred in 19.6% and 10.4% of 60+ year olds (65). This is similar to Taylor et al's findings for the general Australian community (73). Another similarity is that females were more likely to be blind or have low vision than males. The disturbing findings by Constable that the increasing incidence of diabetes mellitus in Aboriginal communities has dire consequences for eye health and life span (82).

The first eye disease found in Aboriginal populations was trachoma. The *Chlamydia trachomatis* micro-organism causes chronic inflammation of the eye leading to red, thickened membranes covering the inside of the eyelids and leading to scarring of the cornea and eventual blindness. It thrives in dirty, overcrowded living conditions, but is eradicated with simple hygienic measures such as face-washing, the application of antibiotics and, in adults, corrective lid surgery. It was eradicated from Australia's mainstream society 100 years ago and is now only found in indigenous populations (86).

Literature on the origins of trachoma, led to the review of the writings of Bates (87), an ethnologist from the early twentieth century who lived and worked amongst the North Western Australian Aboriginal people who continue to suffer from the highest rates of blindness from trachoma and, now, diabetes. Aboriginal spirituality was at the core of how disease was understood by them.

“Notions of what indigenous people understood as disease and sickness were intrinsically bound up in other complex ideas about the relationships that Aborigines had with each other, and in belief systems about the animal world and the locations of their birth. Magic played an important role in Aboriginal thinking about disease because magic was understood to be at the root, causing people to become sick, die or be cured...Aborigines thought there was no such thing as death from disease of any kind. (They) had no notion of death from disease because disease could not

be translated as a unified concept.”

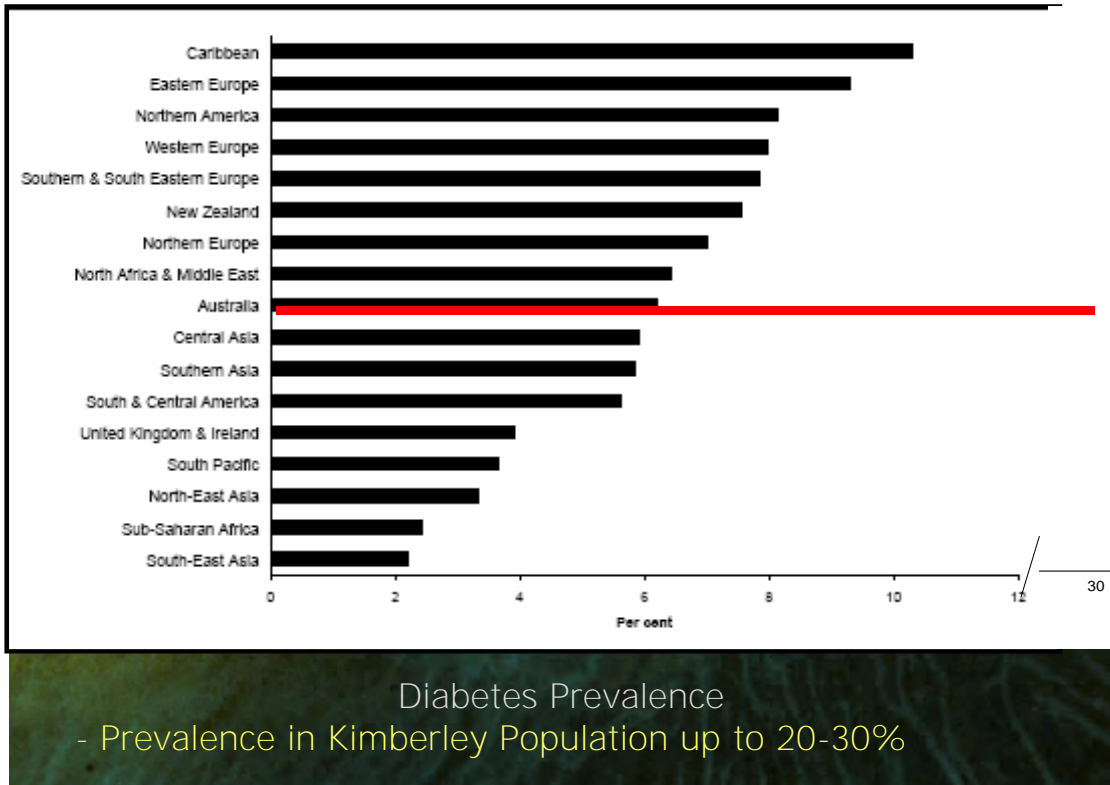
As Bates travelled she noticed the presence of what was popularly called ‘ophthalmia’. Ophthalmia (trachoma) was regularly present, ‘particularly amongst the North West natives, and was due mainly to great plagues of flies which infest the district during two-thirds of the year’. Bates noticed that the action of wind and sun on the dry dust and sand had an effect on the eyes of settlers and Aborigines. Once the eyes became sore, infection could follow to become ophthalmia, popularly called ‘sandy blight’ (87).

Reverend John Flynn, the founder of the Royal Flying Doctor Service, invited ophthalmologist, Ida Mann to examine the trachoma situation in the North West of WA in the 1950’s. She instigated a program of checking for trachoma and educating the affected communities in a strategy of face washing and improved hygiene methods. This taskforce was then taken over by ophthalmologist, Dr. Fred Hollows who devised the following program.

The National Trachoma and Eye Health Program (NTEHP) specifically targeted rural and remote indigenous communities. Teams of ophthalmologists, medical students, and support staff, including Aboriginal liaison officers, organized visiting 465 communities, screened 100000 people, of whom 62000 were Aboriginal. A system of clinical records which reported the results of a standardized questionnaire and eye examination was developed which showed the high prevalence of the blinding eye disease (27000 people). It galvanized ophthalmology to spearhead a campaign to eradicate this disease (86, 88). A randomized cluster sample was followed up in 2008. At least a quarter of NT, WA and SA communities screened have shown a decline in trachoma due to the implementation of many factors including increased access to medical services and living conditions. This positive step forward in the arena of improving eye health due to a sustained and repeated service reinforced the outcome of improving a chronic eye condition. Unfortunately, a quarter of communities screened in the Pilbara region of WA and Alice Springs Town Camp in NT showed no improvement and even increases in rates of trachoma recently (67). Further action for greater access by way of visiting teams of optometrists and ophthalmologists, permanent clinics and/or outpatient services is being suggested (62).

Where once, trachoma was the main scourge of indigenous eye sight, the new problem of diabetic retinopathy is now taking its place (13). In Madden’s 2002 report, the authors did not highlight diabetes as a growing health problem because their data were limited to earlier studies or studies which did not reflect rural Australia (84). This demonstrates the case of the dynamic nature of eye

health statistics in Australia and the need for on-going research. By 2003, however, Jaross showed the devastating incidence of diabetic retinopathy in indigenous communities (13). Diabetes mellitus is becoming a disease of epidemic proportions in non-indigenous communities. It is an even greater problem in the Aboriginal populations. As shown by **Figure 3.1**, below, the rate of this disease with blinding consequences is now at 30% in a study of a WA population.



**Figure 3.1 Comparison of Diabetes Prevalence in WA's Kimberley Region (2007) (89).**

### 3.2 Utilisation of Eye Care Services

The consequence of poor access to optometry services could, at worst, be blindness. Some conditions that present in routine optometric practice need urgent attention which optometrists are skilled to diagnose and manage to save the person's sight. Accessibility is the strength of the optometric profession. No referral is necessary to attend an optometrist's practice, unlike the medically-trained disease treating ophthalmologist. Waiting times for optometrists are usually less than a week, compared with months for ophthalmologists. Convenient locations of optometry practices make them easily accessible and standardization of these practices means that high quality care is given. The examination is usually less than one hour duration and, in 98% of cases,

they are bulk-billed so there are no out-of-pocket costs for the patient (90). It is in the public interest to maintain the optometric workforce to continue to deliver this service and, therefore, to, know how to recruit, retain and sustain this cost effective workforce.

Keeffe et al, examined the gap, finding “...ophthalmology services were utilized at lower rates in rural areas”, and concluded that, “...despite the similarity in prevalence of eye disease in urban and rural areas, significant differences exist in the utilization of eye care services.” The authors saw that the reason for this difference was due to access to ophthalmological services, because there were fewer ophthalmologists in rural areas (28). Only one eye care provider group is acknowledged in the report and therefore a broader coverage is required which would include optometry, for a more in-depth assessment.

Despite the importance of optometry services and their advantages for rural populations, evidence suggests that remote populations use services less frequently than urban and rural residents. This is supported by the Medicare Australia data from 2005/06 (Appendix 4). Table 3.1 shows data for optometrist services in the RRMA zones for Australia. Medicare statistics of the Item 10900 utilization is shown across the RRMAs. The Item 10900 was used for assessing the logistical need as it is the “Initial Consultation” to which all Australians are entitled every 2 years. It is the main consultation billed to Medicare by optometry and gives an accurate statistical picture of the majority of examinations undertaken. This item covers a full eye examination, which is needed to detect and diagnose eye conditions, refractive error, eye disease and/or muscle weaknesses through to systemic diseases such as diabetes and hypertension. The methodology of **Table 3.1** is described in Chapter 5.1.1(page 101).

**Table 3.1 Medicare Australia Optometry Item 10900 (Initial Consultation) Year 2005/06 (95).**

RRMA Item 10900 Uptake Comparison 2006

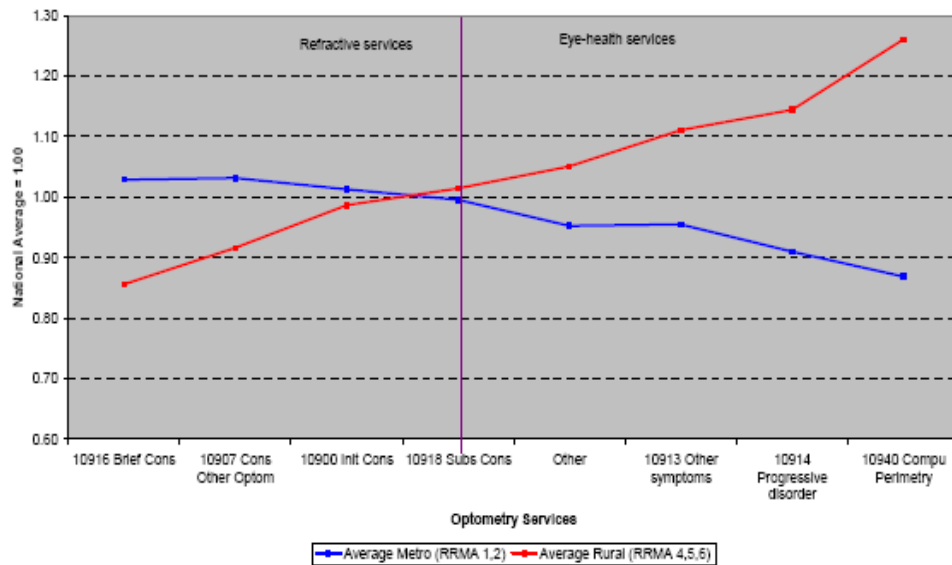
RRMA	Capital (M1)	Other Metropolitan (M2)	Large Rural Centres (R3)	Small Rural Centres (R4)	Other Rural Centres (R5)	Remote (Rem6)	Other remote (Rem7)	Total	
Actual number of 10900s	1,739,322	222,961	177,805	187,026	346,523	24,306	29,807	2,727,750	
Expected number of 10900s	1,728,475	216,059	162,046	189,052	351,097	27,007	54,015	2,727,750	
% of population living in the RRMA	64%	8%	6%	7%	13%	1%	2%	101%	**
Actual % of 10900s	63.8%	8.2%	6.5%	6.9%	12.7%	0.9%	1.1%	100.0%	
Ratio Actual/expected	1.006	1.032	1.097	0.989	0.987	0.900	0.552	1.000	
Range* from to	1.000 1.014	0.983 1.101	1.029 1.197	0.936 1.065	0.958 1.026	0.643 1.800	0.460 0.736	0.996 1.005	

Note: \* given imprecision in population data being provided as an integer

\*\* Data provided only as an integer and adds to 101%

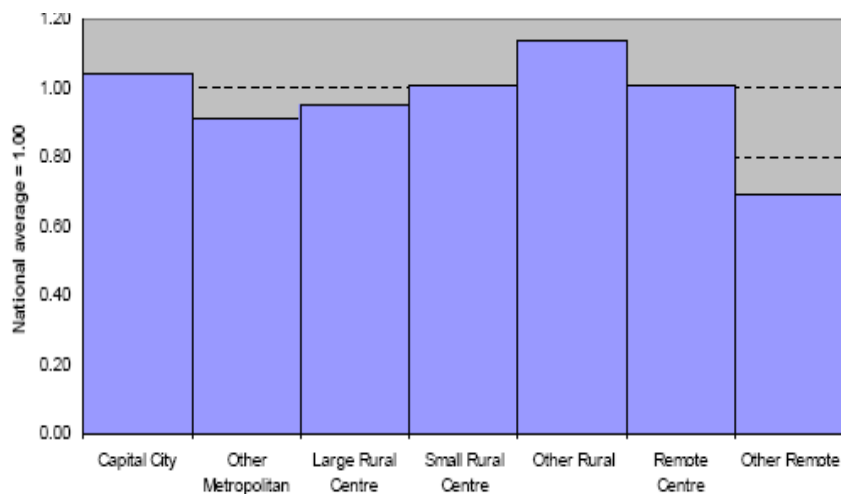
Utilization of optometry services was less for initial consultations in RRMA zone 7, yet Access Economics found there was an increase in other optometric consultations which related to monitoring eye disease in RRMA 4, 5 and 6 regional centres in rural areas. This is demonstrated by **Figure 3.2** showing the contrast between metropolitan and rural services utilized across the RRMAs(55). The methodology used by Access Economics included using more initial consultation items (10900, 10916, 10907, 10913 and 10914), subsequent consultation item (10918) and the computerized perimetry item (10940). By using more item numbers, data revealed more information regarding monitoring of eye health disorders than the item used in **Table 3.1**.





**Figure 3.2 Metropolitan and Rural Eye Service Utilization by Type Across the RRMAs (59)**

The optometry services by zone are demonstrated further by the following graph, which shows the number of optometry consultations per RRMA. **(Figure 3.3)**



**Figure 3.3 Optometry Services per capita by RRMA Relative to National Average 2005-06(59)**

The higher rate of utilization of optometrical services in RRMA 5 is evidence of the growing need for eye care in these rural areas. It has been suggested that due to the relative sparsity/undersupply of ophthalmologists and the excessive case workload of country GPs, rural residents are more likely to attend optometrists for their eye health needs, instead of travelling to urban regions where the availability of ophthalmologists increases. This indicates that those

optometrists in RRMA 5 have to provide more services per capita than the national average. This also implies that optometrists in these rural areas have to have a wider experience and be better equipped to handle a more varied workload than urban optometrists who have the ability to refer cases to a nearby ophthalmologist for further care. This additional responsibility may make optometry practice more diverse and rewarding or it might overwhelm a new graduate without the experience to deal with such novel aspects. This could become a stressor impacting negatively on the motivation to stay in rural and remote practice.

Another finding that is of interest in **Figure 3.3** is the low number of services per capita for the “other remote” areas. It has been highlighted previously that there are a higher number of indigenous communities covered under this category and they need more optometry services due to their poor eye health. To increase this care, more services to this area of need are obviously required or public awareness campaigns based on the importance of having vision reviewed regularly.

Other evidence of lower or different utilization of eye health services comes from a WA study which showed that rural residents had a lower rate of cataract surgery than metropolitan residents by 17% between 1996 and 2001(91). Ng and Morlet commented that this difference reflected that a two-tier health system was starting to emerge in eye health, whereby more cataract surgery was performed on those who had private health insurance and came from urban regions. This is a troublesome finding when one considers that although the VIP study showed that rural residents have a higher incidence of cataract, there is less surgical treatment available for these residents. The lower utilization of ophthalmology is possibly due to rural residents having poorer access to ophthalmological services in WA.

### **3.3 Distribution of Eye Care Workforce**

This brings us to looking at the area of provision of labour for addressing eye health needs, which the following studies convey. Most optometry workforce studies in Australia have focussed on the adequacy of the workforce, with only the most recent ones addressing that there is a maldistribution issue (92-94). These studies reported that rural areas have fewer optometrists than do urban areas. The researchers conclude that despite increasing the supply of optometrists, the current system will be ineffective in achieving an equitable distribution of the workforce (95). This is quantified further in **Table 3.2** which shows the maldistribution of ophthalmologists

across states between rural and urban areas (84).

**Table 3.2 Distribution of Ophthalmologists by Population Density (1995).**

State/Territory	Capital City		Other Major Urban		Rural		Remote	
	Ophthal	Popn	Ophthal	Popn	Ophthal	Popn	Ophthal	Popn
NSW	77.6	62.3	7.5	11.6	14.2	24.6	0.7	1.5
Victoria	86.1	72.0	2.7	2.6	10.2	24.0	1.1	1.4
Queensland	60.3	45.9	25.0	20.5	13.8	29.9	0.8	3.7
SA	87.3	73.1	NA	NA	11.4	23.6	1.2	3.3
WA	86.4	72.7	NA	NA	13.6	18.5	0.0	8.8
Tasmania	62.5	40.1	18.8	20.6	18.8	33.8	0.0	5.5
ACT	75.0	99.6	NA	NA	25.0	0.4	NA	NA
NT	100.0	46.4	NA	NA	0.0	6.8	0.0	46.8

Note: NA-Not applicable

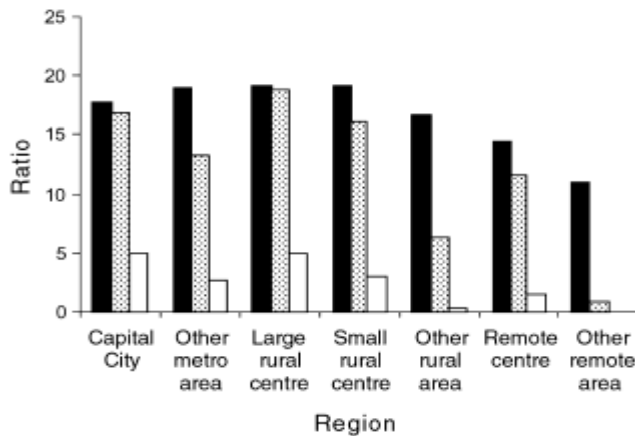
Ophthal- proportion of ophthalmologists

Popn- proportion of population

This represents a maldistribution of ophthalmology and their way of providing a solution lay in developing specialized rural training programmes and the utilization of telemedicine, rather than increasing the optometric workforce. Note that there are remote areas with no ophthalmologists.

Workforce shortages of ophthalmologists in rural areas in NSW alone have been a catalyst for the Vision 2020 program. It found that 82% of the ophthalmologists only serviced metropolitan areas, making them inaccessible for the remote Aboriginal people and inhabitants alike (96). This is a significant workforce issue.

Madden et al, found that there was a considerable variation in the distribution of optometrists (84). They showed that capital cities and large rural centres were over catered for, while the number of patients per optometrists was greater in smaller rural and remote areas, shown by **Figure 3.4**. They also found there was also a difference in pharmaceutical service utilization between rural and urban residents relating to glaucoma medications. They found that fewer rural residents consulted ophthalmologists, speculating that this may be due to access issues.



Key:

■ Population who saw an optometrist (per 100000)

■ Optometrist per 100000

□ Ophthalmologist per 100000

**Figure 3.4 Ratio of Optometrists and Ophthalmologists by RRMA in Australia (88).**

These statistics, gathered by the AIHW in 1999, draw attention to the differences between rural and urban eye care services. Note the reduction in RRMA 5-7 of those seeking optometry services, which may be due to lack of eye health service providers or may be due to residents in these areas not seeking eye health providers even though optometrists may travel to their remote locations on a regular or irregular basis. If on-ground support in the form of coordinators/reception staff, advertising, a personal interest in self-care on the patient's behalf and an accessible location in which to practise, are not optimised, then uptake of the services may be affected, even where it is available.

The other limitation of these studies is that the statistics for Medicare Australia servicing are drawn from provider practice locations, not from the patient's home locations. This means that residents who travel to larger centres from remote areas for their eye health needs are represented in the figures for the larger centres even though the patient resides in a more remote location. They may even by-pass their local service providers to travel to the larger areas for a range of reasons such as more choice in shopping, health, the advantage of anonymity or for family reasons.

The latest study by the AIHW collected data about the eye health labour workforce using the

2006 Census data, Medicare Australia data and ABS data. The limitations of this study were the potential inflation of numbers of practitioners using Medicare Australia data. Optometrists and ophthalmologists were included in the data if they billed for one or more Medicare items in a year. This means that even very part-time practitioners were counted in the study with same status as full or near full-timers. The report also added that census data was prone to “respondent error, partial response, processing error and undercount” (10).

Statistics represented in **Table 3.3** show that, even though there has been an increase in workforce numbers between 2001 and 2006, there are fewer ophthalmologists now in remote areas where there is the highest need, dropping from five to zero. The ones who do work in rural areas are younger, predominantly male and work longer hours than their urban counterparts in 2001.

**Table 3.3 Number and Characteristics of Employed Ophthalmologists by ABS classification. (10).**

Characteristics	Major Cities	Inner Regional	Outer Regional	Remote	Total
2001					
Number	538	64	14	5	653
% Female	11.4	14.4	35.7	n.p.	12.1
Average Age	51.7	49.3	56.6	n.p.	52.2
% initial medical degree obtained in Australia	85.2	78.6	65.9	n.p.	85.2
<b>Average hrs worked/week</b>	<b>44.3</b>	<b>45.0</b>	<b>40.6</b>	<b>n.p.</b>	<b>44.0</b>
2006					
Number	634	92	25	n.p.	769
% Female	16.4	11.1	5.1	n.p.	15.7
Average Age	52.0	49.3	44.4	n.p.	51.6
% initial medical degree obtained in Australia	83.6	82.1	83.5	n.p.	83.4
<b>Average hrs worked/week</b>	<b>42.6</b>	<b>42.8</b>	<b>58.9</b>	<b>n.p.</b>	<b>43.0</b>

**Table 3.4** shows the characteristics of optometrists working across the ABS classification of remoteness. The majority of them practise in major cities (79%) despite less than 70% of Australia’s population living in these areas. An alarming sign is that even though there has been an overall increase in optometrists of about 15%, there has been a 60% reduction in optometrists who service remote areas. This is a trend that must not be overlooked. If it continues, the rate of blindness in rural Australia will become catastrophically high, as optometrists are the major eye health service providers and access to them will become more of an issue. The proportion of female optometrists was increasing in the major cities but not in the rural areas, possibly

indicating a reluctance of females to move to rural regions compared with males. The optometrists who are going to remote areas tend also to be older, from an average age of 34 years in 2001 to 50 years of age in 2006. The future consequence of the retirement of this group is another issue that needs to be anticipated and planned for. The last trend is that the optometrists that service these areas tend to be Australian born (75%) rather than overseas born compared with those who practise in metropolitan locations (60%).

This table is also showing optometrists in rural areas are growing older, so unless changes are made, this will be the area that can expect a shortfall in the future. Once again, this shows that a workforce issue is emerging which needs addressing if rural communities are to be catered for in

**Table 3.4 Characteristics of Optometrists by Remoteness Classification (87).**

Characteristics	Major Cities	Inner Regional	Outer Regional	Remote	Total
2001					
% Practising	76.0	11.0	0.06	0.01	87.07
% Female	42.8	33.0	40.2	50.0	41.0
Average Age (years)	38	40	38	34	38
% Australian born	n.a.	n.a.	n.a.	n.a.	n.a.
Average hours worked/week	38	40	39	37	40
FTE rate	17	13	10	5	15
2006					
%Practising	79.0	15.0	0.05	0.005	84.06
% Female	46.3	34.4	40.0	50.0	44.2
Average Age	39	42	42	50	40.0
% Australian born	59.8	80.3	78.7	75.0	64.0
Average hrs worked/week	37	38	39	31	38
FTE rate	18	12	10	3	16

an eye health capacity. Finally, **Table 3.5** shows the workforce characteristics of employed optometrists by state and territory for the years 2001 to 2006.

**Table 3.5 Characteristics of Employed Optometrists by State/Territory (87).**

Characteristics	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
2001									
Number	987	658	526	244	163	62	36	21	2697
% Australian born	60.4	73.3	83.4	59.3	76.7	71.7	62.2	75.0	69.3
Average hours worked per week	39	38	40	38	41	41	34	43	39
FTE rate	17	15	17	14	13	15	11	13	15
2006									
Number	1118	730	650	258	173	67	46	22	3066
% Australian born	56.0	69.0	76.0	54.7	65.3	63.2	60.9	65.0	64.0
Average hours worked per week	38	38	38	38	36	38	33	47	38
FTE rate	18	15	17	14	11	15	14	14	16

There is an increase in optometrists in all states. NSW has the highest FTE rate whereas South Australia has the lowest and this has actually reduced since 2001. This statistic has been a catalyst for the proposed new Optometry courses starting at Flinders University in 2010 and Deakin University in 2012. WA had an increase in overseas born optometrist labour since 2001 and has maintained its FTE rate. Apart from the workload of optometrists in the NT, all optometrists are working fewer hours since 2001.

### **3.3.1 Optometry Workforce Research in Rural Eye Care**

#### **3.3.1.1 Characteristics, Distribution and Recruitment of the Workforce**

Optometry research has had a strong tradition in Australia making it one of the leading countries in contact lens research in the world. Matters of optometric public health have not been high on research agendas, perhaps because they do not have as obvious direct clinical, but rather social, consequences. This section reviews the history of the optometric workforce, followed by the findings of relevant studies relating to the topic of rural and remote optometry. Difficulties arise in reviewing optometry in the provision of primary eye care because there is an overlap with ophthalmology. To understand this intersection of service, some literature reviewed includes both. Seeing the professions not in isolation, but as components of a single eye care delivery system is an important aspect.

In Australia, the national health insurance system initiated in 1953 included ophthalmology but not optometry. Over the following two decades the ratio of people receiving ophthalmological

care compared with optometrical care was about 80 per cent to 20 per cent. In 1975, Medicare included optometric services and the situation reversed from 20 percent to 80 percent accessing optometry by 1987 (97). The 1993 Access Economics report, optometry is reportedly saving Medicare tens of millions of dollars annually due to this changeover (98). With more than 95% of optometry consultations being bulk-billed, the consumer costs for eye care combined with ready access and avoidance of the extra costs of a prior examination for referral, allow a cost effective service for the public.

The “Clinical and Experimental Optometry” journal is published bi-monthly by the OAA to inform and educate all participating optometrists in scientific matters of research. It has been published continuously under a number of titles since 1919 with various changes over the years to reflect the increasing amount of new advancements made in the area of eye care (99). In a search of this journal, there were 152 findings for the words “rural” and 247 findings for the word “remote” in the journal’s content. Of these, 12 papers were published with relevancy to the optometry workforce and manpower which included the issue of rurality, five papers were published with relevance specifically to indigenous eye problems and optometry services, ten papers were published targeting optometry’s role in diabetic screening in rural areas, and two papers dealt with the use of teleophthalmology in rural and remote areas. Below, is a review of the papers concerning the rural optometry workforce in chronological order.

In 1969, Cole’s paper discussed the undersupply of optometrists in rural areas and states without optometry schools. He argued that a fourth optometry school would afford (100) better regional distribution of optometrists. This recruitment idea has not been followed through. Instead, a Commonwealth Scholarship Board gave financial assistance to support students who were required to live away from home to attend the courses. This funding was phased out and there has been nothing to replace it. This reinforces the need to investigate recruitment strategies for prospective students in states without optometry schools and regional students.

Ten years later Smith called for the OAA to monitor the manpower situation and bring about changes necessary to balance the patterns of need, supply and demand (101). He reiterated that the number of graduates was the most important influence on the manpower situation.

Differences between rural and metropolitan optometrists were first researched in 1985 using a questionnaire sampling 106 optometry graduates from UNSW and University of Melbourne. It was found that “...rural optometrists spent a greater proportion of their time carrying out general



examinations and less time doing industrial optometry than did urban optometrists” (92). This result clarifies the research noted later in Chapter 4 by studies in allied health, that a more generalist approach to the profession is required for health workers in rural areas and also the Access Economics report mentioned earlier in this chapter.

By 1988, projections of optometric manpower in Australia were being developed by using a computer nomograph program from a survey conducted by Johnston et al (102). They reported that there was an adequate spread across most of Australia and that only remote country areas were not as well covered, and remained dependent on visiting optometrists. They expected case loads of optometrists to fall unless an increase in utilization of services occurred. A subsequent paper by the same authors showed greater detail about the workforce characteristics, such as age, sex, migration, workload of optometrists and geographic distribution (93). The authors noted the 33% increase in female graduates over 1980-1986. Males made up 85% of active optometrists practising in rural areas. They found that 62% of active optometrists practised in the capital cities and 38% in rural areas. A great variation occurred between the states in the proportions that practised in the capital cities and the rural areas, such as in WA where 86% of optometrists practised in Perth, while in Queensland, 49% practised in Brisbane. They concluded that this was due to the population distribution of WA and SA, as these states had more isolated country towns compared to Queensland and NSW which have larger rural centres relatively well serviced by optometrists. In regard to gender and age, they found that younger females preferred working in city areas (72%) and when over 40 years of age, reduced active practice considerably, to 50% FTE. The authors found that “another factor that has made life difficult for (optometry) employers both in rural areas and in states without schools had been a reluctance of employee optometrists to move any distance away from the cities in which they completed their courses.” This paper highlighted that gender differences were starting to occur in workforce issues as well as a geographical origin issue for retention purposes.

In 1992 Horton found that the optometric workforce was balanced but there were some minor regional undersupplies in rural areas (94). Compared with Johnstone et al’s studies there was a slight increase in active optometrists practising in capital cities. Rural optometrists were most likely to work full-time (89%), be male (73%) and be self-employed (69%) rather than an employee of a corporate chain. They attributed the lower rate of self-employment among females due to the difficulties experienced by women combining the responsibilities of conducting an optometric practice with raising a family. Once again, this research demonstrated the workforce

issue of gender affecting retention and also, the mode of an optometrist's practice has an effect on rural optometry retention. One factor about the time period of the Horton study, that needs to be acknowledged here, is that there was less corporate involvement in optometry than recent times.

The OAA regularly audits its workforce, observing if there are adequate numbers of optometrists to provide satisfactory levels of care. The feminization of the profession has been a major issue since the 1990s as it has been shown that the average caseload of female optometrists overall, is less than males in the average working career (103). Numbers of optometry graduates have increased to make allowances for this changing demographic (10). This is fortunate, as the ratio of female graduates' at all Australian schools of optometry is increasing to over 70% in 2006 as shown by **Table 3.6**.

**Table 3.6 Gender of Graduates from the Australian Schools of Optometry Year 2006.**

University/ Gender	UNSW	Queensland University of Technology	University of Melbourne	Total
Male	10	12	12	34
Female	38	23	29	89
Total	48	35	41	123

A 2005 study which followed on from previous research of the Australian optometric workforce from the OAA found more evidence to support the maldistribution of the workforce (30). The first major result pertinent to this study was the ratio of optometrist to population, which had dropped to 1:7414 in Australia, declining from 1:12340 in 1984. When states are compared, there was a difference in the jurisdictions without optometry schools. For example, NT had a ratio of 1:9339, South Australia 1:10263 and WA 1:8945. The authors discussed the size of the optometric workforce sufficiency to meet the needs of the population making the point that "patients should not have to travel far nor wait more than a day or two for optometric care." They concluded that a more in-depth analysis of the distribution of the optometric workforce would

help to assess the adequacy of services.

Consequential to the above study, Kiely et al were able to demonstrate the distribution of optometrists across smaller areas, by Local Government Areas (LGAs) than just states or territories. The authors found that all capital cities except some Adelaide LGAs, had an excess of optometrists and in the eastern states, coastal LGAs did also. The study was able to highlight the inadequate workforce supply in rural areas. They found that many rural LGAs are in need of an optometrist in only a part-time capacity to meet the needs of the local population. This emphasizes a need for sustainable services to these areas on a regular basis (29). Models of service delivery to these areas that do not require a “whole” optometrist and travel associated with providing these services are issues that the authors cited as requiring further investigation.

Kiely et al also suggested that discussions on governmental solutions attempting to reduce the shortage across the health fields were required. They proposed ideas such as scholarships for rural students, realizing that there is a link between undergraduate year background of students and resultant provision of service to rural areas after graduation were proposed (29).

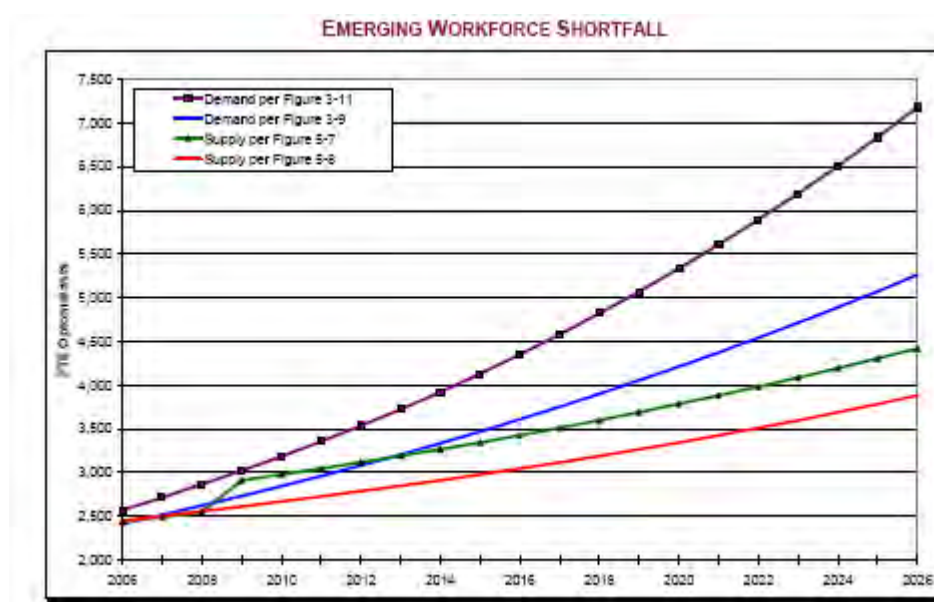
A limitation of the study was that it could not account for nearly 13% (364 optometrists) of the workforce that would provide optometry services for nearly 3 million Australians. This large lack of information from the present workforce could have skewed results. The deficit of optometrists required overall for Australia from this study was found to be 327 optometrists and that would be balanced out by all those optometrists unaccounted for in the present workforce. This emphasizes the earlier finding that there are enough optometrists for Australia’s needs, but the distribution is not even. Kiely et al concluded that their study was not able to show if and how people in remote areas accessed either optometric care or the distances optometrists or patients travelled.

Frederickson et al surveyed optometrists in New Zealand in 2006 and found similar results to Kiely et al (8) in the demographics, working arrangements and hours worked (104). They also made comment on the uneven distribution of the New Zealand workforce, citing proportionally fewer optometrists in rural areas compared to urban regions. A major comment made about this study was that the feminization of the workforce was impacting the profession due to fewer hours worked and earlier retirement taken by female optometrists. They concluded that an expansion of graduates would be required to meet the increasing demand of this trend and the ageing population.

The most recent independent study on the optometrist workforce has been commissioned from Access Economics by the Italian multinational firm (Luxottica) which owns several optometry and optical dispensing groups. They found that there was a marked shortage of optometrists willing to staff their corporate practices in rural and remote areas (55). The following **recommendations** from the report show the workforce issues that are prevailing and strategies they have proposed to overcome these.

**Figure 3.5** shows their predictions for the workforce shortage in the next 20 years, depending on supply and demand. By modelling several scenarios, they found that in all cases, a shortage of optometrists will occur by 2026 at current standards of practice and there will be a maldistribution issue with rural and remote areas being under serviced. To address this projected shortage they recommend these strategies:

1. Increases in the intake of undergraduates;
2. Increased remuneration of graduates working in these areas and;
3. Retention of older workers.



**Figure 3.5 Predictions of Optometry Workforce Shortfall in the Next 20 Years (51)**

A critical review of the Access Economics report and the Keily et al papers shows a difference of opinion in the optometry workforce predictions for the future. Keily et al conclude that by 2031,

there will be an excess of 6.9% compared with demand, compared with Access Economics prediction of a shortfall of nearly 90% by 2026 (High demand-Low supply).

Reviewing the literature pertaining only to optometry was too restrictive for the scope of this topic, so looking further at the inclusion of ophthalmology revealed more results. The Australian journal, “Clinical and Experimental Ophthalmology” dedicated a 2002 issue to the rural-urban divide in eye care services starting with a call to closing the gaps between urban and rural eye health and eye care services (83). By bringing awareness to the professions of ophthalmology and optometry in this issue, action and strategies to overcome the problem resulted. Wang outlined the need for more research in the areas of epidemiology of eye health statistics in rural Australia and secondly, the need for services to those areas of need. The promise of telemedicine operating in these areas and the use of an indigenous recall system managed by local health care workers for diabetic outreach services were mentioned.

### **3.3.1.2 Workforce Issues Affecting Recruitment**

This section reviews literature which discusses the recruitment of the optometry labour force which is pertinent to the rural areas and states without optometry schools.

In the latest study regarding Australia’s optometric workforce, Kiely et al found there was a lack of mobility of graduate optometrists to states without optometry schools. They found a maldistribution of the workforce was occurring, showing that 14% of optometrists practise in jurisdictions without optometry schools, where 21 % of the population reside (105). There were also higher proportions of overseas qualified optometrists in these jurisdictions. Over 25% of WA, SA and Tasmanian practices relied on overseas trained graduates. They cited reasons for remaining in the state of graduation as being:

- Location of family and friends (psychological support bases)
- Proximity to the major Australian cities
- Cost and effort of re-locating
- Remoteness from continuing education
- The majority of the Australian population (79%) reside in these states (NSW, Victoria,

Queensland).

They acknowledged that a shortfall in the number of Australian-trained optometrists did exist and that there needed to be further work required to distribute optometrists equitably at a state level. They suggested that factors to make relocation attractive would be higher salaries; an opportunity for a change of lifestyle; challenges of a new place and the attraction of moving back to their state of origin for those who had come from states without schools.

The limitation on this study was that data was not available on where graduates from the optometry schools lived prior to their studies, so some may have been returning to their original place of residence. These same factors are applicable to undergraduates proposing to study optometry initially. They did not go further to add that more support is needed at every level of entry to optometry at a rural level, so there has to be incentives given at the undergraduate level initially. The authors admitted that optometry schools should gather data regarding the states of origins of their students to add insight into reasons for movement. They did not include the suggestion to gather data regarding rurality of students' origins. This data could be used to further analyse optometrist graduates' intentions as to where they will practise.

The other limitation of Kiely et al's study is that the data did not allow determination of whether graduates go to states without schools for a short time and then move elsewhere or whether their re-location is long-term. Cash-strapped, HELP-laden graduates may have to locate to areas of high need until their debts are paid, but may not remain if their family and support base are a significant distance away. Is this high turnover of staff a positive for the profession? As the medical retention research shows, "Home-grown (GPs) are the answer", the question that must be asked is how to attract optometrists or potential optometrists to these locations and have them return (106).

American studies in rural and remote health care relating to optometrists were first published in the 1970's. Kegel-Flom surveyed students' intentions to go to rural areas to practise and found that students were able to predict whether they would practise in an urban or rural location even before entry to university and this could help to pre-select a rural workforce for these areas of need. A follow-up study looked at the identification of variables associated with optometrists' choice of practice location (107). By surveying rural and non-rural optometrists, she found that rural optometrists had these common traits: possessing a rural origin, a strong liking for the people and lifestyle of the rural community and enjoyed outdoor pursuits. Community

recognition as a health professional, rapid practice growth, professional independence and the opportunity for community leadership were seen as major advantages of rural optometric practice. These traits required for recruitment of undergraduates are important.

With the strong connection established of rural origin being required for rural practising, the area of recruitment of indigenous Australians to health professions was reviewed next. The future involvement of these people in health will be influenced by their current participation in health education. In the **Table 3.7**, below, showing the number of undergraduates in health-related undergraduate courses, indigenous students accounted for 1% of graduates in the field of “optical sciences” and 0.8% of medical studies (108).

**Table 3.7 Indigenous Health Students (108).**

Course	2003			2005		
	Indigenous		All persons	Indigenous		All persons
	%	Number	Number	%	Number	Number
Medical Studies	0.6	10	1 735	0.8	13	1 697
Nursing	0.8	61	7 497	0.6	48	7 565
Pharmacy	0.1	1	769	0.2	2	1 037
Dental Studies	0.7	2	306	0.6	2	343
Optical Science	1.7	2	121	<b>1.1</b>	1	92
Public Health(b)	6.0	40	672	10.6	78	736
Radiography	-	-	468	0.4	3	688
Rehabilitation Therapies	0.5	12	2 193	0.2	6	2 451
Complementary Therapies(c)	-	-	408	1.0	3	315
Other health(d)	1.9	40	2 100	0.4	10	2 471
<b>Total(e)</b>	<b>1.0</b>	<b>168</b>	<b>16 269</b>	<b>1.0</b>	<b>166</b>	<b>17 395</b>

It could be argued that this is too low a figure of recruitment, if 2.5% of the population is indigenous, yet only 1% are undertaking health courses. It might be assumed that the “Optical Science” category here includes optical mechanics and dispensing. These are the technical diploma courses where the manufacturing and supply of spectacles is taught. There were no fully indigenous optometrists in Australia until 2009, when the first one completed the optometry degree course from UNSW and the second from the University of Melbourne’s Department of Optometry in 2010. Groups such as the National Rural Health Alliance believe that this number needs to be increased. It proposes to do this by encouraging local programs which encourage secondary students in rural and remote area to take up careers in health care, such as the “Science in Schools” program, which uses a “show and tell” approach to advertising health careers to Year 11 and 12 students, and lowering the university entrance requirement for the indigenous students. This has proved to be successful (34, 109).

In terms of recruiting health professionals to work in remote Aboriginal communities, Morgan regards that the importance of orientation programs for medical practitioners and highlighted several factors (110). Inadequate orientation has been identified by junior doctors as a significant barrier to practising confidently in these settings. Morgan identified core components for orientation to remote Aboriginal community practice. These included communication skills and language (English is often not the first language in many remote communities); cultural safety training; population health and disease control; professional roles and self-care; and also a site visit. In combination with the NT Specialist Outreach Service, specialists are introduced to the program and key staff, which include optometrists. In this way, the practitioner is more likely to be prepared for the unique issues associated with working in an isolated Aboriginal community. This idea must also be implemented for optometrists working with indigenous people. If the planning of education programs targets the younger Aboriginal population demographic, there would be hope for more long term success and service availability to these areas.

“Money, marks and motivation are the three barriers that hinder rural and remote students seeking health careers” (111). It has been found that tertiary students from rural and Aboriginal backgrounds often do not have high quality teachers required to explain the difficult concepts these subjects entail, therefore putting them at a disadvantage when final exam marks are the only measure of ability taken into account. At present, all three schools of optometry recruit students predominantly on the basis of the ATAR score, which does not augur well for rural students



applying to the course.

An inquiry into geographical differences in the rate in which Victorian students participated in higher education showed this discrepancy. The Victorian state government made the recommendation that programs be put in place to take this into consideration when rural students apply to university departments, applying some flexibility in university admissions (112). Leaping the hurdle to be accepted into the optometry course is one obstacle to achieve; staying in “the race” is the next.

Lewis et al, found that rural tertiary students studying at urban universities were forced to work long hours each week in order to continue studying and living in the cities. They concluded with the question-‘Is it worth it?’ (113). For a course such as optometry, that demands a full course load of many contact hours. This is a detractor for prospective rural students, they might not be able to find time to study and work to support themselves. Scholarships to prospective optometry students are a way of increasing those who eventually will embrace rural and remote practice. Local, state and Commonwealth governments are applying this recruitment strategy for undergraduates of rural origin. There are eighteen scholarships available for eligible optometry students at present (114). Table 3.8 reviews these by their conditional requirements.

**Table 3.8 Scholarships Available for Optometry Students 2009 (114).**

Eligibility Requirement	Rural Origin	Non-Specific Origin	Financially Needy	Indigenous	Summer course Only
Number available	8	5	3	1	1

The conditions associated with these scholarships vary, but they predominately offer students financial assistance on an annual basis dependent on their academic achievement. A limitation of the scholarships available for rural students is that five of the eight scholarships offered deemed that the students must be residents of NSW and some were specifically for students from a particular LGA in rural NSW. There were no scholarships advertised for students from states without optometry schools.

Reviewing literature regarding the response to the uptake of scholarships is limited. The

candidate found only information concerning one which offered scholarships for the recruitment of rural optometry students, the SARRAH scholarship, which is open to all allied health undergraduates. In response to the allied health scholarship in 2007, there were 900 applicants for 65 placements (114, 115). This overwhelming statistic shows that there is demand for students from rural areas to desire health professional careers, but they are in at least financial need, to achieve this goal.

Making rural practice an attractive career choice upon graduation is the next hurdle to overcome, and strategies that are implemented at an undergraduate level are reviewed. The preceptor idea is one that has been used in the past successfully. Placements in rural areas in the final undergraduate years have been seen as a positive recruitment tactic in the medical profession (31, 116, 117). Awareness of this finding precipitated the recommendation at a meeting between rural optometrists and schools of optometry in 2004 while discussing ways to replace overseas field trips with placements in regional Australia and states without schools (118). This is definitely an area that the schools of optometry could improve in, by offering rural placements either with rural optometrists or sharing the Universities Departments of Rural Health (UDRHs) and Rural Clinical Schools (RCSs). The limitation of this strategy is that it needs active coordination and a university department that is funded accordingly. Support is strengthening for this idea though with this recent submission by the NRHA (108). Rural placements in the final year of the optometry course are definitely an area that needs further investigation. A program such as the above could help to increase exposure to rural practice and subsequent recruitment. At present, the Department of Optometry and Vision Sciences at Melbourne University offers a voluntary week of rural placement for their final year students. The UNSW has a program for its final year optometry students also. Governments could work with universities and health professions to establish a national system of quality rural placements for health science students. Part of this would be the enhancement of the network of UDRHs through the establishment of new and the augmentation of some existing UDRHs.

Financial consideration of recruitment of health profession related students is another recommendation that the Alliance has put forward in their report endorsing the idea that the introduction of a HELP reimbursement scheme should be administered for those who choose to practise in a rural or remote location. At present, this is only available to doctors who practise in areas with population centres of less than 100000 people in areas of specific need. The participants have one-fifth of their university medical school fees paid for each year of service.

This is administered by the Department of Health and Ageing in conjunction with Medicare Australia (119).

### **3.3.1.3 Workforce Issues Affecting Retention**

Retention of the workforce is of prime importance as it has now been established that rural Australians have higher levels of blinding eye disease than urban people (42, 73). A lack of access to optometrists contributes to this poor eye health. To continue as primary eye care service providers in rural areas, research is required to know what keeps the workforce there in a sustainable form which will be beneficial for the future of rural eye health.

There have been no published papers on retention of optometrists in Australia, but the issues rural optometrists face have gained momentum since 2004, when the Victorian Division of the OAA had a forum which included rural optometry issues. By 2007, a Rural Optometry Group was established nationally, where key issues such as burn-out of rural optometrists, access to continuing professional education, locum relief services and the need of peer support and networking to overcome isolation professionally and personally, were identified and discussed (90, 118).

The need for continuing education is mentioned as a source of problems for medical practitioners in rural areas, not just optometrists (120). The costs associated with leaving their practices unattended, the costs of travel, accommodation and family upheaval can cause a severe disadvantage for them, which may outweigh the advantages of what they need to learn for their practice to improve. In regard to supporting optometrists by technological means, the world definitely becomes smaller. Wildsoet initiated the role that teleconferencing can play successfully for audiences far and wide (121). This has been now capitalized on by some groups who offer optometry modules of learning by email and internet, such as OPSM Learning and the UK based group, “Optician” .

Another area that has been identified by the OAA as a need for optometrists in rural areas is a lack of locum relief (118). By not having adequate cover for their practice when they go for a holiday break, continuing education in a capital city or sickness and maternity leave, optometrists find it a detriment to providing their service to the community. This is a common phenomenon amongst health professionals first documented by Kamien (122). In response to this optometric need, the OAA Victorian Division set up a trial relief locum team for optometrists in regional

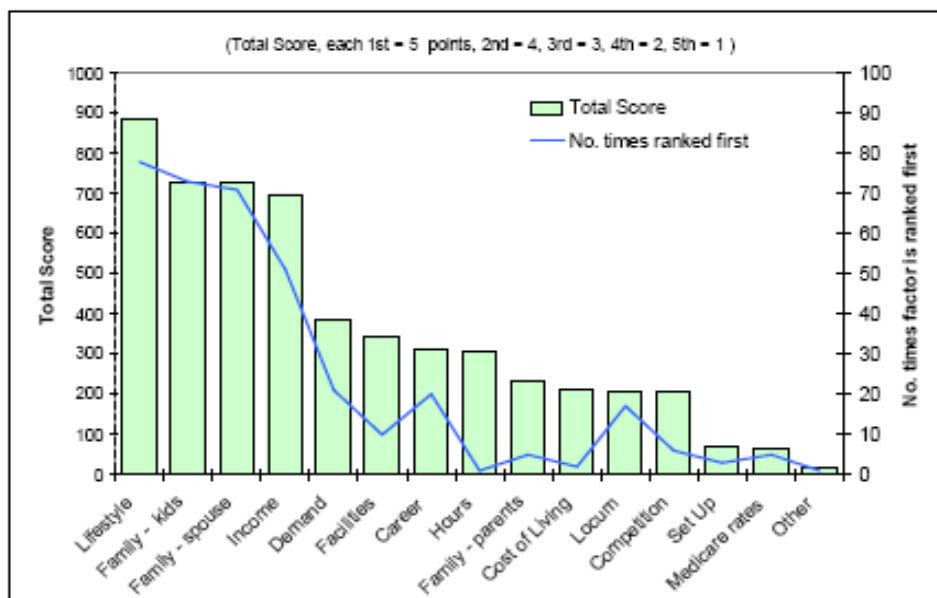
Victoria (118). The Victorian Country Locum Project was a jointly funded initiative by the optometrists in rural areas and the Victorian OAA through the Victorian state government (Department of Human Services) which was rated as successful from the rural optometrists' point of view. Results were evaluated by rating the rural optometrists' response, the locum's response, the number of consultations completed and the interest generated by further continuation of the program in other regions of rural Victoria. A 95% "very satisfied" response was reported by 17/18 of the optometrists who partook of the program, deeming it highly successful (123). Locum satisfaction was not measured quantitatively, but the two locums reported enjoying the experience except when one of the locums' got sick and was far from his support base to help him convalesce. They advised that short term employment contracts of less than a month would sustain interest and not be as personally taxing. This model of locum project could be role-modelled in all states of Australia to benefit and refresh optometrists who should be entitled to annual leave.

The limitation of this project is that of having locum optometrists who are freely available to practise in distances far from their homes. Victoria has a Department of Optometry and Vision Sciences and a surplus of optometrists. Coupled with smaller distances to travel rurally than other states, it has worked well. Transferring this idea to a state with no optometry school, an undersupply of optometrists and large travel distances may present difficulties, such as WA and South Australia. The other limitation of the Victorian Locum Project was that it relied on government subsidizing, and it has now been terminated due to the lack of funding (124).

There is controversy about the factors that affect retention. The Access Economics report found that recruitment of rural optometrists did not coincide with having a rural background (55). This is contrary to the findings of the other professions reviewed in this thesis (19, 31, 125). They found that only 44% of rural optometrists had a rural upbringing and of these 13% were planning to move back to urban areas to practise. According to Kamien, these are the "leavers" (122). Ideas suggested included increasing salary by at least 50% might entice urban workers to move to rural areas. Mention is made in the report of the importance of family support and the bearing this has on rural location of practice. They found that those without dependents and women under 36 years of age were more likely to move from urban to rural areas for a substantial increase in salary. They concluded that feminization of the profession was therefore not detrimental to servicing these rural regions provided that corporate support such as administrative services were in place. The literature from other professions disputes this (17, 107, 126).

The Access Economics report found lifestyle factors were the leading reason why optometrists practised where they did, followed by family issues such as children and spouse employment. It was interesting to note, they found that income was not the leading factor, therefore suggesting other ways to recruit rather than just salary incentives were required, contradicting the earlier idea of increased income for those who go rural.

The reason for the age of optometrists in rural areas being older than in other areas has been cited as due to the complex workload of being the first and foremost primary eye carers in rural communities as seen in Figure 3.6.



**Figure 3.6 Factors Important in the Choice of Practising in a Rural Area (43).**

More experience, confidence and training to handle difficult situations are required and younger, newly graduated students would not have this level of expertise. The work is challenging and therefore there are grounds for research that there are certain personalities and characters who relish this idea of professional testing than others, or that at certain stages of life, one is prepared to be stretched by such challenges if a need presents itself and support is available.

More research is indicated in this area of why optometrists practise in their locations, which is why a detailed study is required. There may be few shortages at present, but with the above

information, it can be seen that potentially, shortages in the rural workforce will occur in the future.

### **3.3.2 Research Into Rural Optometry Service Models**

Optometry in Australia has a strong research base. The three Schools of Optometry all offer postgraduate opportunities for further advancement of the profession. Lately, there have been several issues that command attention of all optometrists who are involved in rural and remote optometry services. These workforce reforms include the prescribing of therapeutic medications and task transfer, information technology in the eye health arena and visiting services.

Workforce reform is occurring in Australian optometry in the area of having the license to prescribe therapeutic drugs to combat eye disease. Roth argues that “a wide variety of ocular conditions present to optometrists or are increasingly referred from general practitioners, especially in rural settings where ophthalmological services are often limited” (127). Treatment of these conditions by authorized optometrists can be timely, easily accessed and cost effective (128). Excluding optometrists from prescribing common ocular drugs that can only be prescribed by an ophthalmologist or GP may lead to delayed treatment, unnecessary referral, patient inconvenience and unnecessary expense. With the implementation of national registration for the profession in 2010, this new change will help the plight of rural (authorized) optometrists to better serve their patients. Roth adds that the restricted list of drugs prescribable should be widened to allow for others that can provide treatment for other ocular diseases. He also describes the use of the concept of “task transfer”. In terms of sustainable services to rural and remote areas, this is definitely a workable model for further examination.

Ellis et al have described this idea of task transfer as one solution to the health crisis (129). They predict that with the total health workforce presently at 11.3% of Australia’s total workforce, it may need to be increased to over 20% by 2025 to maintain the standard of health care we currently enjoy. They propose that this demand may be met by “extending the roles of existing health professionals” such as optometrists and also “improving efficiency by using information technology more effectively in the health industry.”

A model of task transfer has already been implemented in optometry by the ICEE group who trained Aboriginal Eye Health Coordinators to screen for eye problems using a specially designed kit. This has reduced referrals to ophthalmologists by 85%. Layland et al shows there are direct

benefits of task transfer in this area of rural and remote eye care, already (69). The scheme is being utilized in NSW, Queensland and NT to address Aboriginal eye care issues. It is showing the way by collaborating and cooperating with Aboriginal-community controlled health services to reverse the blindness trend (69). By working with optometrists in the rural areas, who are assisted by Aboriginal health workers at the Aboriginal Medical Service centres or regional hospitals, many more Aboriginals are having eye examinations. The strategy and process of the program is a successful sustainable service that has a good future; hopefully for all Australian states where Aboriginal eye care is an issue. The lessons learnt from the ICEE experience are that a sustainable program can operate using the below format :

- Conducted under the auspices and control of the local Aboriginal community.
- Organized and delivered through Aboriginal Medical Service (AMS).
- Coordinated by a Regional EHC (Eye Health Coordinator).
- Well supplied with patients by cooperative activities and population screening by EHC and AMS.
- Serviced by locally-based primary eye care professionals (optometrists).
- Providing on-site dispensing of low-cost spectacles and rapid delivery of more complex prescriptions.
- Referring to secondary care personnel (ophthalmologists) at regional hospitals.
- Organizing visits of appropriate team members to smaller and more remote community centres.
- Conducted with the cooperation of GPs and other key health personnel.

The program is a success measured by the amount of spectacles delivered to indigenous people since it started in 2000 to 2004 where spectacles supplied went from 20 pairs per year to over 2000 per year (69). It has also been shown by the increase of remote area residents accessing optometry, having their refractive error corrected with custom made spectacles, increased community awareness about eye health and optometry services, skills transfer and training of local eye health staff and the establishment of referral pathways (130). The limitation of this

study is its dependence on optometrists and ophthalmologists willing to provide the services and work together in an environment that demands cultural respect and tolerance.

The next area that is having a major impact on rural optometry service models is that of information technology or e-health using digital screening and teleconferencing. E-health is an evolving term covering the idea of information gathered using the internet and communicating health care wherever the participants are located (131).

In the situation of mobile screening for eye disease, many papers are being published on its success (52, 82, 132-134). These authors all report how the use of non-mydratic fundus photography and other mobile screening devices may be a cost-effective way of screening remote communities by way of using trained local personnel. By using internet technology of the digital images taken in rural or remote areas, and then sent by internet to health professionals in more central locations, diagnosis may be made and treatment started with a great reduction in direct and indirect costs. Auto-refraction by local health workers allows for less optometrist involvement. Ophthalmologists researched, developed, initiated and implemented these pilot programs with minimal optometrist inclusion.

E-health could be used to target areas of eye health need from a data collection basis. For example, despite the many years of provision of eye care services from different groups to Aborigines in remote areas, little data exists about true demography. The need for a National Information Network, where integrated and linked databases improve eye health monitoring, examination of successful outcomes and health care utilization for successful reduction in diseases such as diabetes, is of premium importance. This will greatly assist the organization of sustainable health care because communities with high needs may be eligible for more assistance (61, 72, 130Commonwealth of Australia, 2005 #107).

The next models of delivering optometry services to rural and remote communities involve travelling schemes by the patient and the optometrist. Rural residents often travel to larger centres to access eye care, using a “self-management” type of model because they have no other alternative. A recent submission to the Australian Government focused on the shortages and maldistribution in health care in Australia, realizing that:

“Australia will not be able to meet the demand for health care merely by increasing the supply of health care *personnel*... However, with a creative approach to demand and supply, it should be



possible to meet the demand for health *care* through a range of actions. For a balanced outcome, increased *self-care* will have to become part of the equation” (108). This means patient travel becomes a factor in health care.

The Patient Assisted Transport Scheme (PATs) allows reimbursement of travel expenditure to cover the need for rural residents to travel to specialist medical appointments not available in country areas. PATs exist in all the states and territories of Australia. This scheme began in 1987 and is administered through the rural health services, country hospitals and general practitioners, allowing the cost of travel to be reimbursed by the state government. Ophthalmology is one of the highest accessed specialties that residents are referred to; costing over \$500000 in WA in 2001. Optometry is not eligible. It may be argued that some of these ophthalmological referrals would be unnecessary if optometrists could service the patient in their local hospital. In their review of PATs, the federal government acknowledged that there is inequity in access to allied health for rural residents and have allocated an additional \$4 million to overcome this. They did not want to include allied health services, such as optometry, in the PATs scheme for fear of a budget blow-out, but rather encourage allied health groups to travel to these rural areas (135).

The government submission also distinguishes the demand for health professionals from the demand for health care. It identifies the importance of recruitment and retention as strategies to cater for the 30% of Australians living in rural areas. A noteworthy point in the submission appropriate to the model of service delivery of optometry is recommendation number 94:

“The best future for rural and remote health services will see a greater emphasis on multi-disciplinary teams, with individuals from a variety of health disciplines working together. This has important implications for how health professionals are educated and trained, and for the infrastructure that needs to be provided for their work” (108).

Therefore, by combining optometrists’ service with others, there would be an increase in efficiency for rural health care. Shared coordination from an advertising and administrative level would allow better access pathways.

The other model of service to remote communities is the travel of optometrists to specific destinations. In regard to serving remote communities, there has been a Commonwealth funded program that has operated for many years, the Visiting Optometrists Scheme (VOS). The objectives of the VOS are to improve the eye health of Australians living and working in remote

areas with an identified need for optometry services, increase these services and support optometrists to provide these services. Recent overhauling of this scheme has supposedly created a more viable option for optometrists to service communities that don't have a full-time equivalent optometrist. The scheme relies on matching optometrists who are prepared to go to these areas of need with appropriate remuneration. Extra requirements not included by VOS are the need for on-ground support staff to advertise the service to the rural area and optometrist commitment to travel to these places of difficult accessibility. Four-wheel drive vehicles are required and the possibility of road injury can result in these harsh environments. Cultural awareness training is required if going to indigenous communities. The type of person who is able to commit to such requests therefore has to have cultural sensitivity, organizational skills, good driving skills and be a proficient and experienced optometrist.

The flaws with the VOS continue to be that locum cover is required if an optometrist leaves their principal practice for the extended period of time required to provide the service in the remote location. Even though financial provision is offered for a locum allowance and 'loss of business opportunity', it is of little value if the optometrists cannot get a locum to take their place in their primary practice (136, 137).

India has developed an interesting model to overcome the lack of trained ophthalmic health workers needed to combat diabetic retinopathy, seen as a national threat as its prevalence is extending to dynamic proportions in their large population (138). Rani et al, investigated a diabetic retinopathy screening model for rural populations. They are forecasting the number affected to be 80 million by 2030. They embarked on an educational tour of southern Indian rural areas, teaching ophthalmologists, physicians, voluntary groups, health workers, government groups and individuals about this debilitating disease. People were screened and a full program was established to save sight in a team work setting. This idea of collaborative teamwork from highly trained medical personnel down to rural village vision screeners has been developed further by the L.V. Prasad Eye Institute in Hyderabad, India called "The Pyramid Model". This model is able to support and coordinate the various levels of need in Indian society as shown in **Figure 3.7.**



**Figure 3.7 The Indian Pyramid Model of Eye Care (139).**

Australians have much to be thankful for, as the challenges of reducing visual impairment are seemingly minimal compared with India, but they do serve as a reminder to us. Some argue that Australia is a “developed country” in some areas, but “undeveloped” in others, particularly in rural indigenous communities (83, 140). Because of this, researching models such as the above serves a purpose for a sustainable model to offer remote communities in Australia.

To summarize, rural eye health has been found to be a serious Australian health issue. Indigenous eye health is a national dilemma which adds to the burdens this disadvantaged and vulnerable group in society suffers by. Medicare data shows there is a lower utilization of optometry services in remote areas where eye disease has been found to be most prevalent. A maldistribution of the eye care workforce (ophthalmologists and optometrists) has been found to exist in rural and remote areas along with states which do not have schools of optometry. Strategies to overcome this have been suggested but few have been independently reviewed in the field of optometry. Workforce issues affecting recruitment and retention have been researched, leading to the conclusion that shortages in rural optometry labour are occurring and need to be studied further. Finally, workforce reform and rural optometry service models have been investigated.

The above review shows that optometrists cannot regard the domain of eye care in exclusion to other areas of health care. Optometrists are part of a whole and complex structure of health care providers offering eye care services to the whole and complex structure of the Australian

population. This leads to the investigation of other health professions, internationally and nationally, to see what they have discovered in their research and insights that could contribute to answers for the rural health dilemma.

## Chapter 4: Workforce Issues in Rural Health Care

Maldistribution of health care professionals is a universal phenomenon. In order to gain as much understanding of the topic as possible and, perhaps, find new solutions to this problem, it is necessary to review literature from other countries and health professions. This review reveals how well Australians are addressing the providers of health care and what lessons might be learned from a global perspective. Australia's prosperity should not be taken for granted and in the areas where the prosperity isn't evident, such as in rural, remote and indigenous populations, Australians must endeavour to strive for equality.

As reported previously, rural health is a complex issue with many determinants, made up of many health professionals providing health care to those in need. By restricting the review in this section to the rural health providers, the issues that they face serving in their communities will show the gaps required for research.

Literature reviewed for this section came from USA, Canada, United Kingdom and Australia, because these countries have all encountered similar distribution problems for health professionals, they have similar public health systems and standards of living, *i.e.* they are "developed" countries. Canada also has an indigenous population that have similar health issues to Australia's indigenous people.

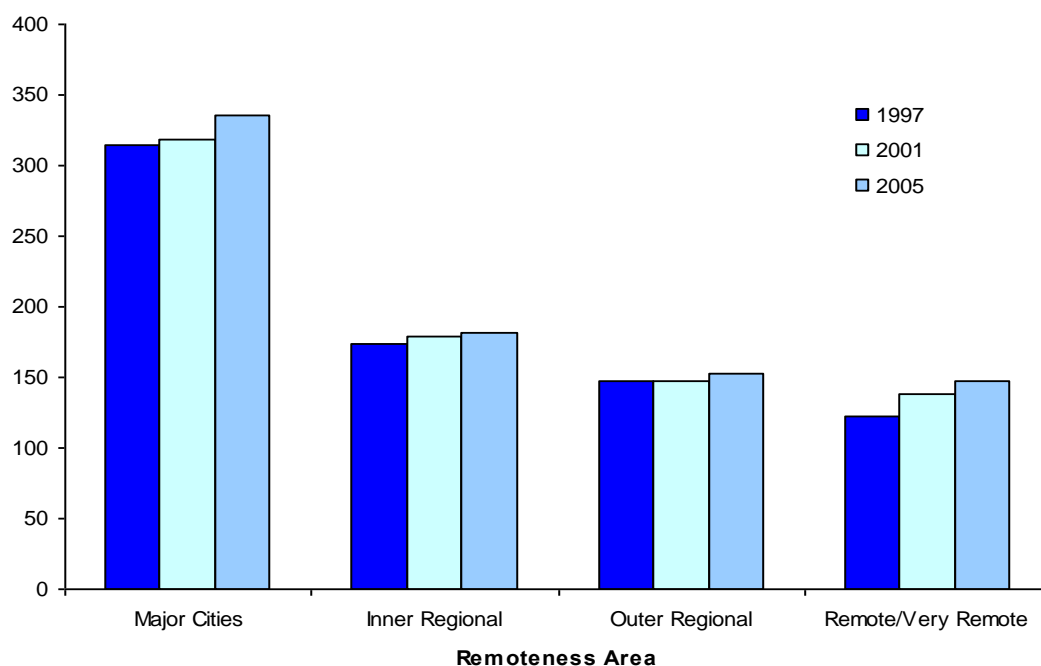
Literature is reviewed from the fields of medicine, dentistry, nursing and allied health. These health professions have comparable workforce issues of distribution, recruitment, retention and service delivery. This has been undertaken to see the comparable problems and their working solutions. The initiatives and strategies that these professions and countries have put to use could assist in the optimisation of eye care delivery in the Australian rural and remote scenario. A better understanding of how medicine and the other healthcare professions have addressed these issues would be another asset and could lead to a closer relationship with the medical profession and allied health groups.

## 4.1 Benchmarking Health Care Professionals

The AIHW conducts annual workforce surveys of the medical, nursing and dental professions and less often for allied health professions such as optometry. Data are represented here from the 2005 surveys (141). The AIHW uses the ASGC Classification system.

The shortage of doctors in rural areas has received much attention and research. Large budgets have been offered to address the problem. Federal and state funded programs established to address each stage from recruitment to retention have been administered to support health care in rural locations. They recognize there are unique problems encountered by the rural practitioner compared with their urban counterpart.

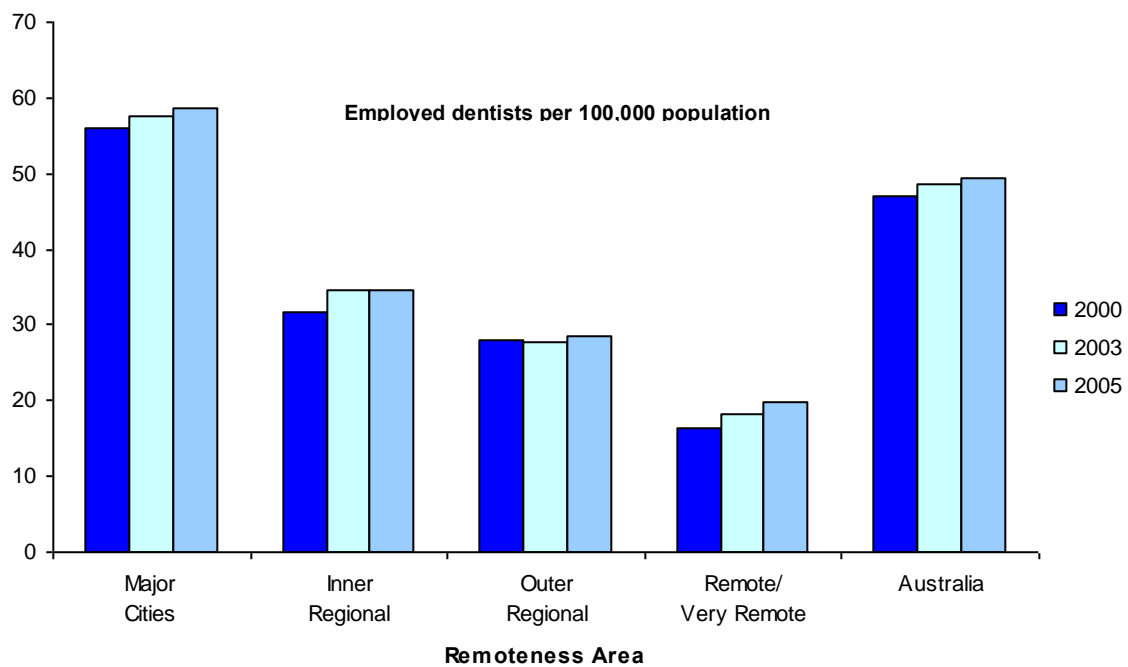
**Figure 4.1 shows the distribution of doctors across Australia over an eight-year period. There has been a slight increase in the workforce over this period in remote areas but it is obvious from this figure that there is still room for improvement by the uneven distribution occurring.**



**FTE rate (per 100,000 population)**

**Figure 4.1 Employed Medical Practitioners, FTE Rate by Remoteness Area, 1997, 2001 and 2005 (133).**

Like optometry, dentistry is a primary health care profession. Dentists are responsible for the oral health of patients providing a range of preventative, diagnostic and restorative services. The difference is that it is covered by Medicare only in some limited circumstances, but mainly by either private health insurance and/or the public sector through state government providers. **Figure 4.2** shows a similar pattern to the medical profession in the trend that there are fewer dentists (FTEs) per population available as remoteness increases. The changes between 2000 and 2005 have **not** changed this situation.

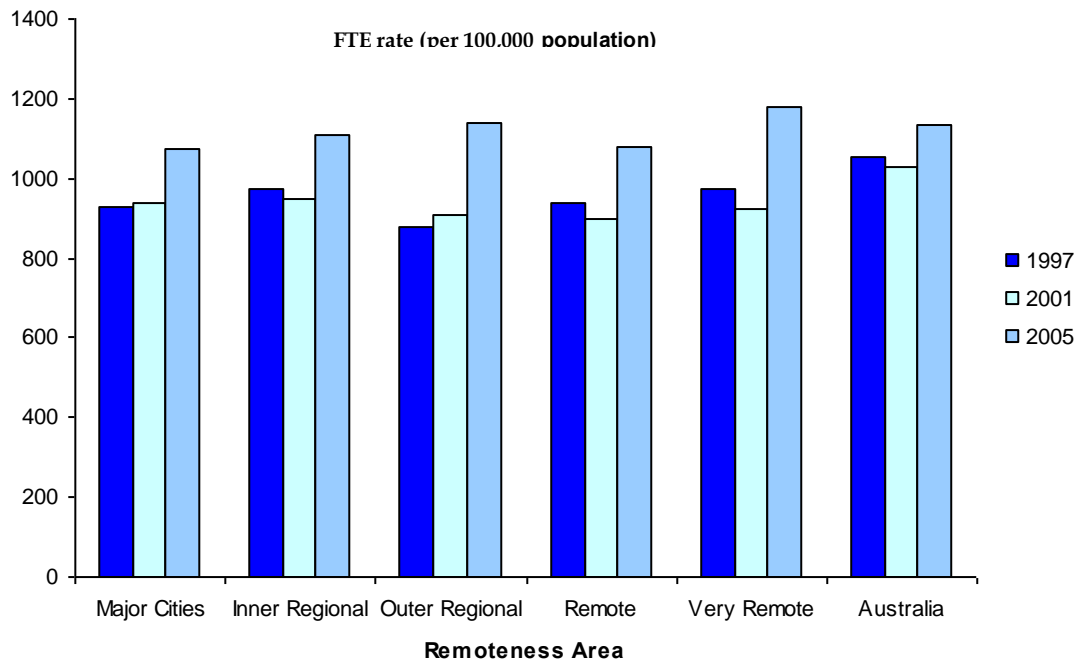


**Figure 4.2 Number of Employed Dentists per 100,000 Population, by Remoteness Area of Main Practice, 2000, 2003 and 2005 (133).**

Teusner found that residents in rural areas were having less dental preventative procedures and more complicated oral health problems on presentation, which required a higher rate of surgery (142). Demographic characteristics of dentists show that 78.4% of all employed dentists worked in “Major City” areas; dentists in “Remote” areas were on average younger (41.8 years) and those in “Outer Regional” areas were older (45.9 years) than the national average (44.6 years) and females comprised of 20% of employed dentists in “outer Regional” areas compared with 27.3%

in “Major City” areas.

Nursing is also included in this section, due to its prominence in the health system and there are no distribution issues as the AIHW statistics indicated in **Figure 4.3** (141).



**Figure 4.3 Employed Registered and Enrolled Nurses, FTE Rate by Remoteness Area 1997, 2001 and 2005 (141).**

The final finding in the review of benchmarking literature illustrates optometrist number growth in comparison with other allied health providers, shown by **Figure 4.4** (35).





**Figure 4.4 Persons Employed in Allied Health Occupations Between 1981 and 2001 (35).**

Optometrist numbers are increasing at a similar rate to other health professions by doubling numbers over the 20 year period. Pharmacy has only increased numbers by 40%. Recruitment and retention strategies are required to cope with the expectant growth as health services are set to rise with the ageing of the population.

## 4.2 Recruitment of Health Care Professionals

The most informative research for this thesis was from Richards and Farmer et al, who surveyed over 2000 primary health care professionals in the Scottish Highlands, where only 4% of the population reside (25). The purpose of the survey was to verify whether the predictors of rural health workers identified by the international literature such as: birth place or education of the individual in a rural location; exposure to rural healthcare during training; access to continuing professional education; good relationships with peers; spousal contentedness; adoption of a rural 'lifestyle'; successful integration into local communities; and educational opportunities for children were true determinants of recruitment and retention in the rural health workforce of the most sparsely populated area of the United Kingdom. Their findings were comparable with the literature that is reviewed elsewhere in this chapter. The strong relationship found that those born in rural areas were more likely to work there. Problems associated with living in the rural areas

were perceptions of being isolated, of their caring roles extending beyond their work, and of an inability to get away from work for holidays and study leave. Eighty-one percent of respondents said that they felt part of their community. That proportion was higher for those working in rural areas than for urban residents. Respondents indicated their perceived ease of access to five amenities and services: children's education (preschool, primary and secondary); access to employment for spouse; and health care. With the one exception of access to primary education, the other indicators were perceived to be most difficult to access by the professionals working in rural areas.

The research of Richards and Farmer et al has geographical parallels with the candidate's study of Australia in that the remote areas of need equate to a similar population percentage to Scotland's remote areas. Although the geography and climate differ, one could argue that both comply with the definition of "remoteness" in proximity to a major urban centre where services are easily obtainable and the harshness and isolation of a sparsely populated environment exist. The issues that were researched in the Scottish study are similar to those of rural optometrists in Australia. This may provide the basis of a similar questionnaire based investigation.

The Canadians also have problems sourcing rural health practitioners in their country (88, 91). For over 25 years, they have implemented an effective strategy for increasing recruitment to rural practice by having medical schools actively select rural origin students who express a desire to be a rural GP (143). At least 51% of graduates remain working in rural areas after 10 years. Canada is similar to Australia in that it has large areas of remoteness with small communities and populations of indigenous and Inuit people who have called these areas home for thousands of years. Topps et al found that cultural immersion through training programs based in rural communities, providing additional skills training that is relevant to rural needs and greater teamwork among rural healthcare providers does address the current shortfall (144). This inclusion into the undergraduate medical courses combined with the expansion of the universities into rural areas, provides this rural focus to medical education. They also noted that in rural areas, there was such a shortage of rural providers that "former suspicions of turf protection by various bodies seem to be evaporating, perhaps fuelled by the realization that there are too few of us in all groups, therefore plenty of turf for everyone."

They found that the most powerful factor was, undoubtedly, the willingness to work in concert towards the common goal of providing an effective, efficient and educated health care team in all the rural communities. This motivation is one that needs to be central to eye health planning in

Australian rural and remote areas as well.

Secondary students identify their interest in the health professions and recruitment of potential providers starts the cycle. In a national study of 2414 Australian general practitioners, researchers found that practitioners with a rural background were more likely return to a rural location upon graduation (145). Rolfe reported similar findings for solutions to the rural doctor shortage using the roles of pre-selection of undergraduates for medical education at Newcastle, NSW (17). He showed that rural placements in the undergraduate final year encouraged rural practising after graduation. He called for medical school admission policies to favour students from rural areas. Combining this idea with that of Wolff, they showed that recruitment strategies of advertising positions to a select target audience would influence the probability of successful recruiting (146). The OAA now has recruitment “drives” where students in their final year of optometry are introduced to optometrists who require employees from states that don’t have optometry schools. This “meet before you choose” form of employment advertising has had a positive effect on employment of undergraduates to these regions.

A study of whether universities are making efforts to contribute to the recruitment and retention of rural health professionals was published recently (23). It surveyed the health science education faculties at the University of Sydney, including dentistry, medicine, nursing and midwifery, pharmacy and eight disciplines of health sciences. The study concluded that the university was not translating adequate internal resources to promote rural health workforce outcomes. They concluded that a step to achieving these outcomes would be improved communication and sharing of resources between faculty and program teams responsible for managing rural attachments and student teaching. This is best implemented at an institution-level and particularly supported by the UDRHs and RCS. Efforts to attract rural students were not well developed and only a minority of courses offered facilitated entry for rural students. There was a lack of information on the number of rural origin students enrolled in the courses and this was seen as an important way that agencies such as the Australian Government could gauge whether strategies were effective.

To combat the workforce shortage, medical general practitioners have used the strategy of recruiting overseas doctors (Overseas Trained Doctors Scheme or OTDS). The most successful and accepted GPs by the Australian community have been those from Commonwealth countries. There are many issues surrounding this controversial movement because it is not consistent with long-term provider provision. A former president of the AMA believes that locally trained

medical graduates are the answer to workforce distribution problems and that the OTDs are only a short-term solution. They tend to migrate to metropolitan areas or return to their homeland. He hinted at the ethics of taking another nation's skilled health investment to meet our own communities' workforce expectation (106). Further documentation showed that by 2005, 43% of the Australian medical practitioner workforce was born overseas (147). Those on temporary visas were working in areas of particular need including rural and remote regions.

Globalization of qualifications is a two-edged sword. While it gives Australia access to overseas trained practitioners, Australian trained general practitioners may be recruited by other nations due to their proficient training and lack of opportunities in the public hospital system. The high salaries, experience, opportunity to travel and lifestyle overseas often appeals to the generation Xs. Eley et al surveyed rural GPs and prospective rural medical students' perceptions and expectations regarding the future of rural practice and highlighted the generational shift in attitudes. Members of Generation X, (that is, the prospective rural doctors) were found to "seek systems or organizations that will help them achieve their goals and perform their jobs". Unlike the current rural GPs, (baby boomers) that are characterized by altruism and self-sacrifice, these Generation X-ers are unwilling to practise in an unsupported environment and their first loyalty is to themselves (34). This generational difference is also discussed later in Chapter 4.3 where allied health has confirmed these findings in their workforce. The ramifications of this generational change are that family and partner support, along with business network structures that aid the health professional, will be required.

The next issue of concern that has been documented is that of the influence of feminization and its consequence in retention in the health professions. This has been highlighted in a survey of physicians in rural north-west USA (148). The authors examined the trend that women physicians did not tend to practise in rural areas. With the growing proportion of women in medicine they concluded that it would have a major impact on the supply of medical providers for rural areas. Their results showed that women were more likely than men to have been influenced in making their practice choice by issues related to their spouse or partner, flexible scheduling, family leave, availability of childcare and the relational aspects of recruitment. They concluded that recruitment is only the first step in ensuring an adequate rural workforce and that retention is of equal importance.

The feminization of the Australian general practitioner workforce has been predicted to have a huge bearing on this sector. Female GPs tend to have a shorter working life and have family

commitments that lead to a desire to work regular hours on return to the workforce (149). Brooks et al surveyed the medical workforce in Australia and found female doctors have a working life of 60% compared with male doctors. This change in the demographics will result in an unmet need for medical services and they warned that Australia will suffer from too few doctors if changes are not made to the recruitment strategies of undergraduate medical students (18). They also found that, even though female undergraduates were content to go on rural placement in their final years, they did not take positions in these areas after graduation (150).

A WA study of dental students looked at the attitudes of students after placements in the rural areas in their final undergraduate year (116). A specialized program was developed by the School of Dentistry (UWA), recognizing the shortage of dentists willing to practise in rural and remote areas. By giving students a positive experience in this area of clinical practice, they believed it would address workforce shortages in these regions. The program was developed by key stakeholders such as rural dentists, Aboriginal Medical Service representatives and indigenous community leaders. The program was designed to give students a broad experience of rural lifestyles while being supervised in a range of dental services. Placements were of three-week duration in RRMA zones 3-6 (5000-100000 population centres) and where fishing, mining, wine-growing and farming were the industry catchments. The Australian Dental Association sponsored transport costs. Student perceptions of each placement were evaluated by an open-ended questionnaire. Over 78% of the students had never experienced rural life before their placement.

**Table 4.1** shows the wide range of reasons students cited as detractors for rural practice. Isolation and lack of facilities and social activities are the main reasons. This indicates the importance of established relationships and lifestyle outside work for this group.

**Table 4.1 Reasons for Difficulty of Rural Dentist Recruitment (116).**

Reason	N (%)
Isolation (from friends, family and other support networks)	22 (31.0)
Unwillingness to change	9 (12.7)
Lack of incentives	6 (8.4)
Lack of employment opportunities for partner	4 (5.6)
Poor exposure to rural practices during training	3 (4.2)
Lack of facilities/social activities	13 (18.3)
Perceived negative ideas	7 (9.9)
Education opportunities for children and continuing education for the dentist	4 (5.6)
Established commitments in the city	3 (4.2)

**Table 4.2** shows the attractors to practising in a rural area by the students. These reasons are evenly spread in popularity between the friendly patient base, therefore showing the importance of relationships for recruitment and the career opportunities offered.

**Table 4.2 Reasons Students Provided to Explain Why They Would Consider Practising in a Rural Area (116).**

Reason	N (%)
Friendly patient base	8 (19.5)
Facilities and earning capacity exceeded expectations	6 (14.6)
Enjoyed time in rural setting	5 (12.2)
Lifestyle	3 (7.3)
Community spirit & 'part of the community'	2 (4.9)
Job opportunities and experience high	7 (17.1)
Rural areas need dental services	5 (12.2)
Greater variety of dentistry	3 (7.3)
Only for a short term experience	2 (4.9)

This reinforces Eley et al's findings that demonstrate the importance of family and partner support for Generation X (34).

An increase in dental graduates working in rural areas did occur following the establishment of the rural placement program. 28% of new graduates rose to 48% over the three-year period after inception. Discussion was made of the medical undergraduate finding that the timing of the

placement was of importance. Final year student placements were of significantly more benefit than those undertaken in earlier years.

There have been few studies of recruitment in the allied health workforce. The pharmacist workforce has been studied. Pharmacy has a closer relationship with general medical practice than optometry and the current GP shortage has a direct impact on the viability of their profession. If there is no doctor in a community, there is no prospect of a viable pharmacy. An example of this was a pharmacist in a rural town reported securing financial support from the state government to buy and furnish a house in the town, specifically to accommodate locum GPs and medical students in an attempt to recruit these professional partners (151). Optometry can learn from this example. Corporate groups who employ optometrists may have to look at the idea of providing accommodation as a part of an employment package in order to retain optometry staff in difficult-to-staff and high rent locations such as Port Hedland, WA.

Nursing is central to the health workforce. It is reviewed here because of the similarities to the optometry workforce in the area of gender overlap due to feminization of the professions. Historically, nursing has been a profession dominated by women and, as reported in Table 3.6, new optometry graduates and the eventual optometric workforce are becoming increasingly **female based**. Issues that traditionally relate more to women, such as childcare, family relationships, partner employment and contentment will become factors to consider in future recruitment and retention.

The largest health workforce studies have been done on Australian nursing practice because they have the greatest population of health professionals. They have identified a trend towards decreased recruitment and retention in rural areas, an ageing workforce and a high turnover. At the same time, these rural nurses have a high level of job satisfaction. Hegney et al investigated the factors that influenced nurses from rural areas to practise in rural locations. They were found to be different from those that attracted their urban counterparts to rural practice (152). From previous studies, they knew that nurses from rural backgrounds may train in metropolitan institutions but returned to work in the areas that they grew up in due to family and/or lifestyle reasons. They found that education and training opportunities such as exposure to rural and remote area nursing in undergraduate placements were unlikely to influence urban background participants' decisions about work in rural areas. They also found that the strong social networks that characterize country life are very important, as "a sense of belonging" was a high determinant to practising there. Third ranked was "the attractions of the rural lifestyle".

Difficulties encountered were lack of employment opportunities for their partner, lack of social amenities and reduced access to childcare.

The authors' recommendations included highlighting the high job satisfaction rate in country practice and attracting recruits already exposed to rural and remote lifestyles by reserving a minimum of 10% of places for students with this background. Regional universities do have nursing courses, unlike optometry.

Another study investigated whether undergraduate courses offered in rural locations were successful at addressing the shortages of nurses in these areas. Nugent et al carried out a longitudinal study of enrolment and completions of nursing students at rural and remote nursing campus locations. They found the proportion of students finishing their course greatly increased if they had come from rural areas (153). Previous studies had shown that increasing the numbers of nurses in the workforce, by increasing the intake of students into urban undergraduate courses, did not address retention of nurses in rural areas. Instead, the courses at rural universities had a far better rate of delivery of workforce to rural and remote areas. They also found that scholarship schemes such as the Australian Government's Remote and Rural Nurse Scholarship Program, funded by the Department of Health and Ageing contributed to the success. The difficulty that they had was defining what constituted a rural and remote location. They surveyed students across 24 different rural campuses. Issues such as the importance of family ties with the local rural community and the lower cost of living were significant findings. The relevance of this study to optometry is that stakeholders in optometry corporations often cite that there are not enough optometrists and that the universities need to increase their intake of students to fulfil employment opportunities (95). By simply increasing the intake of students into these urban university courses, the evidence from Nugent et al is that it will not benefit rural areas in the long term.

The medical and allied health training concept that facilitates recruitment to rural and remote areas is that of the preceptor model. The preceptorship is where students spend time in a rural area working under the mentorship of an experienced professional. It was developed in response to provide varied and extended clinical experience but it can also serve to encourage the choice of rural practice. In addition, Shannon et al interviewed doctors, nurses and allied health staff supporting the student and found that they valued being able to contribute to students knowledge and skills and found that they could promote rural practice as a career option (154). In light of this, the candidate's survey includes questions on the availability of the respondent to participate



in an optometry preceptorship program.

### **4.3 Retention of Health Care Professionals**

In this section, the retention studies of doctors, pharmacists, dentists, occupational therapists and the allied health workforce in rural areas are reviewed. Australian, American and New Zealand research has been identified as most relevant because of the similar issues.

The Australian medical profession has published a prolific amount of literature regarding issues concerning rural and remote general practitioner needs. This has been a substantial help in viewing how optometry may also be affected and effective in the future.

Retention of rural doctors has long been an area of concern and research. A selling point of rural practice is the more interesting caseload and that the resultant feelings of professional satisfaction encourage the doctor to stay. The research in the field of medical general practice substantiates this. Kamien's classic longitudinal study examined the outcome of a sample of WA doctors who, in 1986, indicated their intentions to stay or leave rural practice (122). A postal questionnaire survey was sent to respondents in 1996, after a ten-year interval. He found that 49% of doctors, who had been intending to leave, had stayed and 24% who had intended to stay had left. In 1986, the doctors' typical concerns were overworking, lack of locum relief, lack of contact with professional colleagues, medical related issues and income. The 1996 stayers had negotiated and solved most of these problems and felt they were doing a special job that made a difference to their community. Those who left felt disempowered and dispirited. They reached a critical stage in their professional life that they were not able to overcome the obstacles. Kamien concluded that professional satisfaction was the main reason for doctors staying or leaving rural practice.

Kamien's study was followed by Hays, who interviewed doctors who had left rural Queensland practices and who developed a model of the processes that had occurred (155). Humphreys et al have developed a conceptual framework, which acts as a basis by which to evaluate the best method of delivering effective interventions to aid retention. Internal and external stress factors may be used to predict whether retention occurs or not. The concept of stress being a reason for staying or leaving is one that the candidate will investigate in the context of surveying rural optometrists. Hays recognized that certain factors are responsible for retaining GPs in rural areas and are not necessarily the same as those responsible for their taking it up. For example, lack of secondary schooling opportunities may be overcome by sending children to boarding school in a

city. The model also offers the opportunity for evaluating better the specific impacts of interventions in the form of incentives designed to retain doctors in rural and remote areas. It has been recognized that retention incentives are “unlikely to succeed unless they are preceded by a correct diagnosis of the major causes of turnover” (155). Therefore, evaluation of the effectiveness of retention incentives requires a sound knowledge of the determinants of professional and personal satisfaction and the triggers that provoke relocation.

The retention of physicians in American rural practice was examined by Feeley using the Theory of Reasoned Action (TRA) to examine retention in rural primary health care physicians (156). TRA suggests that turnover behaviour is directly predicted by one’s attitudes to rural practice and the perceptions of significant others in their life, for example, a spouse’s. If a spouse has a rural background and is content to stay in a rural area, the support of the spouse may influence the optometrist to remain in the area. The converse is if the spouse does not have a rural background, there may be pressure applied to the optometrist to re-locate to an urban practice. For this reason, questions relating to spouse’s rural background have been included in the candidate’s survey to rural optometrists.

Isolation is often suggested as the reason why people do not wish to go to rural locations (20, 24, 122). Laven et al studied factors associated with rural practice among Australian trained general practitioners. They found that rural GPs tended to be male and Australian born with partners’ background appearing to exert an influence on choice of practice location (157). Current evidence suggests that rural doctors are more likely to come from a rural background, to have a partner from a rural background and to undertake undergraduate and postgraduate training in rural areas. Rural origin is clearly seen as having a large influence on retention of health professionals.

Retention of rural physicians, who have a similar population ratio to that of optometrist (1: 8000), was surveyed by Simmons et al. They designed a cross-sectional postal survey to Victorian physicians to quantify the barriers to practising as a rural consultant physician. The questionnaire included demographic details, work profile, questions regarding barriers to rural practice that were both closed, such as access to locums, and open, such as listing procedures they would prefer not to perform. They found these results: 67% of rural physicians were born in a rural area; all were male. The most important perceived barriers to rural practice were identified as children’s schooling (72%), spouse’s occupation (66%), other issues related to children (67%) and difficulties getting back into metropolitan practice (45%) (126). An earlier study of rural surgeons by Breuning found the demographics of this group were predominantly male, middle-

aged and married as well (158). They cited professional problems such as frequent on-call work, lack of locum cover and peer isolation. Family issues of children's schooling and spouse employment were also acknowledged as problems. From their suggestions, a national locum scheme was established through the Royal Australian College of Surgeons that aimed at recruiting surgeons nationwide to participate and therefore reduce some of these problems.

New Zealand, though a small country, has reported shortages in rural general practitioners numbers, presented in the results of a survey done by Janes (159). The demographics of the rural GP were: having a mean age of 44 years; 72% male; and having 93% New Zealand ethnicity. The key retention issues they were facing were due to the significant workforce shortage, such as the heavy workload, lack of locum relief to enable time off for professional development and holidays.

Australia's general practitioner rural counterparts are also found to be male, in their 40's, married with children, Australian-born and with rural primary school education (157). If this is so, the question one must ask is: are the universities recruiting this future profile of graduate for the maldistribution problem to be addressed?

The support network provided to other practitioners nearby is also an important retention tool. This was identified in a rural Queensland study (160). A qualitative design using in-depth interviews showed that rural GPs needed clinical, workforce and social support in order to experience satisfaction in the workplace. Clinical support from specialists was seen as being very important as the relationship between the GP and specialist could affect the health outcomes for the patient. Access and availability of the specialist was seen as paramount, with contact often being by phone. Workforce support in the form of locum cover or heavy workload overflow was another important issue in rural medical circles. Social support was minimal in solo-GP towns, and efforts were made often to create opportunities to interact with GP colleagues. These included group practice meetings, local continuing education meetings, meetings and dinners with representatives from pharmaceutical companies and annual Rural Doctors Association conferences. The majority obtained moral or emotional support from their spouses. A clear preference for face-to-face contact for the provision of personal social support was reported. This explains the demographic of rural GPs being predominantly married. The long-term service to rural communities is assisted by the psychological support base of a partner. The study found that, for female GPs, isolation, particularly single females, was a major issue that affected whether to stay or leave rural practice. This issue is of central importance because support for the

practitioner in a network situation may help them to overcome this sense of isolation. With the feminization of the workforce, social isolation may become the main reason for not remaining in a rural environment thereby creating an on-going chronic shortage. The findings were also supported by a later study, by Gardiner et al, who found that psychological support enabled doctors to have reduced levels of rural doctor distress, which included fewer feelings of being isolated and unsupported. As a consequence of this psychological support, fewer GPs planned to leave rural practice, which emphasises the importance of increased wellbeing (161).

Retention issues have been a large problem in the NT. In 2007, the NT dentists were surveyed for the reasons they practised there (162). The aim of the study was to accumulate information in assisting the retention of dentists in an area notable for high staff turnover. In doing so, they hoped to reduce the problem and optimise strategies to retain the professional workforce and maximize productivity. By using a multivariate logistic regression model, they were able to describe the professionals who stayed for more than five years and gathered reasons why others left. Results showed that those who had made major purchases, such as a home, and had social and cultural links in the area tended to stay. Others who came for only for financial incentives or the novelty of working in an exciting and different environment left within five years. They cited a reason such as the work was too stressful and that they had no social support mechanisms in place to alleviate this. Those who stayed enjoyed the sense of community and the opportunities of living in a small centre. They concluded that these reasons were similar to the medical practitioner findings.

The allied health profession of pharmacy is one that is also suffering from rural workforce shortages. A pertinent recent study used a qualitative method interviewing pharmacists that practise in rural and remote NSW (151). It identified a number of factors that affect the recruitment and retention of pharmacists. The study found that there is considerable overlap between the factors, with different weightings of importance for different individuals. For example, in the area of recruitment, rural pharmacists tend to have origins in the country. In retention, the positive effect of job satisfaction due to the extended role of diagnosing more disease and the relationships they built with customers and other health professionals all influenced the pharmacists' satisfaction and likelihood of retention. Problems encountered were similar to other health professions reviewed. These included difficulty recruiting staff, locum cover and limited access to continuing education opportunities. They also found that even though promoting rural exposure through undergraduate rural placements had improved the perception of

rural pharmacy practice, this did not translate into graduates taking up rural positions. This finding questions the effectivity of preceptorship programs on recruitment and retention.

Factors that lead health professionals to start rural practice have been found to differ from those that influence them to remain (163). There were not as many papers written in allied health to show this, yet it is just as important. A survey of occupational therapists using ethnographic interviews identified factors that contributed to them leaving rural areas. They included isolation and homesickness, lack of professional support, large workload, lack of locum cover, lack of professional advancement, lack of financial incentives, especially in mining areas, quality of children's secondary education and lack of social support. These are all similar findings to the medical profession. All describe the friction between influences to stay and leave rural practice (164). An imbalance between incentives and disincentives to stay in rural practice will contribute to a low retention of health professionals. Recommendations included an orientation program, professional packages that include travel expenses and reduced costs for continuing education.

Schoo et al's study in Western Victoria recognized that there were problems associated with recruiting health professionals into rural areas. They developed a conceptual model for recruitment and retention which sets out to describe the multi-factorial features of why people work where they work and what can be done at the various levels, of the individual, organizational and community needs, in order to keep them in these rural locations. They identified that work force trends differ between "baby boomers, Generation X ('61-'81) and Generation Y" (165). For example, "Generation Y includes wanting to work in a team environment, Generation X wants to be mobile and flexible and baby-boomers plan to retire. Generation X has been described as being empowered, self-directed, techno-competent, flexible, and wanting to change jobs more frequently when dissatisfied with work conditions. Generation Y are described as team workers. These findings challenge existing recruitment and retention practices and are likely to have ramifications in relation to management and forward planning of rural workforce requirements." The authors formulated a multidimensional interactive model based on balancing responsibilities and needs of health professionals, communities they serve and the agencies/corporations they work for. It is based on personal choice theory and lead management principles. They concluded that mapping of communities needs and addressing individuals and organizational styles would benefit in less staff turnover in rural areas.

To summarize, the barriers to recruitment and retention that the medical and allied health professions have discovered are:

lack of quality secondary education (112)

- heavy workload (22)
- spouse/partner's unhappiness (156)
- lack of community resources (25)
- low remuneration (20)
- lack of locum relief (122)
- difficulty accessing continuing medical education (166)
- conflict with the medical community (25)
- personal isolation (17, 20, 24)
- lack of privacy and anonymity (24)

Attractors to rural practice are:

- sense of community (25)
- happiness of spouse/partner (25, 148, 156)
- rural lifestyle (25)
- scope and variety of work (25)
- hospital access and procedural work (22)
- independence and autonomy (167)
- comprehensiveness and continuity of care (19)

Effectivity of services and programs to increase recruitment and retention in order ranging from most to the least effective are:

- funded student scholarships (with obligations to practise in rural areas of need) (109)
- preferred student admission (from rural backgrounds) (143)
- rural placements for at least 6 weeks in the final year of the degree (17, 109, 146)
- overseas trained doctors (with obligations) (106, 147)
- financial incentives (lump sum payments and tax breaks) (162) .

## 4.4 Models of Health Services in Remote Areas

Models of service delivery are the next area that has to be addressed if rural and remote Australia's eye care needs are to be met. Sustainable health care services are of paramount importance to address the gap evident in rural areas. In order to approach this section, it is important to review primary health care models that have been successful. It is also important to review how "success" is measured.

In larger regional areas, health care is accessed in the conventional manner of patient attendance at the local "discrete" centre. As the population is dispersed over a vast area, being defined as remote, services have to be adapted to meet the workforce and patient need. This interface is one of great challenge. In these areas of sparse population, the identification of a threshold population sufficient to support an optometrist will not work. Models of health care that utilize different perspectives are required. In the following examples, novel ways of practising and delivering health care are reviewed. Ingenuity, resourcefulness and creativity are all required attributes to making health care work in areas where there are too few health services and large distances to cover.

Rural health researchers have devised a systematic solution for health provision in small rural and remote areas of Australia (168, 169). Based on the requirement of delivering primary health care successfully and sustainably, the authors evaluated existing models on evidence from financial and structural aspects of each model. A typology of models was developed with five broad groupings. By characterizing each model in each grouping by their requirements at a macro level of environmental enablers and at a micro level of specific service needs, they were able to identify what models work well and where. **Table 4.3** demonstrates the typology of models as a continuum from rural discrete service centres with larger populations through to remote services that are outreach based.

**Table 4.3 Typology of Rural and Remote PHC Models (168, 169)**

CATEGORY	HEALTH SERVICE MODELS	RATIONALE/SENTINEL ISSUE	MEASURES OF SUCCESS
<b>Discrete Services</b>	<ul style="list-style-type: none"> <li>• 'Walk-in/Walk-out'</li> <li>• Viable models/sustainable models</li> <li>• University clinics</li> </ul>	<i>Sustainable</i> medical <i>workforce</i> (getting GPs into rural services)	<ul style="list-style-type: none"> <li>• Increased number of doctors recruited</li> </ul>
<b>Integrated Services</b>	<ul style="list-style-type: none"> <li>• Shared care</li> <li>• Co-ordinated Care Trials (CCTs – mainstream)</li> </ul>	<i>Coordination</i> between and <i>access</i> to services otherwise not available locally or not sufficient	<ul style="list-style-type: none"> <li>• Decreased suicide rate; decreased GP isolation &amp; increased confidence</li> </ul>
	<ul style="list-style-type: none"> <li>• PHC teams (multidisciplinary)</li> </ul>		<ul style="list-style-type: none"> <li>• Decreased waiting times, reduced after hours call-outs; enhanced continuity of care; reduced inappropriate ED attendance</li> </ul>
	<ul style="list-style-type: none"> <li>• Multi-Purpose Services Program</li> </ul>		<ul style="list-style-type: none"> <li>• Increased service access; reduced residential care; increased home-based services</li> </ul>
<b>Comprehensive PHC Services</b>	<ul style="list-style-type: none"> <li>• Aboriginal Controlled Community Health Services (including Aboriginal CCTs)</li> </ul>	Primary focus on improved <i>access</i> to services	<ul style="list-style-type: none"> <li>• Some improved processes of care: increased community participation; enhanced funding, improved community participation, improved governance, increased staff numbers, increased utilization, new population health programs</li> </ul>
<b>Outreach Services</b>	<ul style="list-style-type: none"> <li>• Hub-and-spoke</li> <li>• Visiting/periodic services</li> <li>• Fly-in, fly-out</li> </ul>	<i>Access</i> to service for communities too small to support discrete rural service. A secondary driver relates to sustainable workforce	<ul style="list-style-type: none"> <li>• Increased occasions of service; increased workforce length of stay; increased referrals; improved cost-effectiveness</li> </ul>
<b>Virtual Outreach Services (IT/Telehealth)</b>	<ul style="list-style-type: none"> <li>• Virtual amalgamation</li> <li>• Virtual clinics – video pharmacy/assessment &amp; monitoring</li> <li>• Tele-health/-medicine</li> </ul>	Use of IT to increase <i>access</i> to and <i>sustain</i> service for communities too small to support discrete rural service	<ul style="list-style-type: none"> <li>• Improved access to records; reduced GP on call; increased consultation hours</li> </ul>

This study revealed a lack of evidence based evaluations of PHC models in the literature (168, 169). They concluded that, with tightening governmental health budgets, the burden of chronic disease due to an ageing population, changing consumer demands and workforce supply, there is



an increasing need to revise existing models for effectivity and sustainability. Their research shows that a “one coat fits all” model is unsuitable.

For remote communities, where internet technology exists, virtual service models of health care have been discussed in Chapters 2.2.2 (pages 38-9) and 3.3.2 (pages 67-8). This has been integrated into a multi-disciplinary model in the next example. The Scottish Highlands is an area of sparse population that has a high rate of diabetes mellitus amongst its population. This posed problems from a health perspective when centralized policy developments demanding local implementation put pressure on an already overloaded rural health system. A regional review of services amongst stakeholders in these remote areas brought about the development of acceptable and sustainable solutions producing a new health care regime. This model for rural service for people with diabetes in the Scottish Highlands was devised as patient-centred and integrated into a managed range of clinical services (9). In the programme, retinal screening is seen as a crucial part of the diabetic care, a service that an optometrist or a skilled medical person can provide in the primary care role as complementary to ophthalmology.

The development of the “Virtual Clinic” as a tool of consultation may overcome some of the issues of access in a remote location. They have been found to improve clinical indicators in the pilot studies performed in Australia for some chronic diseases (170). The emphasis is on self-management, the use of telemedicine consultations and having the associated home-based equipment. Blood glucose monitoring, which is vital for diabetic control and blood pressure testing, can be self-administered and this information relayed to a general practitioner for assessment. The chronic eye disease of glaucoma may be self-monitored with a device which measures intra-ocular pressure (171). Age related macular degeneration may also be self-monitored with the Amsler Chart (172). Cataract may also be self-monitored with the aid of a visual acuity chart (173). Although these tests are not as accurate and precise as a professionally performed examination, it does give a useful indication of disease progression. This model does rely on the motivation, capability and training of the patient. It may have limitations with patients with a non-English speaking background, such as those in indigenous communities.

Gruen investigated the requirements for sustainable specialist services for indigenous people in remote areas to assess how well organized models can work (27). He found the key to this is having organized workers at the “ground level”. This focus of employing local community residents caused an increase in accessing specialist services.

Improving access to services has been researched in allied health workers' attitudes to indigenous clients. Stoneman found that Aboriginals felt uncomfortable coming into chemists for their prescriptions (174). He noted that there may have been a financial aspect to this discomfort and concluded that having Aboriginal health workers in the pharmacies would help alleviate this discomfort and make the shops more welcoming. This facilitates the collection of prescriptions by indigenous chronic health sufferers. It would also contribute to employment opportunities for indigenous people.

The model of training indigenous health workers to encourage service utilization is one that the optometry practices of ICEE, who operate from Aboriginal Medical Service clinics, are already undertaking (175).

The ICEE/AHMRC NSW Aboriginal Eye and Vision Care Program Report have found this workforce model to be successful. They have addressed the challenge of offering eye care services to remote areas with education. By educating eye care skills to Aboriginal health workers and regional health coordinators in remote communities, they are effectively using a model that combines a local workforce that is culturally aware with knowledge and skills to make a health benefit difference (69).

Another model explored is the effectiveness of the Breast Cancer Bus. This outreach service travels to a variety of rural and remote locations to screen women for breast and cervical cancer. The most recent report shows that rural women are now being screened at a higher rate than urban dwellers, indicating that the program is working (176). This program was implemented successfully in geographical locations that might normally not have good access to health services and is an example of a successful screening service. This may be one of the few examples where equitable health care is achieved in remote locations of Australia.

Travelling to remote communities with a group of other allied health professionals or even non-health workers (*e.g.* accountants, lawyers, etc) may be the way of the future for these groups. Even though this FIFO perspective could be condemned for not offering residential benefits to a community, it may be the best option when the distances to travel are too great and communities are too small to support a professional workforce. An internet search for literature concerning such a model revealed no results. The idea needs further investigation.

A new government incentive for rural aged care has recently been implemented in response to the

urgent need for support of the elderly. It recognises that community services are not always available and travel is required to access them. The NRHA and Aged and Community Services Australia (ACSA) have devised a scheme for service providers who will travel to rural and remote areas based on “remoteness”. Payments for providing the services in these remote and rural areas will be distributed through Medicare. The use of such a formula is pleasing for all who recognise the wider needs, higher costs and other challenges facing rural and remote areas. At present, optometry is not included in this scheme, but this is an avenue that should be a lobbied point in discussions with federal and state health departments.

Another allied health profession that optometry might learn lessons from is physiotherapy. Sheppard’s article regarding the work practices of rural and remote physiotherapists found that physiotherapists in these locations had to be “generalistic” in their practice as they saw a wide range of clients and had reduced opportunity to specialize (177). In fact, the remote working professional was more likely to be a solo practitioner with years of experience and able to manage without professional support due to the diversity of practice. For this reason, this form of practice did not suit new graduates. Sheppard also made mention of the idea that, in order to develop resource networks in these areas, regional organization of resources and infrastructure would need to be accessed. This model of sharing premises and administration being coordinated from a regional source, such as a local council or hospital, is one that remote towns could definitely benefit from.

Physiotherapists have been providing sustainable services to the remote areas around Mt Isa in North West Queensland. Mt Isa is a mining community with a population of 20000 with eleven culturally diverse remote communities. These communities vary in size from 200 to 4000 people and are staffed with clinics with one registered nurse and one indigenous health worker in smaller communities rising to the larger centres having a hospital with ten or more beds. The area covered is over 590000 km<sup>2</sup> – more than twice the size of Victoria. A physiotherapy service using a “hub and spoke service delivery model” operates from a range of locations. This idea incorporates a principal base providing centralized services, being the “hub”, to satellite sites, smaller outlying bases where services are delivered less frequently but regularly which are the “spokes”. Ashworth demonstrates a model for use by allied health workers in a remote area (178). Features of relevance include:

- Regular and reliable service: an itinerary is published 6 months in advance. Teams are away from 2-5 days and travel by 4WD or charter aircraft.

- Community participation: members work with a community panel along with other providers and stakeholders.
- Building and strengthening existing services in the region: developing links with other health and educational organizations.

Realising the difficulties with recruitment, a retention package was designed to address the issues found in other rural and remote health workers. It included mentoring from an experienced worker, salary commensurate with the demands of the position, time at base to avoid “burn out” after the demands of travel, paid professional development, orientation to remote and indigenous practice, annual leave (six weeks/year), annual airfare home, housing subsidy, relocation costs, assistance with partner employment, childcare subsidy and retention bonuses paid after two years’ service. They found this package and the interesting work offered meant that the programme has been successful. The limitation of this model is that funding is required from already stretched state and local government health budgets.

## **4.5 Implications for Rural and Remote Optometry**

The literature review conducted has shown that similar studies have been done in many other health fields and other countries, but not with optometrists. The strength of studying these other health disciplines has been that researchers have used methodologies that incorporate the actual experiences of the rural practitioners themselves. They have often used a mixed methodology of quantitative and qualitative data, which has augmented the importance of social science combined with statistics (24, 25, 34, 107, 144, 179).

In recent studies covering eye health in Australia, the papers often did not refer specifically to rural optometry services, but had the “rurality” as a component to contrast with an urban determinant (29, 92, 100, 105). Therefore, assessment of the need for eye care has been the major aim of these studies, rather than assessment of the support for the service providers (optometrists) or the service delivery of eye care itself.

No papers that have been published compare the individual requirements of catchment areas in relation to eye health care. By surveying the areas that have agricultural, mining or indigenous as their main socio-economic groupings, trends may be established that can show whether more or less services are required in those areas and what type of extra or specialised services may be needed. For example, areas with a high indigenous population may need more resources

dedicated to diabetic retinopathy such as digital retinal photography.

Effectivity of strategies used by other health professions to tackle workforce maldistribution is crucial to access for all Australians. As seen by the above review, the recruitment, retention, influencing stress factors and successful models of health care to rural and remote areas are topics that impact health care and need to be applied to the optometry profession.

Firstly, recruitment of optometry students from rural areas and, in optometry's case, states without optometry courses, is of fundamental importance. Investigation of this area by surveying optometrists on their rural experience prior to their undergraduate training is therefore required. At present, there is no pre-selection of tertiary students on the grounds of rural origin, and no data is collected about student origin for research purposes.

Secondly, motivation to continue to practice in rural and remote areas influences retention. Incorporating questions based on the theory of reasoned action viewpoint into the candidate's survey methodology is important, as it gains information about rural optometrists' perceptions regarding their future in rural practising.

Next, stress factors, such as waiting times for appointments, require investigation. The majority of optometric consultations are not urgent and waiting times of up to a week are acceptable by the majority of the optometry profession. It will be interesting to survey rural optometrists to see if they have longer or shorter waiting times than "the norm". Medical practitioners have longer waiting times than their urban counterparts. Longer waiting times may be seen as a stress factor for the practitioner and they may be an indicator of under supply of services.

No papers have been published showing information regarding the distance that health professionals travel to give neither services nor how far patients travel to access services. This as an important factor, especially in remote area practice where distances are large, fuel prices are rising, vehicle choice is crucial to success and time to travel to a destination may all influence whether a service is viable. It may influence the types of models to be investigated for best access.

The hub and spoke model of delivery is one that can be seen to be working in rural optometry. Reviewing the Directory of Members of the OAA, there were many rural optometrists that have more than one practice, indicating they travel regularly from their primary practice (hub) to service smaller areas (spokes) (33, 180). WA, SA and NT are described as being the most isolated

places in the world. NSW also has large stretches of remote area in the outer western reaches. Distances between urban centres are often more than a day's drive even if the road quality is good. The question of how far patients travel to access an eye examination may also be linked to the severity of the condition, the patient's knowledge of eye care and access to an optometric practice. By surveying the rural optometrists regarding this matter of how far optometrists travel to offer their services, it will show information that could be beneficial for the location of practices, funding purposes and the implementation of packages that could deliver sustainable services to remote and small rural centres that cannot justify a full time optometrist.

The model used in outreach health screening programs such as the Breast Cancer Bus may be useful in providing eye care particularly things like screening for chronic eye disease such as diabetic retinopathy (176). As eye examinations should be conducted two yearly on all the population over 45 years of age and breast screening services should ideally also be two-yearly for the same (female) population, the model could be developed further to include, at least, optometric screening.

The significance of all this research lies in the potential for all Australians to access eye care services, no matter where they live. The intention is to supply Australia with optometry providers or services. In doing so, it must be realized that certain areas have different needs from others, and that the more remote the area the greater the challenge to provide sustainable services.

## **4.6 Research Questions**

The importance of good eye health and the prevention of blindness are of prime importance to Australia. In 2003, the World Health Assembly passed a resolution to eliminate avoidable blindness and Australia developed the VISION 2020 plan to collaborate with non-government organizations and the private sector to make this their aim.

Fifty one percent of Australians have a sight problem. Optometrists are the key primary eye care providers that are in an important position to examine, diagnose, advise and manage eye care for most of the population. Rural and remote areas make up to 30% of our settlement areas and 23% of the population. Optometrists are needed to service regions that have special needs and conditions (72).

The aim of this research is to test the hypothesis that optometrists who service these areas are a unique group who have certain characteristics that make them perform their duties far better

than others who do not have these traits. By reviewing the current literature, the candidate has found a large range of information from other health professions that have researched this area, but there has been no research specifically addressing the recruitment and retention issues of rural optometrists in Australia.

Previous literature suggests that gaps were discovered in workforce issues relating to recruitment, retention, distance providers travelled, distance patients travelled, feminization of the profession, overseas trained health providers covering areas of need in the short-term and models of sustainable services. By identifying these gaps in the workforce studies, research may promote appropriate strategies that can ensure country areas of Australia will not face the problems that developing countries do. That is, poor access to eye health professionals that lead to resultant blindness. So, the framework of this thesis is designed to answer the following principal questions arising from the literature review:

1. What trends are occurring in the number and characteristics of optometrists who service RRMAAs 4-7?
2. What issues and challenges do rural optometrists face in their present locations?
3. In what ways are workforce issues similar or different from to other rural health professionals?
4. What support has been offered to them and has it been successful?
5. What strategies are required to ensure a sustainable workforce in the future?

By surveying the optometrists who are dedicated to directly providing eye care services to rural and remote Australians, the gaps in research that the candidate has discovered will be addressed. The mixed methodology of qualitative and quantitative research which other related disciplines have used, overcomes the shortcomings in the past literature regarding optometrists.

## Chapter 5: Methods

The scope of the project combined with the diversity of rural and remote communities meant that a quantitative and qualitative design methodology was required. This was demonstrated by the flowchart of the thesis in Figure 1.2 on page x. These are explained as follows with Chapter 5.1 showing methodology for the quantitative section and Chapter 5.2 for the qualitative section.

### 5.1 Quantitative Assessment (Self-Administered Survey)

The quantitative method used in the thesis to select and survey a group of optometrists is explained in detail. Firstly, there is a description of how the sample was chosen and, secondly, the survey rationale is explained.

#### 5.1.1 Characterising the Sample Subjects

Fifty survey recipients have been characterised and chosen on the basis of three criteria. Three data sources were used to explore the demographics of eye care provision in rural and remote areas. The first was statistical data from Medicare Australia that showed the reduction of services in these areas compared with metropolitan areas. The second involved the socioeconomic make-up of the individual communities, through the AIHW. The third was a survey to selected optometrists who practised in these areas.

##### 1. RRMA location

Optometrists were selected as practising in one of the RRMA areas 4-7

The first data source required for investigating optometry service provision was Medicare statistics, as explained in Chapter 3.2 and RRMA, as explained in Chapter 2.1. The populations of these RRMAs from the 2001 Census have been applied to the table and the ratio of actual/expected number of examinations allows one to see the proportion of item number 10900 utilization in Table 3.1. The RRMA classification includes the nation wide total divided by the population percentages in that RRMA cluster. A source of error is that the total percentage of the population is 101% which causes a range of data required for each RRMA integer. This range has been included in the table to cover the imprecision of the data.

By specifically surveying optometrists practising in rural areas of lower utilization, information



regarding what attracts them there, what keeps them there and whether their future is to remain there is gathered. This useful information may be used to inform the planning of recruitment and retention.

## **2. Socioeconomic type**

The second consideration for the sample was the demographics of the rural communities. This information was obtained by the AIHW which classifies the main socioeconomic identity of an area by way of the main industry undertaken or principal social group that resides there (15). The literature review showed there was a vast difference in the needs of different communities within Australia (43). These communities can be divided into three main groups: mining, agricultural and Aboriginal catchments. The candidate specifically surveyed those that practised in the three identifiable societies outlined below:

1. Indigenous communities made up the bulk of the population in RRMA 6 and 7. Six out of the 50 survey recipients serviced these communities.
2. Mining communities. Eleven out of 50 survey recipients serviced these areas.
3. Agricultural communities. Thirty three out of the total of 50 survey recipients were from agricultural regions.

## **3. Continuity of practice**

Continuity of practice was seen as a desirable attribute for the surveyed sample. The optometrists who practised in RRMA 4-7 for at least five years were selected. This rationale was based on the study by Kamien (122) who found that medical practitioners who had spent more than ten years in a rural area had overcome rural concerns and had successfully remained servicing their communities. For the purpose of this study, the candidate selected optometrists who had practised in their rural area for at least five years on the basis that this was a long enough time to know the region's needs and be reliable in their comments regarding the survey. In contrast, transient optometrists, who were relatively unfamiliar with the communities that they briefly served, would represent a different perspective. One optometrist, who had worked in rural regions for at least five years, commented that there was a "Five year barrier" to practising in rural locations which needed to be overcome. The candidate chose optometrists who were consistently in the same locations by accessing the OAA "Directory of Members", 2002 and 2007. This period matches the Medicare Australia processing data period (Appendix 4) (33, 180). It does represent a group

that is better able to inform about the factors that attract and retain where the shorter term practitioners would represent a group able to inform about factors that attract but less able to inform about those that retain since many would not have made long term decisions about their future practice location. Another group that would be interesting to survey would be those that have practised in rural and remote areas but returned to the urban areas.

### **5.1.2. Survey Instrument**

The candidate developed a six page self-administered survey (Appendix 3). It includes survey items from previous studies among other groups (25, 122, 126) as well items generated de novo. A total of 29 items was generated covering three main areas of variables. These variables and the questions used were identified from the literature as being related to recruitment and retention. Study aims were pursued by assembling sets of items as described below.

#### **(i) Personal details**

Aim: The demographic of the rural and remote practising optometrist. (11 items)

The candidate has hypothesized that optometrists practising in rural areas would have similar characteristics to those found among rural doctors. Questions were asked about place of origin and education (22, 34, 109, 146, 148, 151, 165, 167, 181, 182).

Variables of this study include the differing socioeconomic catchments of agriculture, mining and Aboriginal areas, where they have been found to have a variation of demands for eye care services. The intentions of optometrists to practise in these areas are financial in nature, as market forces drive the availability and sustainability of the optometry business. Success is not always to be measured by economics though, and therefore the quality of lifestyle due to a measure of contentedness is of high, if not, equal importance (133). The connection between family support and staying to serve in an area has been powerfully linked, providing the hypothesis that this research is investigating (53).

#### **(ii) Recruitment and retention information**

Aim: To study the motivation of the optometrist to move to that location and the support required to keep them there. (5 items)

Using the work by Kamien and others (20, 22, 24, 109, 151, 156, 165, 167, 182), questions were

also asked regarding the intention to remain in rural practice as a proxy for retention.

Respondents were asked to rate key choices in order of importance/relevance from 1-5.

An “other” option was also provided for the item relating to reasons why they would consider leaving their rural practice.

Perceived barriers to practising in rural and remote areas include having non-rural origins, no local family support, no related rural or Aboriginal cultural connections and no professional support such as the referral pathways set out in Figure 1.1. The particular barrier of high turnover of staff in these areas (126) made the selection criteria for respondents difficult. There were optometrists that were emailed the survey who didn’t respond. The reasons might include that they no longer practised in that area.

Helping to overcome these barriers are those qualities that facilitate rural practice. These have been shown in the literature to be such aspects as spouse/family origin and support; financial incentives from government and not-for-profit organizations; professional support from related groups (for example, from ophthalmology and locum cover organized by the OAA) and individuals who “know the territory” and willingly pass on their local knowledge, such as optometrists who have worked in rural and remote communities for over 20 years (134, 135).

### **(iii) Rural practice profile and travel**

Aim: To determine the location of the practice, the types of practice and the amount of travel undertaken by the optometrist and their patients and annual leave. (12 items)

The factors that have been found in studies of other professions to be relevant to retention are having a rural origin, enjoying rural lifestyles, having a spouse from rural origin, spouse employment in chosen profession, age of children, intentions to stay or leave their current location, distances travelled by the optometrist to give services, distances patients travel to access services, services offered, locum cover and retention. Twelve questions relating to these issues were asked in the section.

Three items were grouped to assess the location of the practice. Three items were grouped under the topic of travel. Two items related to the perceived adequacy of the optometric service for the area. For each of these statements, respondents were asked to indicate their choices on a scale that

was appropriate to the question. Two items related to what services were offered by their rural practice. Two items were grouped under the issue of annual leave.

#### **(iv) Growing the next generation of optometrists**

Aim: To investigate if optometrists in rural areas are prepared to support recruitment initiatives. (2 items)

Suggestions for support for recruitment strategies were canvassed by the final two questions. Respondents were asked if they would be involved in a preceptorship program for students in their final years of the undergraduate optometry course or offer to promote optometry as a career choice at local high schools.

#### **(v) Face Validity**

To ensure clarity and face validity, the survey was reviewed by the Head of School of Optometry and Vision Sciences, UNSW and the former Head of the same school. These reviewers commented on the wording of the items and how they were grouped together. The survey was modified accordingly before emailing and posting.

### **5.1.3 Recruitment of Participants and Survey Administration**

A total of 50 optometrists were identified, using the above criteria from the OAA “Directory of Members” 2002 and 2007 editions in which 97% of Australian optometrists are listed (33, 180). A total of 165 optometrists were found to practise in RRMA 4-7 in the 2002 edition, with a similar number found in 2007 edition. Eighty-five of those identified were eligible for survey, as they had remained in the RRMA 4-7 for the five year period required. There was a turnover of 80 optometrists (48.5%) in that five year period. The candidate selected optometrists who practised in states that had large areas of rural and remote areas, namely, Queensland, New South Wales, Western Australia, South Australia and Northern Territory. A minimum of ten from each state were identified, but there were not enough practising optometrists in the Northern Territory to identify ten. To increase the sample, an extra recipient from each state and further selected optometrists who practised in rural Victoria were added. The optometrist’s location in the socio-economic catchments of mining, agriculture or Aboriginal communities were identified and tabulated. This information is represented in Table 5.1.

**Table 5.1 Survey Recipients by RRMA and Socio-Economic Catchment Community. (N=50)**

RRMA Zone/ Catchment Community	4 Small rural 10 000-24 999	5 Other Rural <10 000	6 Remote Centres >5 000	7 Other remote < 5000
<b>Mining</b>				
Queensland			2	
NSW				1
WA			4	
SA	1	1		1
NT				1
<b>Agriculture</b>				
Queensland	2	5		1
NSW	2	4	1	
Victoria	1	4		
WA	3	2		
SA	2	6		
<b>Aboriginal</b>				
Queensland				1
NSW				2
NT				1
WA			1	1
Total	10	23	8	9

UNSW Ethics Approval (**Appendix 2**) for an email survey was obtained. The survey was administered on a voluntary basis. The respondents could withdraw at any time and confidentiality was assured.

Fifty surveys were sent either through Australia Post or emailed from October 2007 until March 2008. Email was selected by the UNSW Biomedical Ethics Panel as first choice of contact. Australia Post was used only in the event of no email address being held on the OAA database. Email addresses were initially obtained from the 2007 edition of OAA “Directory of Members”. Thirty-eight surveys were sent using this method. Those who did not respond were emailed at monthly intervals, except over the Christmas-New Year period. This was undertaken in October 2007, November 2007, February 2008 and March 2008 until they responded. When “Mail Administrator” of Microsoft Outlook Express reported a “Mail System Error – Returned Mail” due to the recipient address rejecting the email, the candidate attempted to find another email address for the survey recipient through the state division offices of the OAA. It is common for

the population to change email addresses on a regular basis, but to not update these details with the OAA.

The candidate posted 12 surveys to the respondents who had no email addresses, with reply-paid envelopes to aid response.

#### **5.1.4 Stress Scores Rationale**

Stress scores were applied to experiences which potentially cause a lack of continual optometry service to an area. These have been documented in the literature review by other health professions such as medicine (18-20, 24, 31, 148, 164). Stress was seen to result in areas such as optometrists not being able to take leave, lack of locum cover, having to travel long distances to their outlying practices, personal health issues, children's education, and their patients' having to endure long waiting times before being attended to.

### **5.2 Qualitative Methods- Case Studies**

A qualitative follow-up study from the survey was volunteered by four respondents to complete the Case Studies section of the sample. This aspect supplemented opportunities to gather further information not initially considered by the candidate when the survey was designed. This provided flexibility to pursue issues that the respondents themselves raised during the process of surveying.

Case studies are useful for 'how' and 'why' questions. The multi-method approach of survey and case studies helps to focus on contemporary events using qualitative means. Four cases were chosen from the survey respondents, one from each RRMA area. The candidate selected them because firstly, they volunteered and secondly, their responses typified the themes that affect rural and remote optometrists across the diverse RRMA areas. In short, they were able to spare the time to give the extra information necessary for this section.

A number of different approaches were required to gather information for this section, because the optometrists were extremely busy and difficult to access. One respondent was phone interviewed, two were emailed because of their workload and distance involved, and one was interviewed at a face-to-face. Some gave extra information written on their surveys.

Pseudonyms have been used in this section to protect the identity of the optometrists. The

interviews were not based on a set of questions, but rather the open-ended question, “Were there any issues in the survey which you would like to speak further on?” The candidate allowed the respondents to speak of their own experiences, reasons for practising where they were and the issues they found pressing at the time, which followed on from the survey they had completed earlier.

**Table 5.2** shows the variety of factors that are investigated in this section. Each case study is focused on a single individual, but they all have multiple issues that show the complexity of rural optometry practice. The case studies are descriptive in nature, but able to assist the formulation of strategies to attract and retain optometrists to rural and remote practice.

**Table 5.2 Demographics of Case Studies. (N=4)**

CASE FACTORS	CASE 1	CASE 2	CASE 3	CASE 4
Pseudonym	Mike	Basil	Susan	Jack
Age	50's	80's	40's	50's
Gender	male	male	female	male
Marital status	married	widowed	single	married
Location RRMA	4	6	7	5
Rural background	yes	yes	no	yes
Spouse Rural background	no	yes	-	yes
Reason for Starting Rural	Family	Need	Need	Need
Reason for Staying Rural	Financial	Financial	Lifestyle	Can't sell practice
Help required to stay rural	Higher Medicare rebate	Higher Medicare rebate	Locum services	Locum services
Five years' future	Yes	Retired	Other	Left and started in another rural
Type of practice	Individual proprietor	Individual proprietor	Individual proprietor	Corporate Franchise (new)
Annual Leave	3 weeks intermittent	2 weeks	10 weeks	0

### 5.3 Data Collection and Analysis

Combined with the survey results, data collection took place over a ten month period in 2008. Notes were taken on each of the four optometrists and referred to, along with the data from their individual surveys.

Data collection was by email or normal mail for the quantitative data. It was entered into an Excel spreadsheet. It was analysed using the various functions associated with Excel, namely means and



standard deviations. The data was not complicated and could easily be interpreted using this method. The results of this survey are reported in Chapter 6.

Qualitative data was collected and recorded as written comments with content being analysed by organizing the data based on the participants' background, views, experiences, stress scores and type of practice. Chapter 7 reports the findings of this case study section. It provides insight into issues rural and remote optometrists face, though they may not be generalisable to the whole population of rural and remote optometrists in Australia. The data analysis section shows themes emerging from each case that are consistent with rural practice. Finally, cross-case comparisons are discussed. The rationale of using the case study method is because it strengthens the academic rigor of the quantitative results, reflecting the personal side of the research.

## Chapter 6: Survey Results

Chapter 6 is divided into two sections. The first section presents the results obtained from the survey in the three main areas. These are:

- demographics of the rural and remote optometry workforce sample and their communities,
- the nature of their optometry practices, and
- the challenges that they encounter practising , which represent stress factors.

The second section presents case studies obtained from survey respondents who gave in-depth interviews. By describing examples of rural practice encountered by four rural Australian optometrists, the distinctive nature of each practice is reflected in participants' responses. The case studies are analysed for their similarities and differences.

### 6.1.1 Demographic characteristics

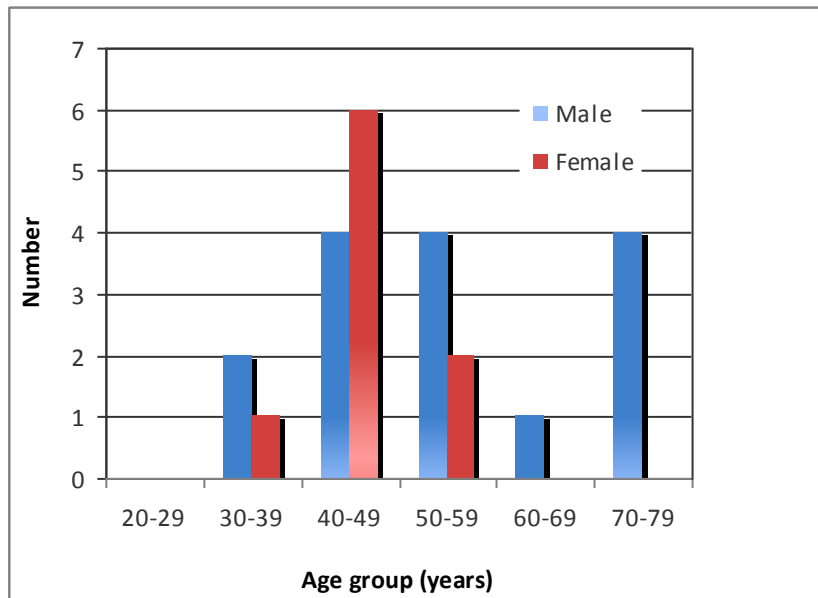
A total of 24 optometrists completed the survey. Those who responded are represented by RRMA and socio-economic catchment community in **Table 6.1** below.

**Table 6.1 Survey Respondents by RRMA and Socio-Economic Catchment Community (N=24)**

RRMA Zone/ Catchment Community	4 Small rural 10000-24999	5 Other Rural <10000	6 Remote Centres >5000	7 Other remote < 5000
<b>Mining</b>				
Queensland			1(2)	
NSW				1(1)
WA			3(4)	
SA	1(1)	(1)		(1)
NT				1(1)
<b>Agriculture</b>				
Queensland	1(2)	(5)		(1)
NSW	2(2)	4(4)	1(1)	
Victoria	(1)	2(4)		
WA	2(3)	(2)		
SA	1(2)	(6)		
<b>Aboriginal</b>				
Queensland				1(1)
NSW				1(2)
NT				1(1)
WA			(1)	1(1)
Total (24)	7(11)	6(22)	5(8)	6(9)

Figures in parentheses are the number of surveys sent out (from **Table 5.1**)

The mean age of rural optometrists was 47 years. They ranged in age from their 30s to an 80 year old.



**Figure 6.1 Age and Gender of Rural and Remote Optometrists.**

Over half of the respondents were male (15/24) and all but one were married. All but two of the female optometrists were married.

All but one of the married optometrists had children.

All optometrists who practised in remote locations were single.

None of the single optometrists had children.

The children ranged in age from babies born to female optometrists in their 40's to "children" over 40.

All optometrists were of Caucasian ethnic origin.

Over half (14/24) of the rural optometrists had spent their formative growing years in a rural area. The range experienced was a minimum of 2 years to 23 years, with the mean being 9 years. Of the 9 females practising rural optometry, 6 (66%) had no rural background. Three of these had rural raised spouses. All but two of the five male optometrists who were married and practising in rural areas and who were not from a rural background were married to spouses who were from rural backgrounds.

There were 21 spouses in the data. Of these, 12 spent between 6 to 21 years in a rural area before

adulthood, with a mean of 10 years. Nine spouses had no rural background before adulthood. Four were married to optometrists who did have a rural background. The remaining five spouses with no rural background were married to optometrists with no rural background. Of these couples, 4/5 of the optometrists were from the University of Queensland, they had children and were planning to remain practising in the rural area. This information is represented in Table 6.2.

**Table 6.2 Rural Background of Optometrists and Their Spouses (N=24)**

MARITAL STATUS	OPTOMETRISTS WITH A RURAL BACKGROUND	SPOUSES WITH A RURAL BACKGROUND
Single/widowed		
Females (N=2)	1	N/A
Male (widower) (N=1)	1	N/A 1-deceased
Married		
Males (N=14)	9	8
Females (N=7)	3	3

All but two of the respondents were trained at Australian universities. The other two were trained in England. The UNSW supplied most of the rural optometrists with ten of the respondents being trained at that university. Another nine were trained at QUT but only three came from University of Melbourne.

A summary of the demographic trend of the optometrists is found is shown in **Table 6.3**. This gives a snapshot of the profile of optometrists in rural Australia.

**Table 6.3 Summary of Characteristics of Rural and Remote Australian Optometrists. (n=24)**

VARIABLE	RESULT
Mean Age:	47 years (Range: 30-70yrs)
Proportion Female:	37%
University:	UNSW 10 QUT 9 Melbourne 3 UK 2
Marital status:	Married 12 Widowed 1 Single 2
% with children:	88%
Ethnic Origin: % Caucasian	100%
Optometrist with Rural background	14
Spouse with Rural Background	12
Why stay?	Lifestyle reasons: 67%
Retiring or leaving optometry in 5 years:	33%

### 6.1.2 Practice Characteristics

Other practice characteristics that are important for understanding the context in which rural optometrists work are location of practice(s), ownership status, type of community served, type of practice and additional services provided. **Table 6.4** shows the optometrists' location of practice by RRMA and demographic type of community served. It shows that the majority of respondents work in agricultural communities (14/24), followed by mining (6/24), with the smallest group looking after indigenous communities (4/24).

**Table 6.4 Respondent Optometrists from RRMA's by Gender and Socio-Economic Catchment.**

(N=24)

Properties	RRMA4			RRMA5			RRMA6			RRMA7		
	Mining	Agric culture	Abor - iginal	Mining	Agric culture	Abor - iginal	Mining	Agric culture	Abor - iginal	Mining	Agric culture	Abor - iginal
Male	1	4			5		2					3
Female	1	4			1		2					1
Total	2	8			6		4					4

**Table 6.5** shows the majority of respondents (17/24) were individual proprietors in solo practice. Four were in partnerships, with the remainder being employees in a corporate chain group (3/24). The chain groups tended to be in mining communities (2/3) and none went to Aboriginal communities. All the partnerships were in agricultural regions. Corporate practices attracted predominantly female optometrists and these women gave their reasons for practising in these locations (mining) as due to their husband's work.

**Table 6.5 Type of Practice with Variable Factors of Age, Background and Support Basis.**

Participants	Age 25-40	Age 41-59	Age 60+	Rural background	Married de facto	Solo practice	Partnership practice	Corporate practice
Male	6	4	5	10	15	11	3	1
Female	7	2	0	4	7	6	1	2
Spouse				12				

Type of practice relates to the financial and administrative structure of the practice management. These are usually one of three types: practices that are owned and managed by an optometrist with full dispensing services; consulting-only practices, where the optometrist receives payment only from Medicare and uses an independent dispenser for supplying spectacles; or consulting-only practices with a corporate chain group who employ the optometrist on a salary or license agreement. Results showed the majority (21/24) were of the first type, which is the most common for optometrists in Australia. Of the remaining three optometrists, one was consulting-only with an independent dispenser; one was employed by a corporate chain and one described her practice as “conventional but with limited dispensing services”, serving the Aboriginal communities. The two optometrists employed by corporate chains were in mining communities.

Knowing what additional services the optometrists provide helps to see how comprehensive examinations can be. In theory, the more services that are offered, the less likely patients will need to travel for these services to larger areas, so it is in the patients’ interest that the practitioner provide as wide a range of services as possible. A range of six choices were documented which respondents ticked if they provided these. The services were: Computerized Visual Fields; Binocular Indirect Ophthalmoscopy; Retinal photography; Behavioural Optometry; Therapeutic drug administration; and “other”, where some wrote what service they additionally give to their community.

All but four optometrists offered visual field testing and these were the four who visited remote communities where portability and power supply of such a device would be a problem. These are large, computerized pieces of equipment that are sensitive to movement, therefore needing re-calibration after moving. Binocular Indirect Ophthalmoscopy was offered by all but the oldest optometrist, who was due for retirement and visits remote communities that may not have access to power required for its operation. Retinal photography was offered by the majority of optometrists (16/24) but the four optometrists who served mining communities did not have this facility. Three of those over 70 years old did not have this service either. Behavioural Optometry is a specialisation usually serving children’s visual needs. It would be expected that if offered, it would be in those regions with a high number of school aged children, where sight problems influencing school achievement are recognized. Eight offered this service but they were from all different types of communities (3/8 from mining communities, 4/8 from agricultural and one who practises in Aboriginal communities). They tended to be in RRMA 4 and 5, indicating larger settlements with more children (7/8). The optometrists were all in the 40-50 age group and half

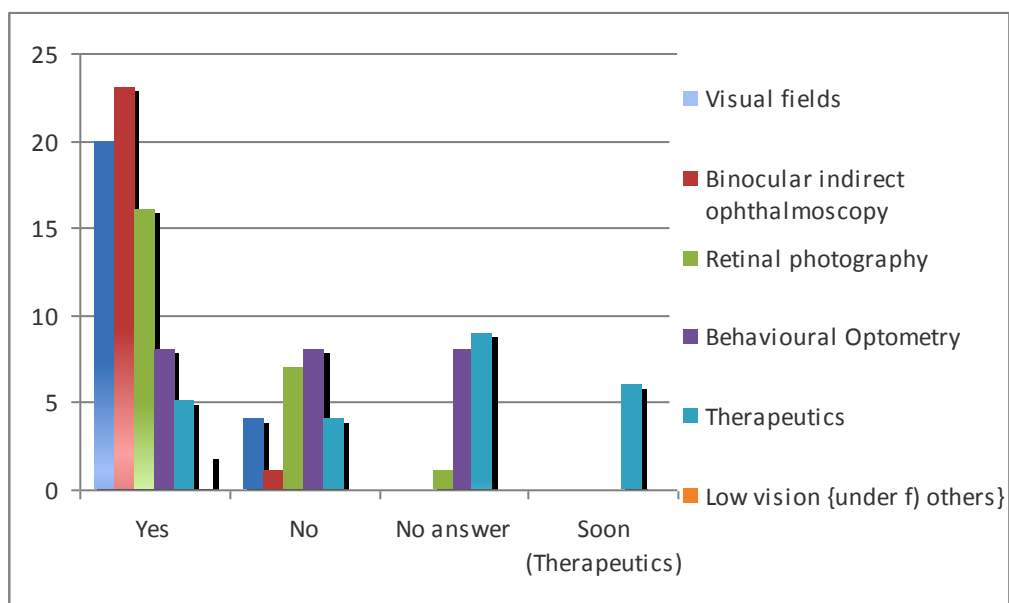


were females.

Therapeutic drug administration is a new service that was, at the time, restricted on a state basis. Answers for this section were therefore dependent on which state the optometrist practised in and whether that state had legislated to authorise suitably qualified optometrists to prescribe. Of the 5/24 who replied “yes” to offering this service, two were from NSW, two were from Northern Territory and one was from Victoria. Six reported that they would “soon” be able to administer these medications, dependent on completing a therapeutics qualification and becoming authorized and/or legislation passing in their respective states.

Three optometrists reported that they offered “other services”. Two offered low vision services and one offered community education to various groups as well as being the optometrist contracted to the Department of Defence in that area.

This information is represented in **Figure 6.2**.



**Figure 6.2 Additional Services Provided by Rural and Remote Optometrists.**

Rural optometrists provided many additional services in 2008, such as retinal photography and computerized visual field testing as well as the basic optometrical services that are covered by Medicare. It was only the optometrists who were employed by corporate chains, or offered a mobile/FIFO service, or were in the 70's age group who didn't have as many of these additional

services.

### 6.1.3 Stress Factors of Rural Practice

The survey included a number of questions related to factors associated with stress for other rural private health care providers. These questions included maximum travel (in km) that patients see the optometrist for services, travel optometrists undergo to offer their services, the number of locations that optometrists travel to annually, waiting times for appointments, adequacy in the servicing level of optometry for the practising region, weeks of annual leave taken in the last year, use of a locum, and spouse employment.

#### 6.1.3.1 Travel

Patients travelling for optometry services ranged from 0-500km, with the average maximum being 212km. Mining community patients averaged the greatest distance, being 300km, agricultural patients were next, at 210km, and Aboriginal patients travel 180km. The information is shown in **Figure 6.3** by RRMA categories.

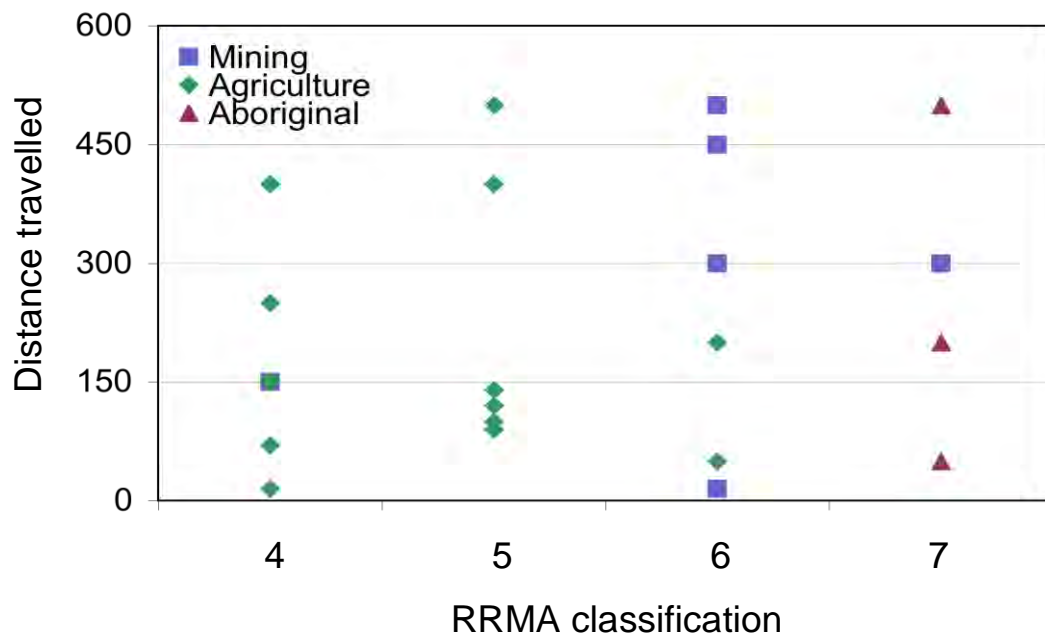


Figure 6.3 Patient Travel by RRMA from Demographic Communities (km)

Mean travel across the RRMA's is quite evenly distributed, with slightly more kilometres travelled by those living in the RRMA 6 section.

Travel by optometrists from their home practice to outer locations ranged from 0 kilometres (as in they practise solely in their RRMA's 4-7 primary place of practice) to 40000km of travel per year. Median travel was 800km with a range of over 8000km, so it is extremely varied. **Figure 6.4** shows that most travel is done by optometrists in RRMA 7 zone, where distance between communities is large. The outlier omitted from the RRMA 4 group was a South Australian optometrist servicing mining communities, who travelled 40000 km/year, mostly by airplane.

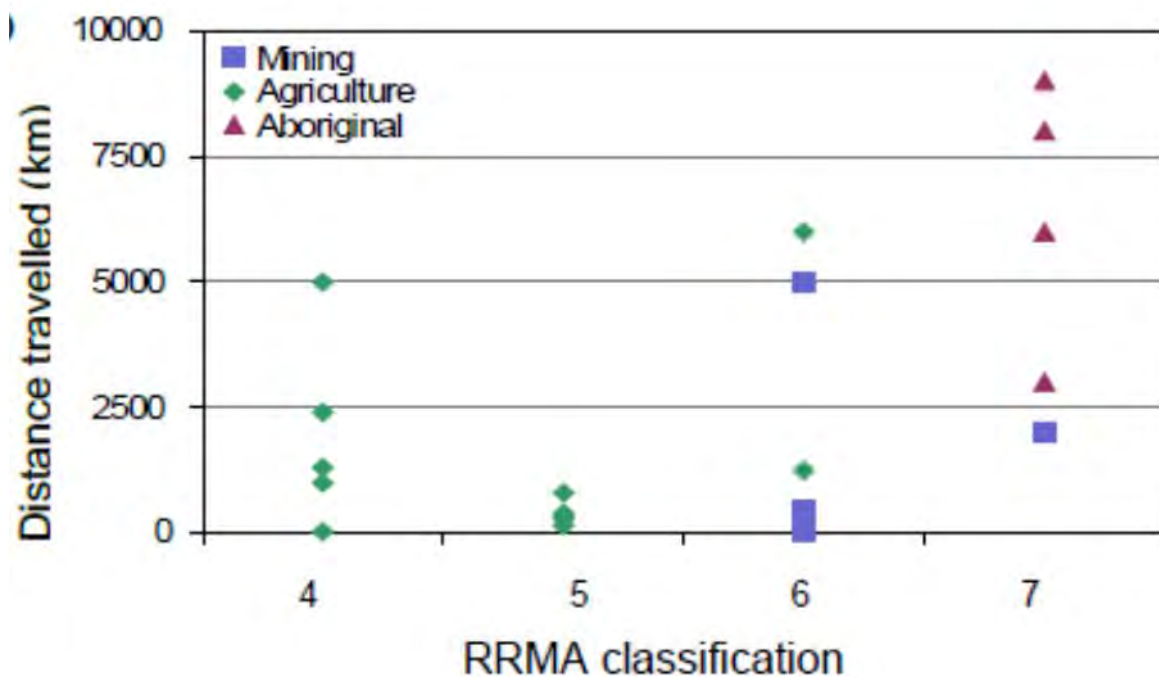


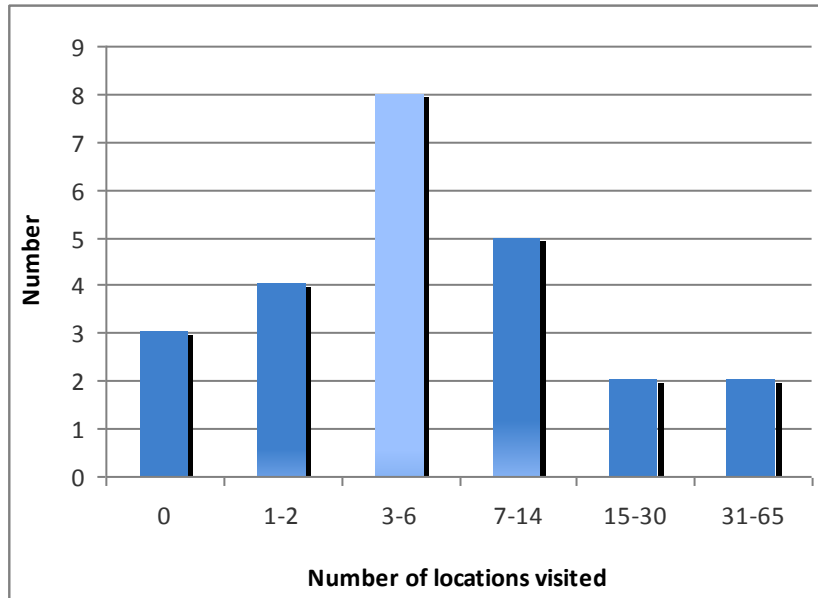
Figure 6.4 Optometrist Travel by RRMA Zones by Demographic Community (per year in km)

Summarizing further, optometrists are shown to travel most distances for mining communities, followed by Aboriginal communities and finally by agricultural communities (**Table 6.6**).

**Table 6.6 Summary of Optometrists Travel by Demographic Community. (per year in km)**

DEMOGRAPHIC/KMS OPTOMETRISTS TRAVEL	MINING	ABORIGINAL	AGRICULTURE
Total	47465	26000	18930
Mean	7910	6500	1352

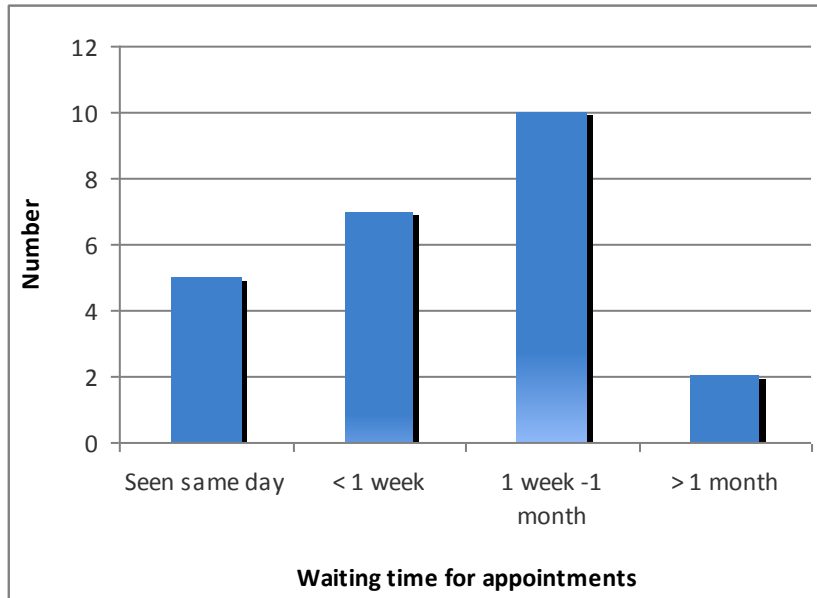
Many rural optometrists work in a number of locations as shown by Figure 6.5. The range was from 56 places (travelling to Aboriginal communities) to none, with four staying at their home base. The mean was nine locations per year. The four optometrists who visited Aboriginal communities visited 112 altogether, seeing a mean of 28 each. The optometrists serving mining communities visited 24 communities per year, seeing a mean of 6 each. Even optometrists serving agricultural communities were very mobile. They visited a total of 80 communities per year, seeing a mean of six each.



**Figure 6.5 Numbers of Locations Visited by Rural and Remote Optometrists.**

### **6.1.3.2 Waiting Times**

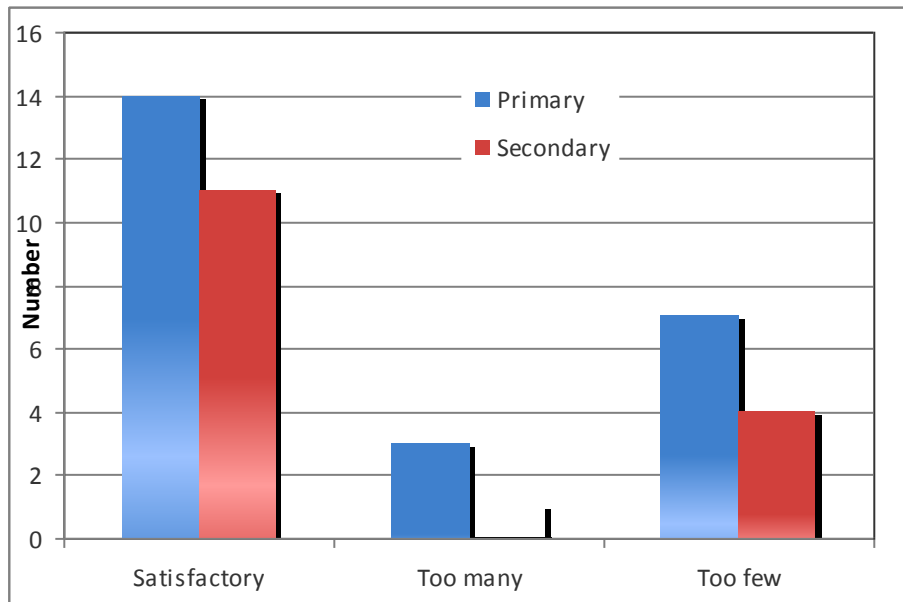
Length of the average waiting time at the main practice location is a factor that may indicate a need for more services. That is, **the longer the wait, the higher the need**. In the survey optometrists were asked to select the answer that was closest to the situation in their primary practice: within one day; less than one week; between a week and a month; and, greater than a month. Responses shown in **Figure 6.6** were 10/24 having a waiting time of more than a week, but less than a month. Next frequently reported was less than a week (7/24), followed by seen on the day (5/24). The final two were booked up more than a month ahead in their primary practices, yet there didn't seem to be anything as to indicate why this was. It is puzzling that when one of these respondents was next asked "Do you perceive the optometry service level is adequate for your area?" he answered that he thought it was satisfactory!



**Figure 6.6** Waiting times for Appointments.

Since most rural optometrists work in more than one location, the survey also asked about the adequacy of service level for both their home base and their additional practices. The majority reported that their home locations were adequately servicing the communities (14/24), but three reported that there was an oversupply. These were in RRMA 4 ranked towns in NSW. Seven respondents reported that their areas needed more optometrists. Most of these optometrists also reported appointment waiting times; as long as a month.

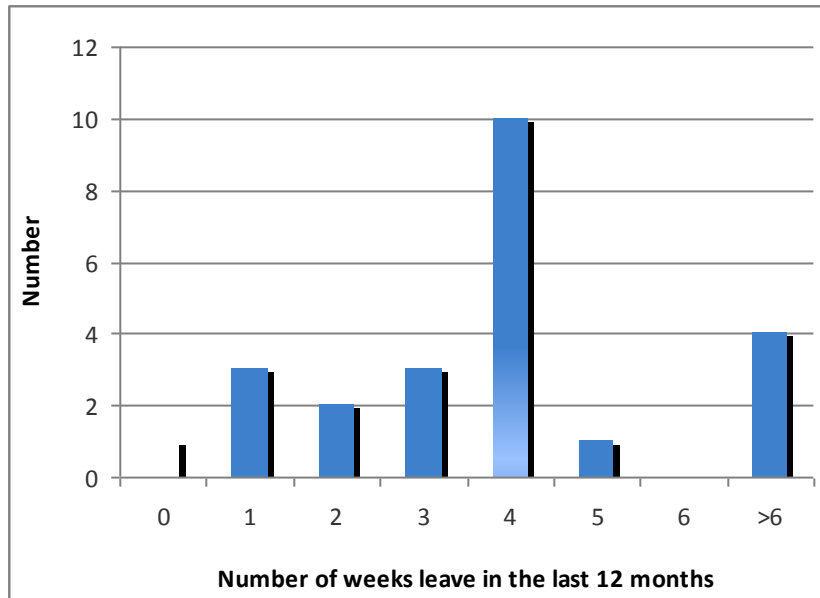
Secondary practices had similar ratios with 13/24 optometrists reporting that service levels were adequate for their principal location, one reporting there were too many (a NSW town) and six saying there was a need for more optometrists. These six were the same previously reported who are from areas with a short supply in their home locations. They were in NT, SA and WA, all states without schools of optometry. They tended to be in RRMA 5-7 towns with no specific demographic.



**Figure 6.7** Perception of Supply of Optometrists in the Area.

### 6.1.3.3 Annual Leave

Annual leave has been reported as a priority for rural practitioners, (19, 151, 178) so the number of weeks annual leave the optometrist took in the last 12 months was asked in the survey. The range was 12 weeks for an optometrist who services Aboriginal communities in tropical “wet” areas and can’t gain access (therefore, it may be perceived as climatic forced leave) to 0 weeks, the mean was just over four weeks. Trends seen were that those who served Aboriginal areas had the most annual leave, averaging eight weeks, followed by those in mining and agricultural communities averaging three weeks.



**Figure 6.8 Annual Leave by Rural and Remote Optometrists in 2006.**

Their source of locum cover while on leave was also questioned. Six optometrists – particularly those from partnerships – had a locum from within their own practice. Two respondents reported that they used a private locum agency and two, working in Victoria, reported using the OAA Victorian Locum Scheme. No optometrists reported using cover from other local practices. The majority (14/24) reported that there were no locums available, so they left their practice unattended from one -12 weeks. Half of these optometrists were in states that do not have Schools of Optometry. Some optometrists used a mixture of locum and no locum cover for their leave. Those serving Aboriginal communities had no cover, which may, again, be due to the issue of climate. Those who served in mining communities generally had no cover. Corporate chain employee optometrists who served these areas had minimal cover.



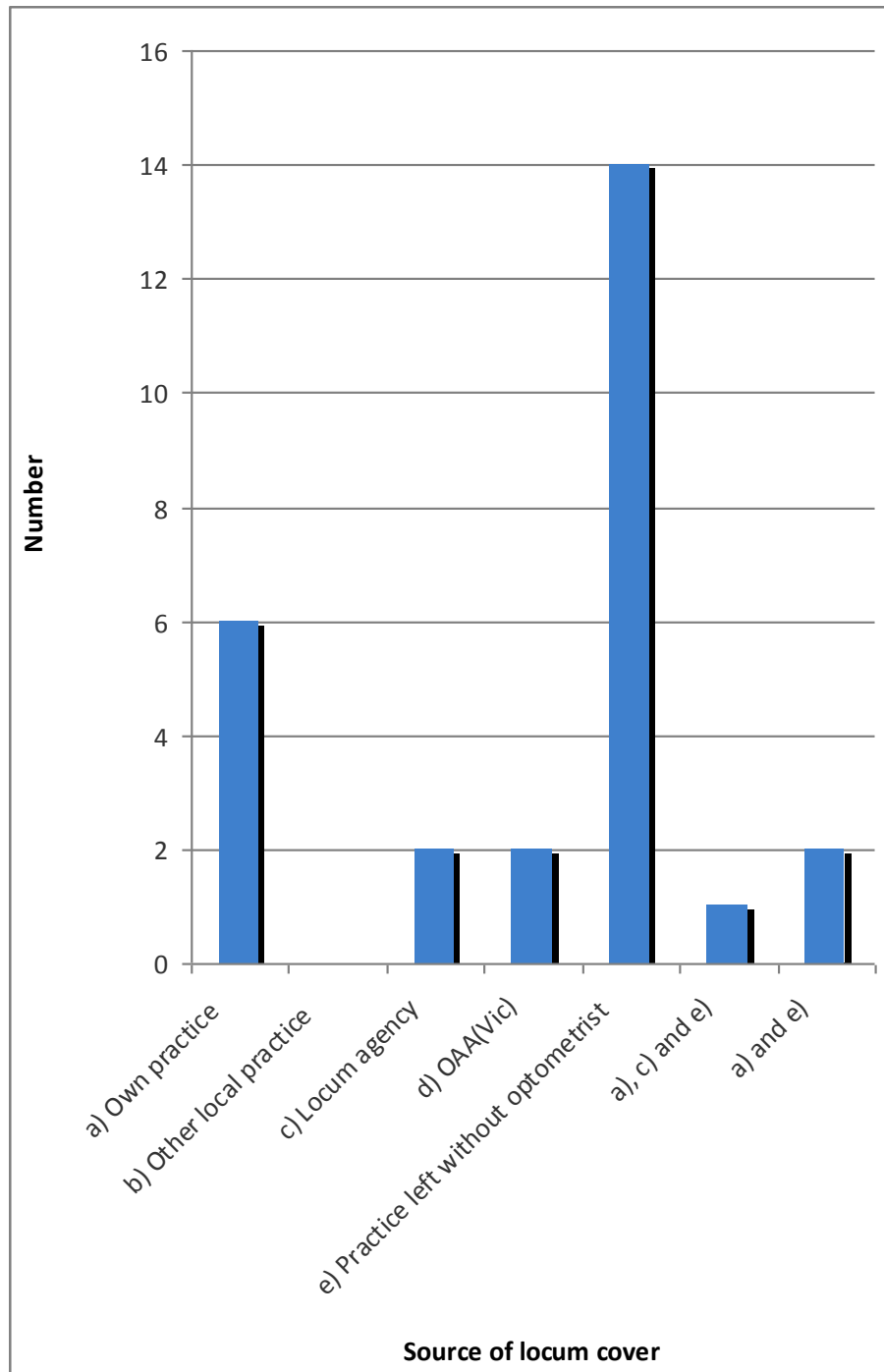


Figure 6.9 Source of Locum Cover.

### 6.1.3.4 Spouse Employment

The final question, which has been reported as a potential stress factor and a reason some rural practitioners leave their place of practice, addressed the employment opportunities for their spouse. All but two of the spouses were employed in their chosen occupations, which ranged from home duties to medicine. The two who weren't employed in their fields had primary school aged children which can render work outside the home difficult. Both optometrists married to these spouses answered the question, "In five years from now, do you intend to still be in this practice?" in the affirmative, indicating that the families were content with their life/work balance in that location.

### 6.1.4 Attitudes to Rural Practice

Opinions regarding living and working in rural areas are an important influence on the recruitment and retention of health professions. The survey asked a number of questions to measure the optometrists' attitudes. The specific questions were:

1. Why did the optometrist start practising rural optometry (recruitment)?
2. Why stay (retention)?
3. What help could benefit them professionally to remain in a rural area (retention)?
4. Where will they be in five years' time (future retention) and
5. What are the main reasons they would consider leaving the rural area (retention).

Each of the questions had a choice of five options with which they were asked to grade importance from 1-5, with 1 being most important to 5 being least.

The most common reason as to why they started practising in a rural area cited by eight respondents was that they could see a need for optometry services in the area, while seven indicated that they found the country life more appealing than city life. This was followed closely by five having family connections in the area. These latter groups had childhoods/spouses with rural childhoods, so that half the sample (12) moved for family and lifestyle reasons. This probably makes the move less stressful than for someone without family support in the area. The remaining four listed additional reasons such as "exciting/ adventure with more interesting

optometry work” (2) and transfer to that area due to husband’s work (2). Three out of four of these were female optometrists. No one was working in rural areas having been sponsored from overseas.

Some respondents only rated two or three out of the five choices and left the others blank so it is assumed that they were not significant issues. The second most common reasons cited for being in their locations were the family connections in the area, followed by need for optometry, followed by appeal of country life. These were all closely ranked answers.

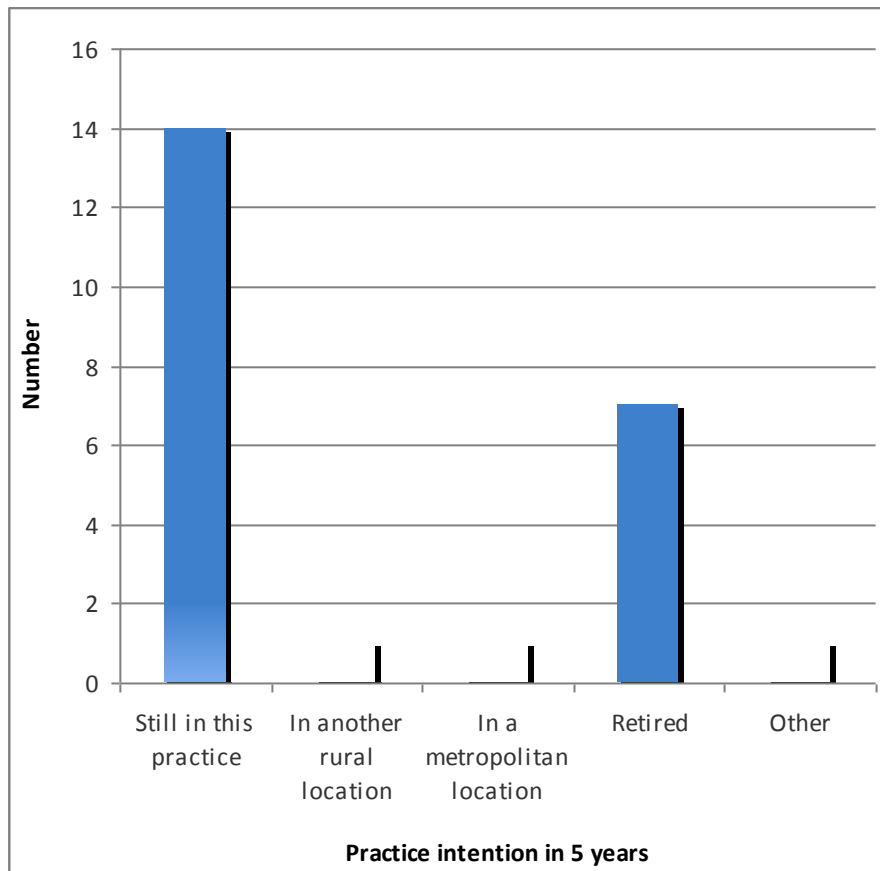
The next question related to why optometrists stay practising rural. The majority (16/24) reported that they liked the lifestyle. Only three rated “financial reasons” as being the main determinant of why they stayed and three reported staying there because they couldn’t sell their practices. One reported staying there predominantly due to her husband’s work.

Once again, some respondents only rated two or three out of the five choices and left the others blank. The second most common reason for staying was lifestyle related, followed by financial reasons.

Respondents were asked what professional help could assist them to stay in their rural practice. This question relates to the issue of retention. The predominant answer (15/24) was the availability of locum services partly sponsored by the government, showing that there is a need for relief services. This was highlighted by the majority of respondents having great difficulty sourcing locum support. The next most frequent first-ranked answer (6/24) was for Medicare to give optometrists higher rebates for travelling to remote areas, showing that financial incentive is of importance. Ophthalmological support and continuing education sponsored by the government were of moderate importance and only two respondents saw the use of teleconferencing as being of high assistance.

Intentions to remain rural were gauged by asking where they thought they will be in five years. This is of vital importance because it relates to the longevity of having primary eye care in that area by a committed optometrist. The majority (14/24) stated that they will remain in that location. This is a good measure of contentedness with their practice and lifestyle. The next highest result, though, was the seven who are intending to retire. With nearly a third of the sample group of rural and remote optometrists to be planning retirement in the next 5 years clearly raises important workforce issues. Of the remaining three, one planned to re-locate to another rural area,

one to a metropolitan area and the last would like to do something other than optometry.



**Figure 6.10 Practice Intentions in Five Years for Optometrists.**

The last question directly asked what main reasons the respondents would consider a valid cause for leaving their area. It showed a shared majority between retirement (7/24) and health reasons (7/24). Children's education, especially secondary schooling was the next reason, followed closely by personal reasons. One mentioned it may be because they are unable to take extended leave/holidays causing burn-out; another cited staffing and financial viability problems. It is not surprising to see that there was a high correlation between the age factor and retirement/health issues being the major causes for ceasing work in rural areas. The 50+ age group dominated this group offering these reasons (13/14). The younger age group tended to cite children's education being the main reason for leaving. Childless optometrists in the under-50 age group cited personal reasons more (3/5).

### 6.1.4.1 Stress Score Results

The notion of a “stress score” for each optometrist was described in the Methods section of the thesis. The criteria for the stress factors to be deemed unacceptable are shown in **Table 6.7**.

**Table 6.7: Results of Optometrists Stress Factors Using Set Criteria.**

STRESS FACTOR	CRITERIA USED FOR UNACCEPTABLE STRESS	NUMBER FOUND:
Annual leave	Time : $\leq 2$ weeks	5
Locum cover available for the duration of leave	Report locum cover as an issue	12
Optometry level of coverage for the area practised in	Report too few in the area	7
Annual travel by the optometrist	$\geq 5000$ km	7
Waiting times for appointments	$\geq 1$ month	2
Children	Secondary school age	9

Using these criteria, three optometrists had no stress factors. A mean of 1.8 factors was found. Three of the sample had four stress factors. The most common stress factors were locum cover and secondary aged children.

**Table 6.8** shows that the three optometrists who were intending to leave the rural area in the next five years had the highest number of stress factors (4). Of these three, two were intending to move to another location and continue practising optometry. The optometrist with no rural background and four stress factors indicated that she would not be practising optometry in five years' time. Those intending to stay had a mean of 1.5 stress factors, with the mode being two stress factors.

**Table 6.8 Optometrists Intending to Stay/Leave with Number of Stress Factors. (N=17) (excluding retiring optometrists)**

Stress Score	Intending to Stay	Intending to Leave
0	3	
1	4	
2	6	
3	1	
4		3

**Table 6.9** shows the influence that rural background has on stress factors. Of the 14 optometrists who were planning to continue practising in their location in the five year future period, 13 had rural backgrounds or spouses with rural backgrounds. This constitutes 93% of the optometrists and their families are intending to remain practising in rural Australia. From the sample, it can be seen that they also have a lower number of stress factors (1.5 versus 2 for those without rural backgrounds.) Three had no stress factors. These all had rural backgrounds.

**Table 6.9 Rural Background (of optometrist or spouse) with Stress Factors. (N=17) (excluding retiring optometrists)**

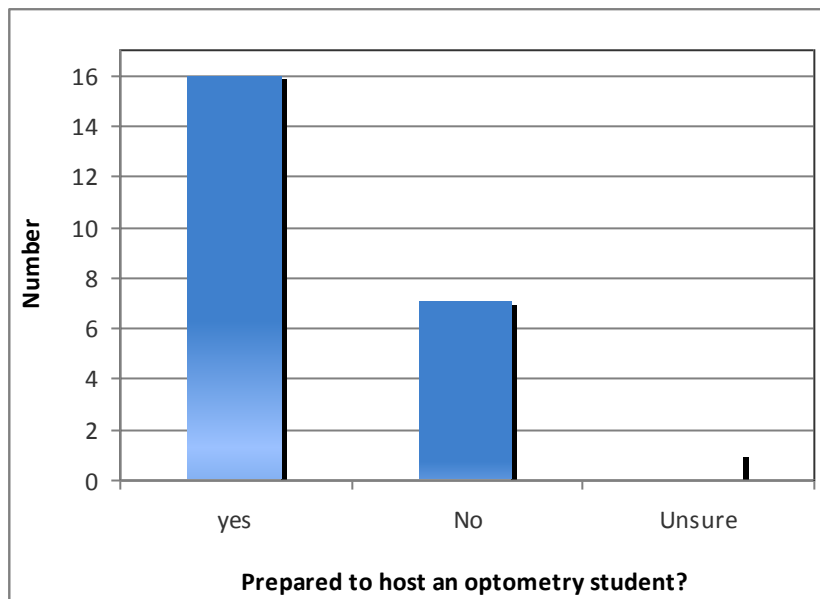
NUMBER OF STRESS FACTORS	RURAL BACKGROUND (OPTOMETRIST OR SPOUSE)	NO RURAL BACKGROUND (OPTOMETRIST OR SPOUSE)
0	3	
1	3	1
2	4	2
3	1	
4	2	1
Mean	2.6	1.6

The remainder of the sample (7) was planning to retire in the next five years. This represents a third of the sample of rural optometrists and for such a large number to be contemplating this move out of the profession, some urgent action is required. Even though this may seem like a small sample size, it is a concentrated and evenly spread representation of the optometrical workforce across the states in small rural and remote areas making these results important and needing to be acknowledged.

### **6.1.5 Growing the Next Generation of Rural Optometrists**

The final section of the survey gained insight into the willingness to promote optometry as a career. Rural optometrists have shown in this section to be a generous group. They are willing to extend their valuable knowledge and experience with potential students in their communities and also to the universities to harness the newly developing undergraduates for rural practice. Three-quarters answered that they would be prepared to billet an optometry student in their final last years of their undergraduate degree if a preceptorship program was developed in association with the universities. These ones also indicated they would be prepared to speak to Physics students in their final year at Secondary School. Most optometry courses have a pre-requisite requirement of Physics, so these are the students targeted as potential undergraduates. The same respondents also

offered to place Work Experience students so that at these early levels of education, the profession is being promoted. Those that indicated they wouldn't be available for these recruitment schemes were found to be aged in their 70's; work in Aboriginal areas that were culturally sensitive and had a highly demanding workload or were single females.



**Figure 6.11 Prospective Preceptors for Rural Optometry**

The following section of this chapter investigates the profiles of four optometrists who have been instrumental in providing rural optometry services to various communities. By studying in more depth these optometrists who were typical of the sample group, greater understanding of their types of practices and the challenges that confront them, are understood.



## **6.2 Case Studies of Rural and Remote Serving Optometrists**

### **6.2.1 Four Case Studies**

Findings presented in this section will describe the challenges and rewards of rural practice encountered by four rural Australian optometrists identified as the case studies. The uniqueness of each practice is reflected in participants' responses and each case study will be followed by an analysis identifying emerging themes. Similarities and differences between themes rising from case studies will then be identified and discussed.

#### **6.2.1.1 Case One: Mining Town Commuter Optometrist**

Mike travels over 40000km/year to provide optometry services to a rural mining South Australian community. The town is rated as an RRMA 4 with a population of 24000. He is the only optometrist in the town. His father started the practice in the town in the 1950's, and Mike grew up there enjoying the people and the lifestyle. The model of practice is an individual-ownership model with many extra services offered. Having the family connections in the area of practice is the main reason he returned after his secondary and tertiary education, thus carrying on the family tradition. His wife doesn't have a rural background.

In the 1980s, his children were in secondary school and he believed that the city schools had better opportunities for them, and thus moved to the city. He started a city practice, but continued to travel back to the rural location to offer optometry services on a weekly basis.

Part of this extensive travel was due to his choice of moving to a city for his four children's secondary educational opportunities, but still wanting to provide eye care for his country patients. He has done this for 14 years now. He has several practices and organizes them so he is at his country practices three days a week and his city practice two days a week. He travels to three rural agriculturally based practices also. Mike indicated that he would be professionally assisted mostly by having higher Medicare rebates for travelling to the rural communities. Finding locum cover was important and stressful. Although Mike had three weeks annual leave in the last year, they were not taken consecutively, but two or three days taken off at a time. He was not able to source a locum; therefore he found taking small breaks was less detrimental to the service

population than a large break.

Having the city based practice allows Mike to access continuing professional education that he sees as imperative to rural practice. He is an advocate for the practice of therapeutic drug administration and has just completed the required university approved course. By completing this and being duly registered, his rural patient base will be offered a complete and full eye health service in areas where rural general medical practitioners are overstretched and under-resourced. This service will be one of an integrated shared care model that is the future of rural eye health. In this case, the model involves optometrists who are able to diagnose and treat eye disease of the patients under professional communication guidelines in conjunction with local medical practitioners. Poor access to ophthalmological care in these rural and remote areas means that patients in these outer areas were previously disadvantaged by the health system. With optometrists being able to prescribe anti-glaucoma medications, for example, the patient will have prompt care, attention, proper medication, therefore saving their sight.

The amount of travel (which was the highest for any optometrist who responded), involves a combination of air travel and driving. His staff commented on his stamina to complete this extensive workload. Mike does not envisage changing this schedule in the next five years.

He believes in the importance of educating the next generation of optometrists and has frequently offered his knowledge and expertise to students on work experience. Mike believes that having an organized program established by the schools of optometry would be of benefit.

#### **6.2.1.2 Case Two: The Rural and Remote Eye Van Man**

Recently, a large pharmaceutical group initiated a mobile “Vision Van” screening unit for macular degeneration. However, this is not the first time such a van has visited rural areas. Basil and his wife, Louise, had grown up in rural areas. Basil started practising on a “bush circuit” in outer NSW in 1969. He built a home-made, slide-on campervan comprising of a consulting and dispensing eye clinic that he drove by truck to rural towns staying in caravan parks along the way. He has seen over 12000 patients and travelled nearly 2000 kilometres four times a year to cover their needs. He visited mining and agricultural regions because he saw a need for eye care in these areas that was not being addressed. Basil’s wife has now died, and, now he is 80 years of age, he is thinking about retiring because of ‘family pressure’ and health reasons. While he made the decision reluctantly to give up travelling on the rural circuit, he continues to practise at his

home base.

Basil has been practising in a rural location for over 50 years.

He started driving mobile consulting trucks for Gibb and Beeman Optometrists to rural NSW in the 1960's. This early corporate group had four trucks that served the country towns with populations of 2000-4000.

After 17 years of this type of practising, the emerging pattern was that optometrists were locating to these growing rural towns and the service was not required. Basil realized there were still areas in need of an optometry service. He approached the Department of Health and negotiated permission to serve these in the above mentioned customized van.

After 39 years of doing this service, times were changing. Once again, new optometrists were establishing regular practices in the areas he was travelling to and public transport, better roads and vehicles meant that patients were able to travel greater distances. They wouldn't wait for his service, but instead, attended an optometrist in their larger local centre for quicker attention.

Basil continued to travel to an outer NSW mining community with a population of 4000, servicing the smaller towns along the way. He enjoyed the scenery, driving, seeing wildlife and the changing colours of the landscape. This was a town of pensioners, low income earners and nomadic people. The NSW State government spectacle subsidy scheme for pensioners and low income residents is called, "Vision Care". With the provision of spectacles for the majority of his patients being provided through this program, it became financially unviable, and the large amount of work associated with this scheme became a stress factor he could not overcome. He now no longer travels there.

The optometry service to this particular town has evolved a new system where an optometrist flies in/out once a month with an ophthalmologist operating out of the rural hospital. The smaller towns along the route no longer have any optometry service cover, as the mode of transport for the optometrist has changed from motor vehicle to airplane. These towns that were once serviced by Basil and his mobile van are no longer serviced. Basil states that many of the people may not attend eye care services if they are not easily accessible. Basil predicts that with "progress", there will be a higher risk factor associated and the outcome could be more vision impairment in these rural areas.

Discussing solutions for this dilemma, he believes that a higher Medicare rebate for optometry services linked to RRMA may entice optometrists to cover these areas. He accessed the VOS allowance, which covered accommodation, meals and fuel expenses, but didn't cover the time and associated costs at his home based practice while he was absent from it. Another stress factor was locum cover. He would have appreciated a partly subsidized locum service if it existed. He has mostly taken holidays without cover. He has trained his staff to deal with emergencies, and "puts a sign on the door" when away.

Basil is now trying to sell his home based country practice. He has advertised it though a national optometry newspaper, and although many have looked, none have committed to buying it. With the current financial downturn, he sees that it may be best to continue practising, despite his age.

#### **6.2.1.3 Case Three: Optometrist Serving Aboriginal Remote Communities**

Susan serves optometry to the largest area in the world: 1000000 km<sup>2</sup> of the Kimberley and Pilbara region of Western Australia. As an optometrist she first realized that there was a need for eye care among remote Aboriginal communities while working in a mining-based community. With limited equipment, a 4-wheel-drive vehicle and stock, Susan initiated the service six years ago to a circuit of 20 remote Kimberley Aboriginal communities. It has now extended to an extra 16 communities in the Pilbara region of WA. Susan is away from her home base for up to three months at a time, working 12-hour days, seven days/week. She travels 28 weeks annually and additionally does 10 weeks of administrative work. Before this service was established, only a few large centres in the area had some ophthalmologists visiting them from Perth. The wet season in this area means no road access for up to 5 months a year for some remote communities.

Susan was self-funded from Medicare rebates for consultations. With the poverty of the Aboriginal residents in these areas, limited dispensing services are offered, though fortunately spectacle prescriptions are generally simple and of low cost. The two major problems now occurring in these communities are endemic diabetic retinopathy and hypertension. Skills necessary for early detection and treatment are binocular indirect ophthalmoscopy and retinal photography. The Aboriginal Medical Service staff in these remote communities has been trained in the use of this photography, which shows the health status of the retinas of patients. If diabetic retinopathy has started to proliferate and proceed to a stage of vision loss, the patient is transported to a large centre and undergoes laser surgery.

The Commonwealth Department of Health and Ageing has assisted Susan with a grant to obtain a replacement vehicle and equipment, which is subject to annual re-negotiations.

In Susan's experience, most of her difficulties are practical and cultural in nature. They include isolation, travel and geography to professional ones, such as lack of locum support and access to continuing education. Aboriginal cultural issues in this area are different from other areas of Australia and are complex. Susan does not see herself continuing in this type of practice in five years' time.

#### **6.2.1.4 Case 4: High Stress Factors Lead to a Change in Ownership**

The final case study profiles an optometrist who has lived in a rural location for 30 years. Jack had a rural upbringing as did his wife, Mary, though they came from a different part of Australia. He set up his independent optometry practice in an agricultural area where he saw a need for optometry services when it had a population of 4000 people. Thirty years later, it has become a favourite retirement centre and a bustling tourist town which services a population of 26000. Jack and his family are active members of the community, involved with the local council, sporting groups and clubs. He has a teenager in secondary school. Lately the town is expanding due to economic and demographic growth, with an increasing percentage of residents aged 5-54 years.

Jack regularly visited three other towns in the region, which had no optometrist servicing them at the time. He rented rooms in a central location and employed local staff. Over the years though, this has led to financial stress. The time away from his home base practice created an economic disadvantage when combined with costs associated with these satellite clinics.

Another stress factor was more optometrists establishing themselves in his primary practice location leading to a current oversupply. The added competition meant that taking time away to visit the rural clinics caused the loss of opportunities for serving the local people and a resultant loss of income. As waiting times were becoming shorter, patients would "shop around" and go to the optometrist with the least waiting time.

The third stress factor Jack identified is the difficulty accessing continuing professional education. Perth is three hours away and hosts most conferences and courses for Western Australia, some during the week. Costs of time away from his practice, accommodation, fuel, or air travel make accessing "free" education nights expensive for the rural practitioner.

The greatest stress factor Jack discovered though was lack of locum cover. He has not had a complete month off from his practice in 30 years. He saw this as a major priority for assistance of a partly sponsored locum scheme to professionally remain in the area.

This final issue was one of the primary reasons that culminated in the exploration of options that would alleviate some of the above stress factors. Originally, Jack was the individual proprietor of an independent practice where all administrative and financial control is under the directive of the optometrist. By becoming a corporate franchise, these areas of potential stress are taken care of by a large corporate chain, leaving the day-to-day practising to the optometrist. Locum cover is a service that the corporate group provides as part of their contract.

### **6.2.2 Analysis**

This section identifies themes emerging from each of the four cases in relation to recruitment and retention of rural optometrists.

#### **6.2.2.1 Case 1**

The key themes in this case study include lengthy travel involved in order to continue to practise in a mining community that has no optometric services apart from this practice. This commitment to rural practice is a related key theme, which is tied into the historic notion of the passing on of the family practice into the second generation.

Another key theme is to provide his children with secondary and tertiary educational opportunities in a city. He has a rural background, but his wife is from the city. He reports few stress factors and is not considering change to this work situation in future.

He would like a higher Medicare rebate and locum cover. Financial reasons were a major reason for continuing practice in this rural area. The practices have many extra services that are offered to patients in order to give comprehensive care and alleviate the need for them to travel.

#### **6.2.2.2 Case 2**

Key themes emerging in this study include the advanced age of the optometrist. He continues to work because he can still see a need for optometry services in rural areas and he fears no one will take over from him when he retires, leaving an “eye health care” deficit. This involves a large

amount of travel to rural communities that may no longer be served when he finally retires. There is no one to take his place. Those graduates from Generation X and Y are not attracted to the heavy workload that Basil has sustained for so long. Increasing competition by way of new optometrists setting up permanently in towns he used to travel to means his practice is suffering financially, so this is another stress factor. He is from a rural background, as was his wife. He enjoys the travel, though some may find it an inhibitor to practising. The novelty of this case is the mode he used to practise, i.e. the slide-on/slide-off consulting clinic.

### **6.2.2.3 Case 3**

The key theme that emerged in this case is the challenge of working in remote Aboriginal settings. The issues faced here include environmental and cultural Aboriginal restrictions, the complexities of working in Aboriginal communities when coming from a different (Western) culture, not having a rural background and not having spouse or family support close by. These combine to make isolation a stress factor. Added to this are economic funding issues and not having locum cover. Stress is a key theme in this case. It is not surprising that this optometrist has one of the highest numbers of stress factors and reported that she may not be practising in the future. She has to contend with the largest area of practice to travel to, the hostile climate, not being able to offer a complete range of services and having to invent a model of practice that suits her patients.

Fortunately, she has developed a relationship with the Aboriginal Medical Service that fosters links between the local people and health workers. This relationship has brought about the key theme of coping strategies when dealing with a stressful situation.

Diabetic retinopathy is a major issue that she specializes in diagnosing. Motivation for practising in this area is one of providing a need for this service. Similarly, she would also like locum relief partly sponsored by the government.

### **6.2.2.4 Case 4**

One key theme in this case was having time off. Without a refreshing time away from work, health issues can occur due to resultant stress. This issue evolves from the lack of locum cover that has led the optometrist to seek a different type of practice, transitioning from an individual practice to a corporate franchise as a coping strategy. The corporate group offer locum services as

part of their legal agreement.

The optometrist originally started his practice over 20 years ago because he could see a need in the community and he had a rural background, as does his wife. Remaining in this growing region brings about another emerging theme that is his family's sense of community involvement, such as enjoying the local yachting and Rotary clubs. These activities help him to stay and be committed to the local people.

His fear of having no one interested in buying his practice when he retires also helped him to consider the coping strategy of changing his model of practice to a corporate franchise. These have an "easy in-easy out" type of ownership structure which appeals to Generation X and Y potential buyers. This change has turned him from a potential "leaver" to a "stayer", and reduced his stress.

### **6.2.3 Comparative Analysis Between Cases**

**Table 6.11** shows similarities and differences analysed and grouped under key theme concepts.



**Table 6.10 Key Themes Emerging in Case Studies.**

KEY THEMES	CASE 1-MIKE	CASE 2-BASIL	CASE 3-SUSAN	CASE 4-JACK
Age		Yes		
Children's education	Yes			Yes
Travel	Yes	Yes	Yes	
Rural background	Yes	Yes	No	Yes
High Stress	No	No	Yes	Yes
Reason for Starting Rural	Family	Need	Need	Need
Reason for Staying Rural	Financial	Financial	Lifestyle	Unable to sell practice
Help required to stay rural	Higher Medicare rebate	Higher Medicare rebate	Locum services	Locum services

**Table 6.11** illustrates that there are certain themes common to most of the optometrists .One is the reason that they originally started in a rural community, which was because they could see a need and they had the motivation to meet that with their practising. This shows their commitment to serving rural communities. The other is that most were from a rural background originally

which ties in with their adoption of a rural lifestyle and ability to remain. Another theme is the large amount of travel they undergo to meet the work commitment. Because of this heavy workload, stress can occur. Locum services and higher Medicare rebates for rural areas are required to retain these optometrists to continue working in these practices.

The differences between these cases that are significant to this research are the stress factors. The only “leaver” in these cases is the female who doesn’t have a rural background, who does a significant amount of travel and who works in Aboriginal communities. The combination of these factors is overwhelming her commitment to continue practising. Her quote, “Aboriginal issues are extremely complex and it has taken 10 years to get to a point where I still don’t know any answers, just understand the problems and their source a little more clearly”, shows the difficulty and difference of her situation compared to the other cases.

#### **6.2.4 Summary**

The data gathered in the four interviews paints a rich and logical picture. It confirms data found in the quantitative section of this thesis which has helped to identify further areas of research which appear valid and logical. Participant numbers would therefore appear adequate. In conclusion, the four profiled optometrists have aspects that are typical to the rural workforce, with some accentuated stress factors. The evidence is shown in the way the optometrists are negotiating these factors. The major cross case comparisons are the amount of travel undertaken to continue providing optometry services to rural and remote areas, their rural backgrounds, the rural backgrounds of their spouses and their ability to be ‘stayers’ despite their difficult situations. The case studies will be discussed as examples in the next chapter, as their situations highlight general results found above.

# Chapter 7: Discussion

## 7.1 Introduction

Chapter Seven discusses the issues relating to rural and remote practising optometrists and service delivery to these areas. It includes matters arising from the literature review and the results found by the survey conducted on a select group of optometrists in RRMA 4-7.

The literature review highlighted the ageing of Australia's rural communities increasing at a higher rate than urban areas. This population shift requires a corresponding increase in health service needs, to which optometry is integral. More vision problems and subsequent eye disease are found in the over 45 year old age group. This is compounded by the higher use of vision services by older age groups. Medicare data of optometry services combined with RRMA population percentages shows the need for optometry in RRMA 4-7. These were represented by Table 3.1. It showed that the main areas of need are in Remote and Other Remote areas, which are RRMA 6 and 7.

Australian country towns have faced significant challenges in the health system over the last decade. In agricultural communities, the economic climate has caused an accelerated loss of young people from rural areas to capital cities where they have more educational and employment opportunities as well as a city lifestyle. Mining community inhabitants are more likely to be FIFO workers who have their primary place of residence in a larger centre. Indigenous communities are often nomadic which causes difficulties with service structuring of organized visits, even though they have more complex and sight-threatening eye diseases.

The following research questions were raised at the end of Chapter 4. This section aims to answer these questions from the results found by the survey and case studies.

1. What trends are occurring in the number and characteristics of optometrists who service RRMA 4-7?
2. What issues and challenges do rural optometrists face in their present locations?
3. In what ways are workforce issues similar or different from to other rural health professionals?

4. What support has been offered to them and has it been successful?
5. What strategies are required to ensure a sustainable workforce in the future?

The results show that the profile of the rural optometrist is Caucasian, male, in the late 40's age group, married, with children and with a rural background. This demographic is the same as that found for rural medical general practitioners and rural dentists (31, 179). With this finding, there are significant challenges for Australian optometry in this context, because unlike these two professions which have had significant government strategies to recruit and retain their rural workforce, optometry has had very little attention given to this area.

One strategy that was tried at universities in the past was to increase the number of places for medical and dental students. Despite this, there were still few doctors and dentists going rural. The reason for this was that almost none were from rural or remote areas. With the introduction of special scholarships for students from rural areas, and the medical schools being strongly encouraged to have a target for the proportion of rural students they admitted, the tide is starting to turn. With this new research, optometry can replicate these professions with confidence, knowing that this will be one proven strategy in addressing the problem of a growing workforce maldistribution.

Ageing of the workforce is a worrying result. A third of the sample group is facing retirement within the next five years. With the oldest respondent turning 80 years old during this study, (Case Study 2-Basil) and several others in their 70's, there is an urgent need to start applying the findings of this study to the workplace, educational facilities and government departments now. This statistic is also found in rural medical studies as reported in Chapter 4.3(page 84-87).

By investigating the results and categorizing them into the major issues confronting optometrists and the related optometry service delivery, a picture of what is required for the future of optometry in rural areas emerges. The main categories discussed are the universities role in creating a rural workforce, the supporting communities, responding to the changing nature of rural practice and the strengths and weaknesses of the study.

## **7.2 The Universities' Role in Creating a Rural Optometry Workforce**

Rural background was a predictor of those optometrists working in rural areas in the confines of

this study. This finding correlates with that found in the literature review of other medical, dental and allied health professionals (25, 31, 32, 34, 106, 125, 150, 151, 165, 182). There is a positive correlation between those who have a rural background and proceed to work in rural areas. Laven et al found that the incidence was six times more likely to practise as a rural GP if they came from a rural area (157). In fact, in the field of medical general practice, pre-selection of students with a rural background is taken into account, to stem the problem that confronts the rural medical workforce. This is a recommendation that should be pursued at the three universities that have Schools of Optometry. Right of entry from those who are from states without schools of optometry and rural areas should be given priority. In some medical schools, a pre-selected allocation of 10% of the annual intake is from rural areas (153). Based on the statistic that rural Australia occupies 30% of the total population, an allocation of this amount would suffice for future projections of required manpower if all Schools of Optometry implemented this figure.

There is no collected data regarding how many people from rural backgrounds enrol in optometry schools. None of the schools have policies to attract rural students such as rural or state quotas at the recruitment stage and only recently have implemented regional recruitment drives at the end of the academic bachelor degree stage. The first indigenous scholarship has been awarded in 2009, but before this, there was no special provision for indigenous optometry students.

Extrapolating from the sample of rural optometrists in this study, University of Melbourne had the lowest number of respondents, while UNSW had the highest. Queensland University of Technology had the most respondents who practised in rural areas without a rural background. Some reasons for this result may be that an insufficient number of University of Melbourne's graduates are from rural backgrounds, therefore strengthening the need to increase the intake of rural students, pre-selecting them on this basis. Or, it may be that the length of the optometry program (five years) causes too much financial hardship for students from rural areas, thus deterring them from enrolling in the course. With the change in course structure in 2011, this may detract rural students even more, as it lengthens the time of study to seven years and would increase the financial burden even more.

Those who practised in rural areas that didn't have rural backgrounds were married to partners who did, providing a psychological support base aiding retention. Most respondents cited a "love of the country lifestyle" as their main reason for staying, rather than financial incentives. The universities could foster this fondness by encouraging students to join rural health student clubs, rural placements and notifying students about rural health scholarship schemes. But, the process

of recruitment can start long before these initiatives.

### **7.2.1 The Early Years**

The occupation of optometry as a health profession needs to be offered to students as a worthwhile, positive and enjoyable career at the upper secondary school levels, when teenagers are assessing their interests and talents. Students studying physics, chemistry and higher levels of mathematics are in the category for preselecting, because these are pre-requisite topics for the Optometry degree. Programs such as “Rural High Schools Health Careers Week” held at the UNSW were an excellent example that showcased optometry amongst the other health service careers.

Leeway is therefore required by the Schools of Optometry to set a lower ATAR score for rural background candidates, if the rural quota cannot be filled. In some Schools of Medicine, up to 10% reduction has been found to be allowable.

Undergraduates from rural backgrounds need to be made aware of scholarships that can enable them to concentrate primarily on their study, rather than having to combine a heavy financial workload to cover transport costs, educational, accommodation and living expenses as well as the equally heavy academic workload that the optometry course demands. Students from states without optometry schools have an even greater burden of travel costs and lack of social support. States without schools of optometry have to realize the importance of local support systems being fundamental to retention, and therefore it is in their interest to offer bonded scholarships to able candidates. This could be implemented through the Departments of Health and Ageing. Schools of Optometry have to allow a certain amount of places for these states in their annual quota, to cater for the nation’s future optometry needs. It is not fair that only states with optometry schools are filled with students from those states, because as the literature review and the results here prove, the end result is maldistribution. A clear, impacting publicity drive for these scholarships is needed to promote their availability in these states without schools. Corporations that employ optometrists from states without schools could also be doing more in this way. Corporate groups need to consider bonded scholarships as a long-term investment. All these systems of financial support need to be advertised to suitable students in their upper secondary school years, when decisions about career choice are being investigated.

### **7.2.2 The Undergraduate Years.**

Rural exposure is educational exposure to rural issues and rural educational opportunities. It is found by other health professions to be of most benefit in the final year of the undergraduate degree training (116). A 20% increase of graduates working in rural areas occurred after these were administered in a School of Dentistry. These placements into rural positions require the personal enthusiasm of university departments and individual optometrists in rural areas who are willing to offer their time and expertise. The positives of rural practice- stressing great lifestyle, professional and financial advantages need to begin at this undergraduate level. The responses from the questionnaire about this section were encouraging. Most optometrists were willing to be approached by the universities if such a program was initiated and developed.

Rural placements can build that sense of connection which can inspire confidence in the undergraduate and give them a vision for future rural practice. Details of a preceptorship program could involve liaising with RCSs already administered by university medicine departments and key stakeholders such as rural optometrists, AMS representatives, and indigenous community leaders. The program should be designed to give students a broad range of rural lifestyles while being supervised by experienced local optometrists. Placements of three week duration in areas of between 5000-100000 population centres of agricultural, mining and some Aboriginal communities would be of most benefit. Transport costs could be sponsored by the OAA or corporate groups. Student perceptions of their placement should be evaluated by an open-ended questionnaire at completion. At present, the Department of Optometry and Vision Sciences at Melbourne University offers a voluntary week of rural placement for their final year students. This study, though, found that Melbourne University graduates were the least likely to “go rural”, after overseas graduates. Therefore, the inadequacy of time that these students experience rural placement indicates it is clearly not long enough.

### **7.3 Supporting Communities**

In order to retain optometrists in rural areas, support is required both from the local communities, governments and universities. It can start as early as in the area of postgraduate training to social and professional networks in rural communities.

### 7.3.1 Support for Postgraduate Training

Attracting graduates to rural areas and states without optometry schools has recently been an area where the optometrical industry and universities have collaborated with good results. Final year students have the opportunity to meet and discuss employment at events such as the NSW Annual Student Employment Expo. The annual event hosts potential employers and other groups, such as the ICEE and the OAA in a forum where students can gain information about rural practice and meet rural optometrists. Though this is a worthy event, issues can still arise following employment to a rural practice that are highlighted by this correspondence from a rural optometrist who is active in recruiting new graduates to a large town in central west NSW.

“I am very happy with my rural lifestyle. I was born and bred in this area. Prior to moving back I worked in Perth. One difference I noticed between city and country practice was that country folk appreciated what I did for them and valued my opinion. The city folk tended not to believe what I was saying and always looked for a discount. They tended not to realize that I was giving my very best to the job and did not seem to be as grateful. This detracted from the job satisfaction in the city position.

I have been very successful in attracting new graduate optometrists to live and work in my town, with some staying on for extended periods of time (i.e. longer than 2 years). I am yet to manage to attract an experienced or older optometrist.

My secret is to give them all the modern conveniences that they could have at a trendy city practice i.e. Retinal camera, internet access at work, slit lamp camera, corneal topographer, computerized visual field analyser, etc. A lot of exciting eye conditions will come their way automatically because in rural communities where the optometrist is usually the primary eye care giver. I make sure I sell this point. I offer to guide them through or tutor them with the difficult cases that present. City practitioners rarely get to see any good pathology.



I try to allow them a trial period of around three months on a "nothing to lose" basis, so therefore I find them accommodation so that they don't need to relocate all their worldly possessions. I make the relocation as easy as possible.

Socially, I find it hard to keep them entertained here. My current new graduate ends up at work on his Saturdays off because he is bored and might as well come in and spend time with the staff and see some "walk ins".

I pay my new graduates a large salary.

They also do some work with Aboriginal clinics for ICEE up here. This is attractive for the new graduates, because of the close association between the University and ICEE links, where they feel they are still in touch." (2005)

This case highlights the study findings by Eley et al who found that although there was a high amount of student satisfaction with the preceptorship scheme that was organized through the RCSs, there remained a resultant discrepancy in subsequent postgraduate employment retention in rural areas (109). The earlier mentioned dental study gave reasons of "feelings of isolation" being so far away from family, friends and support networks and "limited social life" in the fore mentioned medical study that finally caused postgraduates to leave rural areas after a short time. This reinforces the need to recruit graduates from rural areas initially, which have family and support networks in place so that those feelings of isolation are reduced. Appeals have been made for an increase in the number of graduate places for medical students from rural areas, as the research is showing this to be the best solution. In summary, specific recruitment of selective students with a rural background or from states without optometry schools, are needed urgently to balance the outgoing retirees section of the workforce.

### **7.3.2 Social and Professional Networks in Rural Communities**

Adoption of a rural lifestyle is a process in rural communities that is of paramount importance for retention (160). This excerpt from a previously practising rural optometrist's email shows how sport helped his integration into rural communities, and also how he developed liaisons in the

professional community which added to his enjoyment of rural practice.

‘I loved the community involvement that I had in all my country placements which included, Toowoomba, Warrnambool and Mackay. I was the president of the Cricket club in Warrnambool, played Rugby for Mackay and North QLD, and the involvement that you get outside work is as rewarding as the work itself.

My involvement with the local ophthalmological and general practice doctors was equally rewarding and it gave me a sense of community pride that you just don’t get in the major cities. I must admit, for the first year of coming to Brisbane, I missed the significance that I had and the involvement that I was not getting in the city. In my mind, if many of our optometrists gave rural practice a go in their formative years as an optometrist, there would not be as much drop out at the 5 year mark’. (2005)

These remarks verify Kegel-Flom’s findings (107, 125) that when identifying potential rural optometrists, traits such as those who possessed a rural origin, a strong liking for people and the rural lifestyle and enjoyed outdoor pursuits, such as sport in the above example, were the most likely to practise in rural areas. More importantly, they also suggest that communities and other professionals are important in making rural practice rewarding. Programs that integrate optometrists and other health professionals by welcoming them into the towns and extending professional support through an expanded membership of GP Networks need to be encouraged.

Ethnicity is a factor in the demographic characteristics of rural optometrists. The result that 100% of the respondents who practise in rural areas were Caucasian must be addressed. Superficially, this may seem a racial issue, but the candidate believes it is a cultural issue with a rural origin related perspective. This is represented by the results showing that most of the respondents had a rural origin or a spouse of rural origin, and remained practising due to family connections in their areas. It is, therefore, more of an issue about the importance of family support and overall wellbeing (mental and social) of a practitioner. This is reinforced by the literature reviewed concerning dental students reasons for not practising in rural areas. They cited feelings of isolation as the primary reason for not practising in a rural area (162).

In 2004, desperate rural optometrists from SA whose aim was to increase optometrists to rural areas observed that the strong family connections of Middle Eastern and Asian cultured graduates could not be overcome with high salaries (118). As these graduates came from city areas, where their families continue to reside, they did not want to stay in rural areas for a long time, because their families were not close by. The scope of this thesis is not a sociological one that can expand on this further, but it would seem this is a topic that could be researched, not from a racial viewpoint, but one that shows the cultural connection and importance of family in certain ethnic groups influencing work location. The same hypothesis could investigate why it is important to have Aboriginal students graduating from Schools of Optometry. The candidate believes that cultural connection for some individuals has a stronger “pull” than community needs, especially in Generation X and Y. This issue becomes a workforce consequence where retaining practitioners is concerned. School explored this trend, showing generational differences will challenge workforce requirements and with detailed mapping of the individual, community and organizational needs, solutions for sustainability can be found (165). This conceptual model for recruitment and retention could enhance the rural optometry workforce and needs to be implemented by human resource administrators.

## **7.4 Feminization of the Profession**

There were distinct similarities to the findings of the medical profession in the issue regarding gender in the rural workforce. Rural raised males ranked highly in the numbers of those practicing in RRMA 4-7 in the last 5 years. This was an interesting trend, considering the “feminization” of optometry since the 2000’s, where the graduate female: male ratio is 2:1 compared to the 1980’s when it was the reverse (45). Females accounted for 55.3% of all optometrists aged less than 25 in 1998-99, and for 52.1% of those aged between 25 and 34 years. The optometry graduate gender ratio in 2006 was seen to be at least 2:1 (Table 3.6, page 53). Ellsbury et al stated that women are less likely than men to practise in rural areas. The results of this study verify this finding. They also state that ‘because rural areas rely mainly on primary care providers for health care, the recent increase in the numbers of women are likely to have a major impact on supply of (medical) providers for rural areas’. A comparable result found that ‘there is a trend for women to practise in multi-specialty groups and be employed in a practice rather than in partnership or self-employed.’ In this study, the proportion of women optometrists employed in corporate practices was twice that of males. These respondents stated that they practised in those locations due to their husbands’ work choice, so it was ultimately not the optometrists choice to

practise in the rural location, but their spouse's occupation that led them there. Ellsbury concludes that recruitment of female (physicians) is more likely to succeed if they address spouse-partner, childcare and flexible hour's rosters as women (physicians) worked less hours per week (148).

The Access Economics report (55) found that women without dependents and under 36 years of age were more likely to move from urban to rural areas for a substantial increase in salary. This maybe true for short-term recruitment purposes, but as the results show, they do not stay (162). Or, they only stay if their husband's career is significant to the rural area. This is explained by the theory of reasoned action (TRA), where the turnover behavior is directly influenced by the spouse's (husband's) perception towards rural practice. If the husband doesn't have a rural background, the female optometrist will not be retained in the rural location (150). Is this acceptable for the longevity of the rural workforce? The candidate believes this is a short-sighted approach that only informs why people are recruited to an area of work, but not why they leave or what would have them stay. That confirms why this study is so important, because it surveyed the "stayers" and found the reasons why they continued practising in these rural locations: the answers being that "seeing a need" and having family connections in these areas are the significant factors. With fewer female optometrists being recruited from rural areas (and even less males), rural areas will suffer from more optometry staff turnover in future unless decisive action is taken.

## **7.5 Stability of Workforce**

Ultimately, access to optometry services by the public is in the national interest (1). In rural and remote areas, the challenge becomes higher directly proportional to the RRMA factor. It will increase, too, with the retirement of a third of the rural optometric sample in the next five years.

**With the increase in female graduates who are unwilling to stay practising in rural areas unless married to those of rural origin, the future of rural optometry looks bleak.**

Historically, the motivational force of the baby boomer generation's approach to rural practice has been described as "altruistic". This is verified by the over 50 year old respondents of this survey who started practising in a rural area. They went there because they could "see a need for optometry services". But, will this be the case for the following generations? According to the literature, their motivation is different. Corporate groups will have to pay heed to the psychological findings of Generation X and Y and develop appropriate packages to recruit and retain them. Individual owner practises who are aiming to retire will need to look at succession

planning strategies that accommodate the in-coming optometrist, such as offering locum relief and financial, managerial and professional support.

Remote area practice (RRMA 6 and 7) has to be treated differently to the larger population centres. It has a difficult nature of environmental, cultural, and high physical and financial demands that are placed on the optometrist. Stability of the workforce is affected by these demands leading to difficulty attracting regular optometrists.

### **7.5.1 Retention of Optometrists**

The majority of the sample of optometrists showed they intended to remain in their rural locations in the next five years (65%), but they also cited that they would like assistance to do so. Their main need was to have locum services partly sponsored by the government. Difficulty to find locum optometrists and pay the high contract salaries were major deterrents to having time off. The end result of this is stressed optometrists, therefore becoming a wellbeing issue that individuals and the optometry profession need to find ways to address.

Three of the four profiled case studies cited difficulties with obtaining locums, with Case 4 (Jack) going to the desperate measure of changing the management structure of his practice in order to get locum cover. Optometrists differ to rural medical practitioners in this regard. Jones et al showed that the most important retaining factor for rural medical doctors wanted higher remuneration from Medicare. Locum relief was second (22).

The second ranked answer for optometrists regarding what could help them to remain in the rural area was also increased Medicare remuneration, so it is a matter that may need to be addressed if the maldistribution issue continues but with caution.

Hall et al established that NT dentists who stayed for more than five years were those who had made major purchases such as a home, and had social and cultural links in the area. Those who came for financial incentives or the novelty of working in an exciting environment left within five years. The “leavers” cited reasons such as the work was too stressful and they had no social support mechanisms in place to alleviate this. Those who stayed enjoyed the sense of community and the opportunities that living in a small centre provides. They concluded that these reasons were similar to medical practitioner findings (162). Optometrists are aligned in this trend with dentists and medical practitioners according to the results found by this study.

The contentious issue arises where a corporate group offers higher incomes in rural and remote areas believing optometrists will be attracted to these rural positions (55). This is the retention strategy put forward by the Luxottica owned group, OPSM. High salaries may attract people for a short term, but not for long terms, which is detrimental to the community over time. Indeed, there were few participants in this study who were from corporate groups, because they didn't fill the criteria of having stayed in a rural area for more than five years. High staff turnover is a documented problem with such groups. The rural physiotherapist package explained in Chapter 4.4(page 96) could be implemented to address this problem (178).

Like the similar studies on the medical profession, secondary schooling opportunities for optometrists' teenage children were the main issue for considering moving to a larger centre. This corresponds with Kamien's study, which found that " stayers reported the social enjoyment and esteem of being involved with the community" (122). The case study profile of Mike showed how he overcame this social issue- by moving his family to a larger centre and commuting to the rural centre, thus continuing the practice.

In areas where there is no doctor, local councils are now providing good housing as well as a well-equipped practice in order to attract rural GPs. Governments are also offering financial incentives. Corporate chains may have to look at similar incentive packages to attract optometrists for retention purposes. Efforts have to be made to reduce this "floating group" that does not give communities consistency of practice. Kamien describes them as "leavers" who are not able to negotiate the raft of problems that occur in rural areas. These problems may not be financial in nature, but professional or social issues, for example (122).

The case study that represented this situation was that of Jack. He was planning to leave his rural practice due to the professional factors of lack of locum relief and the possibility that he wouldn't be able to sell his practice. He solved these problems by changing ownership from being a sole owner to joining a corporate franchised group that offers relief services and a management structure that is supportive in financial and succession planning strategies. He is now content to stay on in a community he is a part of.

## **7.6 Responding to the Changing Nature of Rural Practice**

The future of rural optometry is a tenuous one. This section discusses the issues that the survey respondents highlighted. These are locum services, professional development, type of practising and finally, new sustainable models of eye care delivery. This last area covers such topics as visiting services, the growing trend of reduced travel by optometrists and therefore, more travel being undertaken by patients, telehealth and the training of Aboriginal staff for indigenous communities.

### **7.6.1 Professional Issues**

These are issues that affect the practice life of the optometrist. In the case of optometrists, these were found to be locum related and continuing education related.

#### **7.6.1.1 Lack of Access to Relief Services**

Results showed that locum relief was seen as the most critical stress factor for retention of optometrists in rural areas. Optometrists do not like leaving their practices unattended while they go on holiday, study break, sickness, maternity or paternity leave. Some do not even travel to secondary practices anymore because they see that it is time away from their primary practice and they believe patients should be able to travel to them instead to avoid this splitting of time. This may be the changing face of rural practice; that optometrists will reduce travel for economic reasons, but the overwhelming evidence that few had a month's (covered) break from their practices in the last year, shows that there is a dire need for a locum strategy to be implemented. The OAA (Victorian division) trial locum service brought about annual leave with successful results for participating optometrists (123). Unfortunately, the project was stopped due to difficulties finding locums to staff the project and the removal of government funding (124).

Locum practice attracts those at certain life events such as wanting the adventure that travel provides, being single, work-life balancing with child rearing and postgraduate studying which all make the flexibility of locum employment more attractive. It is therefore seen as an option that all graduates should be offered as an alternative to the standard types of employment. Another possibility would be to offer optometrists registered in other countries, such as United Kingdom, short-term working visas to address this need, but with the proviso that they have set requirements to practise only as a locum in these areas of need. Commonwealth government liaising with appropriate departments would be required for this strategy with state government

intervention. State divisions of the OAA would be in the best position to liaise with State Government Health ministers and members to coordinate a locum scheme that was partly funded by the government and partly by the owner-optometrist. This management role would be appreciated by all parties. The Victorian locum model could be revised for this purpose.

### **7.6.1.2 Continuing Professional Development**

The Optometry Board of Australia requires optometrists to undertake 80 hours of continuing education over two years, to keep actively involved with new developments in the profession.

The importance of this standard is paramount, especially in rural and remote areas where the optometrist may not have a local ophthalmologist to refer difficult cases to. Problems associated were outlined by the case study of Jack. Time away from practice, cost of travel to and from the education, accommodation expenses, and loss of earnings all make the requirement difficult to attain.

Fortunately, there are some continuing education programs available which can be accessed on-line. “Clinical and Experimental Optometry”, Edupro and OptomCPD do offer distance learning for a reasonable fee which allows optometrists to gain the prescribed amount of professional development training. Luxottica Institute of Learning also has a library of CDs that can be accessed by membership. There is also an internet on-line clinical support “list” that optometrists are free to join for advice. This was set up by a rural optometrist as an avenue that would enable questions and discussion to be available from experienced peers. Although this is not for continuing education, it is a valuable resource tool for rural, newly graduated and experienced optometrists to have on a day-to-day basis for sharing difficulties or obtaining relevant information.

A present issue that affects the public is the legal ability of optometrists being able to prescribe therapeutic drugs for simple conditions such as conjunctivitis. Even though optometrists have the clinical knowledge and specialized equipment for diagnosis of certain ocular conditions, some states have laws that prevent them from prescribing the necessary medication. The result is that they have to refer the afflicted patient onto an often overworked general practitioner, who often doesn't have the required equipment to diagnose. This time-consuming method and double expense to the government can be alleviated by passing legislation that allows the streamlined system recognizing optometrists in their role as the primary eye care provider. In order to facilitate this legislation though, continuing therapeutic education for optometrists is required.



The Graduate Certificate in Ocular Therapeutics involves several months of educating and examination before an optometrist can be authorized to prescribe these medications. It is not available as an on-line learning module at present, and that may be a barrier to rural optometrists. Unfortunately, the rural optometrists in areas where GPs are often in low supply would benefit mostly from the authority to prescribe therapeutics to aid the primary health care of rural patients. Therefore, rural and remote optometrists will find that although they are most likely to need this education to ultimately benefit their community, they may find it difficult to leave their practices to obtain this.

## 7.7 Ownership and Type of Practice in Rural Areas

From the results, it can be seen that the dominant form of practice ownership in RRMA 4-7 are independent sole ownerships. Traditionally, this has been the typical optometry model of practice since optometry started as a profession (97). Recently though, the competitive nature of the profession, globalization and the economies of scale have had an impact on ownership structures.

A dominating trend of change to overseas-based corporate chain ownership is occurring. This is largely due to economic factors, which this thesis does not cover, but it is important to mention as it has implications in rural areas. If practices aren't seen as "profitable", corporate chains will not invest in them, because they are often driven by shareholder contingencies (183). Evidence of this trend is seen in the candidate's results showing employees from corporate groups only came from mining areas, where contracts with large mining groups have been secured and financial risk is low. These groups report they often have trouble sourcing optometrists for these practices, and have to resort to a FIFO strategy to maintain operations (55).

The case study of Jack showed the trend of changing from a sole ownership management style to a corporate chain one, due to the benefits of locum cover, financial management and the strategy of succession planning for future retirement. Jack believes that he will be able to sell his practice quicker and easier, because the pressures of an individual owned practice will be lessened and this will attract the younger generations of optometrists. Generation X and Y prefer teamwork and support, so this generational change will have an impact on ownership and type of practice, with many preferring a corporate structure of practice management rather than individual ownership (165). Corporate groups, being solely economically driven, will only be interested in a limited number of lucrative locations, such as large mining environments or large agriculturally based catchments. The result of this change would mean a further reduction in practices in

smaller rural and regional areas that are not mining based, as these areas are dominated by individual ownership management structures.

The result of this change, particularly in agricultural regions of RRMA 5 and 6, where the population is ageing, will be detrimental to rural eye health. The projected change in health care demands need to be addressed by supporting those optometrists willing to “make the move” out of metropolitan areas (RRMAs 1-3) to the regional areas, from the recruitment to the retention stages of an optometrists’ life.

## **7.8 New Sustainable Models of Care**

The results showed that most of the optometrists did travel to at least one other practice location. This idea of multiple locations is a unique feature of rural optometry practice. It shows the commitment rural optometrists have to service their communities and the need for them to service a larger population in order to stay financially viable.

The RRMA Classification system was used to look at how services are distributed and maintained. These trends arose:

In RRMA 4, (small rural centres of populations >10000-24999) optometrists tend to reside in the community. There were adequate numbers of optometrists, though some were planning to retire in the next five years.

In RRMA 5, (other rural centres of populations >5000- 10000) there were adequate numbers of optometrists, but some were planning to retire within the next five years. In smaller centres, optometrists travelled out in a “hub and spoke” model of practising and some were finding the travel component not financially worthwhile and were considering stopping it. The result is more people in these small communities could lose their sight. A public awareness “drive” regarding the importance of regular vision tests is required, if this happens. Media advertisements in “prime time” explaining this message are of paramount importance, to encourage the patient to travel for the service.

By RRMA 6 and 7 (remote and other remote centres of populations < 5000) sustainable services became more difficult, scant and in some places, non-existent. The optometrists servicing these areas had to travel very long distances (up to 10000km) often needing four-wheel drive vehicles because road conditions were poor. The populations in these areas were often indigenous and

suffering poorer eye health than other Australians. It was also seen in the literature review that they also had less access to vehicles (that worked!) (61). Because of the hardships endured, less vision care results.

The “hub and spoke” model described by the Mt Isa Allied Health Service is a multi-disciplinary model that optometry could adopt further to address the needs in these remote areas (178). The service operates within a primary healthcare framework that requires working out of local hospital clinics, but there is a problem for optometry within this model.

The VOS would assist optometrists to take part in multi-disciplinary out-reach programs. However, additional government support would still be required to allow optometrists to examine patients in a hospital or public clinic setting unless employed by the health department in that jurisdiction. Although there is nothing to prevent health departments from employing optometrists to provide services from a small hospital or clinic, many managers want to prioritise funding to other areas of need.

Furthermore, optometrists practising independently have to forfeit their right to charge Medicare privately for group optometry consultations, under current Commonwealth and state hospital legislation. Remuneration offered by hospitals for salaried optometrists is inadequate in comparison to charging Medicare privately, so the incentive to practise in this way is not as attractive financially. This system needs to be changed if the government is serious about addressing inequality in eye health.

By contracting a consultation area for an optometrist to use within rural, local hospitals or multi-purpose health centres on a regular basis, this hurdle could be overcome.

A way to solve this dilemma is to allow optometrists to practise privately as a separate entity from rooms in rural hospitals or clinics, with the optometrist being able to charge Medicare independently. This way, patients will have better access and care can be more easily coordinated, such as referrals from ophthalmologists and diabetes educators. Easy referral for cataract surgery or diabetic laser surgery is then facilitated with the result that patients get the best service in the one location (158, 159).

In remote and very remote areas sustainable services provided by a team of health professionals organized at a local or state governmental level should be the aim. Evidence of the benefits of successful multi-disciplinary visiting services includes the high rates of screenings performed by

the breast cancer and cervical cancer organizations in rural areas. This shows that with effort and determination, health checks can be done successfully.

A model of service delivery in RRMA 6 and 7 that could be further investigated is travelling around in a “Health Circus” with other professions including artists and sporting legends. This original idea would need greater exploration. To coordinate such a venture that may include other professional groups outside the health arena and would need organization at a state and local community administered level. A model already in place that is similar is the “Croc Festival”. Sponsored by the OPSM charity group, Community I-Care, the annual event involved a three day festival that had thousands of school children come for many services and concerts held in the one location. In the last five years, over 50000 people have been screened, 2700 eye examinations performed and over 1000 pairs of spectacles donated (184). Due to funding cuts in 2007, these festivals are no longer operational. With sponsorship and government support, this could be coordinated for all age groups in the “Dry season”.

The importance of continuity of care providers is a strong theme in rural health research. Canadians have showed that when an irregular source of medical care occurred, residents in rural Canada were less likely to present for medical care (185). However, when the same doctor was available, residents would attend for care. The optometrist case studied in Chapter 7 (Susan), who works in Aboriginal communities, reported that relationship building was important to the success of attendance. With an itinerant service and a changing optometrist at each visit, one could expect that eye health will be jeopardized in remote populations. Therefore, a package which maintains consistency of the practitioner is required. This optometrist indicated that she will not be practising in five years. As a consequence, the implementation of a plan to continue this service with a regular optometrist is paramount. Ultimately, having Aboriginal optometrists who are aware of spiritual and cultural issues, visiting Aboriginal communities should be a national, educational and social goal of the future. In order to make this happen, the findings relating to recruitment need to be applied to this specific group. At Schools of Medicine, Aboriginal graduates are starting to complete their training and begin practicing in Aboriginal areas. It can happen in Schools of Optometry, too, if target quotas are met. With nearly 3% (and growing) of the Australian population being of Aboriginal descent, the same percentage should be applied to university entrance admission candidates. As seen in the literature review, it is barely 1% at present. This is an area that needs addressing.

### **7.8.1 Visiting Services**

Access to optometry services in rural and remote areas involves travel. Either the optometrists or the patients have to travel, usually by motor vehicle to enable the eye examination to take place. The thesis showed that optometrists travel further than patients to offer their services.

#### **7.8.1.1 Optometrists**

The case studies described in Chapter 6 showed the commitment of travel by optometrists to serve their rural communities. Travel by the optometrists was not restricted to one type of socioeconomic catchment community but to all, whether it was agricultural, mining or indigenous based. The results showed that all the respondents travelled a mean of over 1300 kilometres per year. Apart from the mining commuter optometrist who travels extensively by airplane, all respondents drove vehicles to their destinations.

Road quality and type of vehicle become issues that need to be addressed for sustainable practising. It was noted that the most kilometres travelled were to Aboriginal communities where road quality is not always good, and the importance of having a four-wheel drive is paramount to get through to them. Despite this, the optometrists who served these areas did double the amount of travel compared to all others who travelled. The heavy workload of having to travel to a medical centre set up the equipment, practice optometry, pack down and then drive home is a huge commitment. The result may be another reason why the case study in Chapter 6, Susan, is planning to leave within the next five years. It is just too hard. Factors such as no rural background and having to face the complexity of Aboriginal cultural issues combined with the travel issues, become catalysts to leave.

The results showed that most travel by optometrists was done to mining communities, followed by indigenous communities and finally, to agricultural communities (Figure 6.4). There may be an economic factor at work here, as mining communities generate a financially viable income, making the travel worthwhile. This thesis does not cover the financial considerations of optometrists. Further research is required to discuss this important concept of economic viability in rural optometrists' practices. For example, with the new changes to the VOS, is the uptake in rural and remote areas worthwhile if they cannot find a locum to look after their primary practice? Some optometrists no longer travel to outlying areas because it is not viable, and they believe their time is best spent in their primary practice location. They report that patients are happy to

travel to their primary practice because these are usually located in larger centres where the patients commute on a regular basis for other reasons such as those of a commercial, professional or personal nature. The other aspect of travelling to a remote practice is the need for on-ground staff support to advertise and coordinate the service. If such a coordinator is not 'au fait' with the optometrist or the local community, there may be a lack of utilization of the service, even though the optometrist has travelled there and been available.

The following quote from an optometrist working in a mining town highlights the move away from optometrist travel to patient travel.

"Patients will travel quite a distance to see me. I have patients regularly travel from 30 minutes drive away.

I also see patients from Leonora - 2.5hrs drive, Laverton (3.5 hours) not as often and Leinster- 3 hours away.

The most remote come from along the SA/WA border as I am often the closest optometrist.

I had thought about hooking in with a Royal Flying Doctor Service to visit these people, but I am not good in small planes.

We did visit Leinster, Laverton and Leonora but people now come to town and so it's not really profitable. It would be achievable if a locum was (*sic*) available, but too hard when there isn't.

I am still travelling 230 km to Southern Cross and do that every couple of months." (2005)

This may mean that the future of the rural optometrist will involve less travel, with primary practices in larger urban areas, putting the emphasis on the patient to travel. This could cause an increase in vision impairment in small rural communities because access is not easy for the patient, especially the "at risk" indigenous population. A public awareness campaign of regular vision examinations may help to keep the rural patient aware of the need, but ultimately the onus of eye health is shifting to the patient to seek out the optometrist at a further location than in the past, when the optometrist would do the travel. If so, an increase in patient travel will result

emphasizing the shift to “self-care” strategies of health care.

### **7.8.1.2 Patients**

In Australia, rural people routinely visit larger centres to attend to a range of needs not available in their smaller communities. Travelling for their health care, including optometric eye care could become the “norm” in future, if recruitment and retention strategies fail. When a patient realizes they need eye care, as in the flowchart diagram of optometric referral (Figure 1.1), they will have to attend a primary optometry practice in a larger centre or a visiting optometrist, who sets up on a regular basis in a common area that can convert to a “country clinic”. Ideally, a local country hospital would be best for the patient as there is less travel involved. Referrals to local country hospitals for outpatient services are part of the “self-care” proposal to reduce travel for rural residents, but as discussed earlier, optometrists are not allowed to practise under current Medicare rules in these hospitals.

### **7.8.2 Telehealth**

The use of digital retinal cameras in the field of telehealth has been a godsend, as trained local workers can photograph diabetic retinas and send the images to city-based practitioners who can determine whether Royal Flying Doctor Services, in a sight-threatening situation are required or a more conservative wait time is allowable (68, 186). The development of the computerized visual function test (CVFT) will be another tool that local ancillary staff in Aboriginal Medical Centres can be trained to use, adding to diagnoses (70). This technology should not be seen as a threat to the optometry profession, but as a tool that will enable vision impairment to be eradicated in areas where there are workforce issues occurring.

### **7.8.3 Training of Aboriginal Staff**

In some areas, integration of Aboriginal Medical Services, ophthalmological and optometry services provided a streamlined system of screening, diagnosis and referral, alleviating stretched eye care services to some of the nation’s neediest people. The model in use by the ICEE is an example of this, as local indigenous groups initiate and organize visits for optometry services. The ICEE are also instrumental in training Aboriginal Health workers in vision care, so knowledge is being passed on to future generations (69).

A lesson to learn from the case study of Susan in Chapter 6 is the importance of training local

Aboriginal Medical staff with computerized visual and diabetic screening devices, as they have the rural origin and the knowledge of cultural issues. The Indian pyramid model of sustainable eye care services (Vision Centre Concept) which was demonstrated by **Figure 3.7** (page 69) is therefore adopted, using the Aboriginal staff as “Vision Guardians” in the Community Eye Care section of the pyramid. When patients are identified as needing more care than the health worker’s training permits, they could be transported to a Primary Eye Care centre where an optometrist could be scheduled to visit at a regular interval. (One participant quoted that when working in conjunction with an ophthalmologist, he could reduce the ophthalmologist’s workload by 70 %.) These would be centres in the RRMA zone 6 (population of > 5000). The next step of the delivery process, as set out by the National Information Network, would be the coordinated visit by ophthalmic specialist services. This streamlining of clinical practice would lead to cost-effectiveness and best health outcomes. It is best to operate this system at a national level, though with the input of health planners at local, regional and state levels. This would eliminate the gaps and duplication in service delivery arrangements. Data collection at the place of service would ensure accountability and monitoring.

An area that deserves more exploration in the context of Aboriginal health care is the connection of the traditional indigenous spiritual belief system and its influence on health outcomes. Do areas where the historic values of sorcery and magic adhered to by a community have higher rates of disease and mortality? If there is evidence of this, it may be due to lack of belief in “Western” medicine and advice regarding health care generally. If spiritual belief in superior unseen powers overwhelms the motivation to seek healing and respect of one’s body, this may cause a helplessness and hopelessness that “Western medicine and advice” ultimately cannot win against. The battle then is not against “flesh and blood” or the healing of such, but “principalities and powers of spiritual darkness”, that are a lot harder to conquer because they are at the core of an individual’s soul (187).

## **7.9 Study’s Strengths and Limitations**

The major strength of this study was that it only focused on optometrists in rural areas. The information gathered was specific to this group, and was representative of rural optometrists across Australia because there are few of them who have stayed for longer than five years. This type of sampling has never been done before, so originality is assured. The sample group was evenly distributed across the four RRMA groups that were shown to lack other health



professionals. The cross-sectional representation of optometrists in these RRMA groups gave a good balance for comparison. To ascertain a response rate from 24 recipients out of a total of possibly 80 rural and remote consistently practising optometrists is statistically acceptable for showing trends in this particular group.

Optometrists are different to other health professionals in several ways, so it was an advantage to look at the issues facing this small but important group responsible for the eye care of the nation. Firstly, these results show optometrist coverage of rural and remote areas are not as poorly spread as medical practitioners or dentists. The reason for this difference maybe of an economic nature. Because this thesis didn't explore economic viability, this could be an area of further study. Secondly, optometrists are traditionally trained to work independent of other health care workers, not requiring a team of highly trained professionals to keep practicing. Because of this, optometrists are free to set up and consult anywhere, whereas medical practitioners prefer to have a team of nurses, practice managers, other doctors, a nearby hospital and a pharmacy in close proximity. Both of these factors could help to indicate why doctors have rural shortages that optometrists don't have, to the same extent.

The next strength of the study was the longitudinal survey design without the great length of time used to gain the same quality data. A traditional longitudinal study, such as Kamien's involves surveys being sent out twice with a period of time in between. Instead, the fast-tracking of this study involved choosing optometrists who had been practicing in their rural location for more than five years and surveying them for their "secrets of successful rural practicing", their long term experiential wisdom was divulged immediately. Kamien's study took ten years of surveying to show why doctors stayed in a rural location (122). The candidate didn't have that time period to complete the Master degree requirements, so by shortcutting Kamien's method by targeting those who were "stayers", the worthwhile information was found.

Another strength of the study was the realization that differing socioeconomic areas have different needs in terms of service delivery. By targeting optometrists from agricultural, mining and Aboriginal areas, a range of challenges were acknowledged. Agricultural areas tended to have older, stable populations that had optometry services that were in a primary place of practice. The trend was seen that patients would travel to the optometrist. Mining towns, which had a large FIFO population and whose primary place of residence was elsewhere, did not need the services as direly. When the population became of a size that was permanent and greater than 5000 people, FIFO optometry services were used. Aboriginal communities, with their high rates

of diabetic eye disease and nomadic lifestyle made the challenge of service delivery very difficult and yet, very important for their health.

Finally, the candidate's research has already informed further research in this area. An Australian Learning and Teaching Council project used some aspects of the candidate's survey (Appendix 3) developed for this thesis in a larger study into rural and remote optometry in 2009.

The greatest limitation of this study was access to Medicare Australia data. With this data, analysis would clearly show the perceived discrepancies of service in the differing RRMA's and the states without optometry schools. Fortunately, the OAA had a copy of Medicare Australia data from the 2005/06 year for RRMA's across Australia, generally, but not by state, which they allowed the candidate to use (Appendix 4). The candidate had requested the Medicare Australia data of Medicare Item 10900 by RRMA per state and territory for the 2006/07 year. This would have shown the utilization of the main optometry service for each RRMA. After a prolonged wait of six months, they reported it would cost \$2000. This was an unaffordable expense for the candidate and the offer was rejected.

The next limitation was the response rate from rural optometrists at 48%. Factors that may have reduced the number of potential replies may have been the method used to send the questionnaire. It was noted that emailing gave a far less response rate than conventional posting. Given the large numbers of hours worked by most of the study group, it maybe that those who did not respond were simply too busy, too fatigued or distracted, to do so. The rural workforce, now the subject of increased national attention, may also be suffering from "questionnaire burnout". Other surveys were also sent at the time and there may have been a competing of time available. Reluctance to respond may also be attributed to general apathy linked to "research culture" in the profession.

The third limitation was low sample size. The noted barrier of high turnover of staff in these areas made the selection criteria for respondents difficult. Optometrists who were emailed the survey may not have replied because they no longer practised in that location. It is also a corporate chain phenomena that there is a high optometry staff turnover in rural and remote areas (55). This explains the low response rate from this sector of the profession. A larger sample size and more research may have contributed to reducing bias, but despite this, the respondents provided a wealth of information on their backgrounds, services and expected futures which are reported in the case studies, and with their comments sent to the candidate for the duration of the thesis.

Another limitation was the definition used for rural and remote areas. The RRMA classification has limitations outlined earlier in the literature review. In the future, health research in Australia would prefer using the ARIA system because it measures remoteness in relation to road distances travelled to the nearest ABS defined urban centre. As most travel is done by road, this would be a better system to use.

Another limitation was the lack of eye health studies done on a rural sample group. The VIP was conducted in Victoria and only had a small sample of “rural” participants in the whole study. It was not known where the rural sample was taken from or what RRMA it represented. Some argue that Victoria, being such a small state with small road distances to large regional centres has not much of a true Australian “rurality” about it, compared to WA, SA, NT, Queensland or NSW, which have a far greater area of RRMA 4 to 7 represented. True representation of the nation’s eye health would be a study that gathers data from all the RRMA per state weighted according to population density. This would be an excellent way to ascertain which areas have higher needs and therefore require appropriate treatment.

A major limitation of the study was economic viability not being taken into account, even though it is of crucial importance for the success of rural practice. This would definitely be an area that further research could include.

A personal limitation the candidate encountered was that of not practising in a rural location anymore. Even though the candidate had rural practice experience of over ten years’ worth, she had to rely on the comments of rural optometrists in regard to new issues being dealt with, such as retinal camera imaging being used in e-health and the importance of therapeutic drug benefits that they would bring to rural communities when legislation is passed.

## **Chapter 8: Conclusions and Recommendations**

### **8.1 Introduction**

Chapter Eight concludes the thesis by summarizing all the information in the preceding chapters, therefore showing what issues the regional serving optometrists in Australia are facing and the recommendations for the future.

In Chapter One, the candidate reported the aims and objectives for conducting her Master's research. The literature review (Chapters Two to Four) highlighted the importance of optometry's role in caring for the primary eye care of the nation, the optometric workforce, and other health professions role in rural health. Research questions were asked at the conclusion of the review.

In Chapter Five, the candidate presented the methodology developed for this study which included a survey of optometrists who had practised in rural and remote areas of Australia for more than five years. By targeting this group, the candidate could assess whether they had special retention qualities that could be adhered to for growing the next generation of rural optometrists. Four optometrists gave quantitative data for the Case Studies (part of Chapter Six) which explored themes that emerged to a deeper level regarding why they were staying or intending to leave rural practice and what issues they were challenged with.

In Chapter Six, the candidate presented the results which were evidence based and analysed to show what trends were occurring in rural optometrists' practices in the RRMA 4-7 zones. They showed that optometry coverage at present is acceptable in most areas across Australia, except in the RRMA 6 and 7, that is areas with populations less than 10000. The threshold population for an optometrist is 1: 7414, so in theory, and practise, the coverage for these areas is challenging.

In Chapter Seven, interpretation of the results was discussed, such as what trends were occurring and why they were important to rural practice. The individual case studies that demonstrated these trends were integrated in this section to give depth of personal experience. In contrast with other professions, optometry is serving at almost an acceptable level because of their determination and hard work based on their commitment to rural communities. But, there is no room for complacency, as the results showed. With a third of the rural optometry workforce of this study planning to retire in five years, contingency plans are required now.

In Chapter Four, the candidate reported a set of questions for conducting her research. The above summary demonstrates that she has answered the research questions with the aim of providing a picture of the profile of rural and remote optometrists in Australia and the issues they encounter in their work. This is the first time that such a comprehensive study about this section of the optometry workforce has been conducted in Australia.

Having conducted this study, the candidate recommends the following directions to provide a basis for rural optometry to continue successfully. These are based on principles that maintain the viability of rural optometry practice within a strategic framework identified by this thesis.

## **8.2 Recommendations**

The following key recommendations, if adopted, will increase the eye care of people in rural and remote Australia. The intention of these recommendations is to ultimately close the gap in this area between rural and urban eye health care.

### **8.2.1 Key Recommendations Summary:**

#### **8.2.1.1 Recruitment Issues**

1. This research shows that rural background is the best pre-selector for rural practice. It is recommended that the Schools of Optometry increase their intake of undergraduates from rural areas, states without optometry schools and indigenous populations, weighted by population statistics. This support will increase the likelihood of future regional employment in the long term.
2. Building and coordinating a preceptorship program into the final year of the undergraduate optometry courses. This exposure to rural practice has been proven to be a positive influence. A summer work program of a month spent in rural practice in RRMA 4 to 7, or states without optometry schools in conjunction with other university rural clinical schools, and with mentor optometrists would enhance future rural practice.
3. Bonded scholarships with obligations to practise in rural areas on completion of the optometry degree provided by rural health organizations, and state governments without schools of optometry. Or, alternatively, HELP reimbursements for rural and remote service by optometry graduates, weighted by RRMA.

### 8.2.1.2 Retention Issues

1. Locum relief is required by most optometrists in rural and remote areas.

A locum coordination program organized by OAA state divisions, implementing the Victorian Locum model is needed. Overseas trained optometrists on temporary visas to service rural and remote areas could be used if Australian registered locum sources were unable to meet the need.

2. Travel. The Commonwealth Government should give financial support for optometrists who travel to RRMA 6 and 7, or other areas of need, with the optometry Medicare rebate weighted by RRMA factor. As optometrists typically bulk-bill lower socio-economic groups that dominate rural and remote areas, they are only being partially subsidized by the VOS scheme.

The alternative would be to develop the patients' assisted travel scheme (PATs) to include travel for patients to optometry practices in larger regional centres.

3. Representation on the National Rural Health Alliance, a peak body that lobbies national, state and local health authorities and government departments for the welfare of rural optometrists, is required. This would strengthen negotiations in the rural optometry sector. Ideally, a rural practising optometrist should take on this important role.
4. Therapeutic drug legislation should be uniformly accepted across Australia. This would enable authorized optometrists to give the best eye care service to rural patients who are most needy of this service. Rural optometrists have proved to be accessible, well trained and equipped to handle primary eye care cases that hard-pressed country GPs find difficult. A shared-care model integrating these professions is advocated.
5. Lobbying of state governments to allow optometrists to work in rural hospitals, so "hub and spoke" models of practice can be established in RRMA 6 and 7. This action would also strengthen the evidence that rural hospitals meet the health needs of the local community better than any alternative.
6. Encourage the establishment of the National Information Network to aid coordination and integration of eye care services to remote areas, especially indigenous areas. Greater use of information technology to ease unnecessary travel and the training of local staff in Aboriginal Medical Centres should also be encouraged.
7. Policy makers should be aware that the increasing proportion of women in the optometry workforce will mean there is a corresponding reduction in the number of

rural optometrists.

**Table 8.1** summarizes these findings in a logical order to promote project outcomes. It shows the recommendations that enable respected groups such as rural and remote optometrists, governments and health authorities, and professional organizations, together with local communities to work together for the long term future of rural practice.

**Table 8.1 Summary Framework Showing Applications as the Basis for Development of Rural Optometry Practice.**

Nature of existing problems	Evidence base derived from results	Viability Goal based on benchmark	Viability solution (Task/activity required)	Stakeholder responsible for solution
Retention	Problems retaining existing optometrists In RRMA's 5-7	1: 8000	Retention Grants weighted by RRMA; Locum cover	Commonwealth government workforce agencies, Optometry Association state divisions
Recruitment	Difficulty in replacing and recruiting optometrists in RRMA's 5-7 and states without Optometry Schools	To achieve workforce benchmark	Recruit undergraduates from rural areas and states without schools. Bonded scholarships	Commonwealth government; State governments; Universities; Optometry State divisions
Community Characteristics	Lack of high quality secondary school education; population decline and low socio-economic areas.	Optometrists should not be disadvantaged with respect to children's education.	Support to access education for children; good quality housing; vehicle subsidies.	Local communities; Local, state and commonwealth governments.
Personal Circumstances	Ageing of Optometrists; health issues	Family friendly work environment to attract and retain optometrists	Support for infrastructure to enable succession planning	All levels of government
Administration/ Political	Access to Rural Hospitals. Scholarships	Shared care model of practice in local rural hospitals	Application of review by Commonwealth and state governments.	Commonwealth and state governments

This table has been replicated for optometrists using a model produced for rural general practitioners (26).

### **8.3 Future Directions**

Further study is needed to determine the status of eye health across Australia. A national longitudinal vision study which samples across the RRMA's of all states of Australia to investigate the nation's eye health would give policy makers greater information to document differences and requirements. This information could be accessed from optometrists' record databases, and could be retrospectively selective to supplement the two other vision related studies (VIP and BMES) for a balanced viewpoint thus incorporating rural optometry.

The economic considerations of viability of rural optometry practice were not covered sufficiently in this thesis. Further research would include the effect that overseas-owned corporate chains have on the profession, particularly in rural areas. Different models of rural and remote practice could be investigated showing the importance that practice economics plays in maintaining practice viability.

Another area which relates to rural workforce issues which requires further research is the cultural influences that occur in family and social networks of optometry graduates. Such a study could help to find reasons why some graduates from ethnic groups do not "go rural" for long, if at all and address these with positive solutions.

Finally, the candidate has found that rural and remote optometrists need a sense of adventure and a sense of humour. They need to be independent and self-reliant, yet able to work in small communities while providing comprehensive eye care. They are a unique group of individuals that this study has found to be an endangered species.



## **Abbreviations**

ABS	Australian Bureau of Statistics
ACCHS	Aboriginal Community Controlled Health Service
ACSA	Aged and Community Services Australia
AHMRC	Aboriginal Health and Medical Research Council
AIHW	Australian Institute of Health and Welfare
AMA	Australian Medical Association
ARIA	Accessibility/Remoteness Index of Australia
ASGC	Australian Standard Geographical Classification
ATAR	Australian Tertiary Admission Rank
BMES	Blue Mountain Eye Study
CVFT	Computerized Visual Function Test
EFTO	Equivalent Full Time Optometrist
EHC	Eye Health Coordinator
FIFO	Fly In/ Fly Out Worker
FTE	Full Time Equivalent
GDP	Gross Domestic Product
GP	General (Medical) Practitioner
HELP	Higher Education Loan Programme
ICEE	International Centre for Eye care Education

KRDRS	Katherine Region Diabetic Retinopathy Study
LGA	Local Government Area
NATSIHS	National Aboriginal and Torres Strait Islander Health Survey
NRHA	National Rural Health Alliance
NSW	New South Wales
NT	Northern Territory
NTEHP	National Trachoma and Eye Health Program
OAA	Optometrists Association Australia
OTDS	Overseas Trained Doctors Scheme
PATS	Patient Assisted Transport Scheme
PHC	Primary Health Care
Qld	Queensland
QUT	Queensland University of Technology
RCS	Rural Clinical Schools
RRMA	Rural, Remote and Metropolitan Areas Classification System
SA	South Australia
SARRAH	Services for Australians in Rural and Remote Allied Health
SLA	Statistical Local Area
TRA	Theory of Reasoned Action
UDRH	University Departments of Rural Health

UNSW	University of NSW
VIP	Visual Impairment Project
VOS	Visiting Optometrists Scheme
WA	Western Australia

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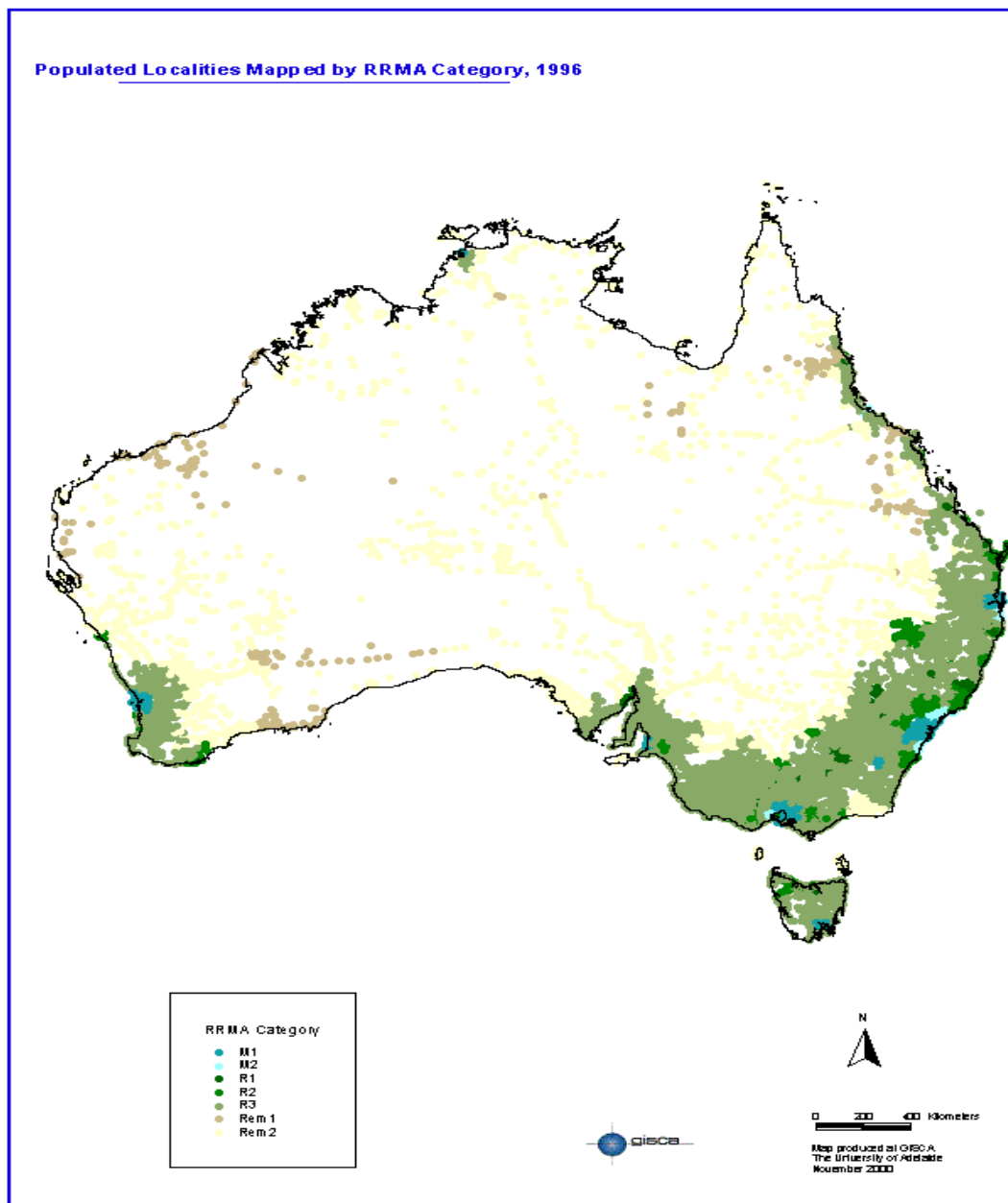
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## **Appendices**

## Appendix 1: Populated Localities mapped by RRMA 1996



## Appendix 2: Human Research Ethics Approval Letter

THE UNIVERSITY OF  
NEW SOUTH WALES



SCHOOL OF OPTOMETRY  
AND VISION SCIENCE

### Panel D Human Research Ethics Advisory panel

April 15th 2007

*Mrs Robyn Main*  
*School of Optometry and Vision Science*

*Re: Issues pertaining to rural and remote optometry*

**Reference Number: 06427**

Investigators: Mrs Robyn Main and Professor Stephen Dam

At its meeting of October 2006 the Panel D Human Research Ethics Advisory panel has recommended to your Head of School and the Human Research Ethics Committee that this project, is of minimal ethical impact and may proceed with full approval. This project is approved for 1 year from the date of this letter.

We wish you every success in your project.

Yours sincerely

A/Professor Fiona Stapleton, Convenor,  
Panel D Human Research Ethics Advisory panel

Head - School of Optometry and Vision Science

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## **Appendix 3: Survey to Rural and Remote Area Optometrists**

THE UNIVERSITY OF  
NEW SOUTH WALES



**SCHOOL OF OPTOMETRY  
AND VISION SCIENCE**

Approval No.064027

### **Survey Questions for Issues Pertaining to Rural and Remote Optometry.**

You are invited to participate in a study that affects rural and remote optometry. There is an oversupply of optometrists nationally, but there are perceived shortages of optometry services in rural and remote areas. You have been selected as a participant because you have provided optometry services to rural communities in the past, present and perhaps, future.

Your contribution to this study will require your participation in a simple emailed survey herewith, conducted by research optometrist, Robyn Main. It should take about 15 minutes.

By participating in this study, you are contributing to the on-going research to address the needs of optometrists and those Australians who live and work in rural and remote Australia. This accounts for approximately 3 million people.

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission, except as required by law. We plan to discuss and publish the results in a vision science research journal. In any publication, information will be provided in such a way that you cannot be identified.

Complaints can be directed to the Ethics Secretariat, University of NSW, Sydney 2052. Any complaint you make will be treated in confidence and investigated, and you will be informed of the outcome.

Your decision whether to or not to participate will not prejudice your future relations with UNSW. If you decide to participate, you are free to withdraw your consent and discontinue at any time without prejudice.

Thank you for your cooperation. We are hoping to use these results of the survey to support optometrists who work in rural and remote communities and also offer all Australians a “fair go” to access optometry services.

## Section 1    Personal Information

Name:

1) University where you did your Optometry degree?

2) Age bracket: 20's.....30's.....40's.....50's.....60's.....70's.....

3) Male.....Female.....

4) Marital status: Married/stable relationship....      Single .... (Go to Q7)

5) Partner's Occupation...

6) Are they currently employed in that occupation? ...

7) How many children do you have in the following age-bands?

0-5yrs..... 6-12yrs.... 13-18..... 19+....

8) What is your ethnic origin?

Caucasian..... Chinese..... Middle Eastern.....

S-E Asian..... African-American..... Aboriginal.....

9) Number of years you lived in rural Australia prior to entering university?

10) Number of yours your spouse/partner lived in rural Australia before adulthood?

Rank in importance to you: 1-5 (1 most important, 5 least)

11) Why did you **start** practising in a rural/remote area?

Choices are:

- a) Country lifestyle is appealing compared to city life. ( )
- b) Family connections in the area. ( )
- c) Could see a need for optometry services in the area. ( )
- d) From overseas and was sponsored to work in the area. ( )
- e) Any other reason? ( )

12) Why do you stay?

- a) Enjoy the lifestyle ( )

- b) Financial rewards ( )
- c) Can't sell practice ( )
- d) Family reasons ( )
- e) Additional reasons which are... ( )

13) What (if any) would assist you professionally to remain in a rural area?

- a) Locum services partly sponsored by the government ( )
- b) Continuing Education partly “ “ “ “ ( )
- c) Teleconferencing ( )
- d) Higher Medicare rebates for travelling to the more remote areas ( )
- e) Ophthalmologist support ( )

14) In 5 years from now, do you intend to:

- a) Still be in this practice? ( )
- b) Left and started in another rural location? ( )



c) Left and started in a metropolitan location? ( )

d) Retired ( )

e) Other ( )

15) What (if any) would be the main reasons you would consider leaving your rural area of practice?

a) Health reasons ( )

b) Professional reasons ( )

c) Personal Reasons ( )

d) Children's education ( )

e) Retirement ( )

f) Other ( )

## Section 2 Your Practice Profile

Questions about your style of practice

16) Address (as) of your practice(s)

17) How would you describe the ownership status of your practice?

(i.e. Individual proprietor, partnership, corporate chain....)

18) How would you describe the main demographics/industry of the catchment population?

a) Agricultural

b) Tourism

c) Mining

d) Aboriginal

19) What is the maximum distance travelled typically, for patients to see you for your services?.....km

20) How far do you travel to see patients to give your services?.....km

21) How many different locations do you travel to in a 12 month period?.....

22) What is the average waiting time for appointments?

a) Daily (can be seen same day)

b) < 1 Week

c) > 1 Week < 1 Month

d) > 1 Month

23) Do you perceive the optometry service level is adequate for your area?

Choices:

Primary practice?

a) Satisfactory

b) No, there are too many optometrists in the area

c) No, there are too few optometrists in the area

Secondary practice?

a) Satisfactory

b) No, too many

c) No, too few

24) Scope of Practice

Is your practice:

- a) Traditional full-scope with dispensing services
- b) Consulting only with independent dispenser
- c) Consulting only with chain dispensing group eg OPSM

25) What additional optometric services do you provide at your practice?

- a) Computerized Visual Fields
- b) BIO
- c) Retinal Photography
- d) Behavioural Optometry
- e) Therapeutic drug administration
- f) Other?

Annual Leave

26) In the last 12 months, how many weeks leave did you have? .....weeks.

27) Source of Locum Cover was?

- a) From within your own practice
- b) Other local practice
- c) Private locum agency
- d) OAA Victorian locum scheme
- e) No locum available (practice not staffed by optometrist)

### **Section 3 Recruitment Issues**

28) Would you be prepared to support (billet) an optometry student (3rd/4<sup>th</sup>/5th year) in a preceptorship program in assoc with the universities?

29) Would you be prepared to speak to Year 12 students at your local High School studying Physics about the optometry profession?

Or offer Work Experience placements?

End of Survey

Thank you once again for your time, support and honesty in completing this survey.

# Optometric Services by MBS Item Number and RRMA of Patient - 2005/06 Year of Processing\*

## Appendix 4: Medicare Data for Optometry using RRMA of Patient Year 2005/06

Item Number	Number of Services by RRMA of Patient							
	Capital City	Other Metro Centre	Large Rural Centre	Small Rural Centre	Other Rural	Remote Centre	Other Remote Area	Total
10900	1,739,322	222,961	177,805	187,026	346,523	24,306	29,807	2,727,750
10905	2,558	306	211	239	324	25	22	3,885
10907	162,017	20,807	15,438	15,758	27,339	2,618	3,156	247,133
10912	32,258	4,431	3,315	4,450	7,265	255	510	52,484
10913	64,138	8,960	8,509	9,112	14,471	427	840	106,457
10914	98,064	16,987	11,333	15,106	23,534	685	1,694	167,393
10915	30,588	7,117	4,644	7,388	12,682	869	1,430	64,718
10916	214,018	24,806	18,376	20,031	31,170	2,466	3,208	314,075
10918	852,572	106,602	89,370	95,675	164,711	10,439	11,191	1,330,560
10921	21,539	1,103	739	668	1,155	66	83	25,353
10922	2,728	339	214	257	376	28	26	3,968
10923	2,642	205	179	136	260	22	23	3,467
10924	1,515	134	110	115	209	15	17	2,115
10925	562	39	47	29	64	n/a	n/a	750
10926	n/a	-	-	n/a	n/a	-	-	9
10927	87	n/a	n/a	7	22	n/a	n/a	138
10928	n/a	n/a	n/a	-	n/a	n/a	n/a	37
10929	181	13	13	24	n/a	n/a	n/a	253
10930	4,095	209	175	134	223	9	18	4,863
10931	1,312	78	84	81	235	8	13	1,811
10932	429	23	21	n/a	61	n/a	n/a	557
10933	3,867	323	183	143	336	10	15	4,877
10940	97,036	15,386	13,537	16,469	26,205	1,300	1,729	171,662
10941	3,847	569	451	700	924	56	61	6,608
10942	2,983	485	462	378	688	7	30	5,033
10943	9,453	981	895	589	1,491	48	111	13,568
Total	3,347,848	432,876	346,121	374,529	660,290	43,675	53,985	5,259,324

\* These statistics only relate to services rendered on a fee for service basis for which claims were processed by Medicare.

## **Appendix 5: List of publications and other contributions rising from work undertaken in this thesis**

1. National Rural Health Alliance newsletter “Partyline” Number 33, August 2008

“Without Vision, the People Perish”

2. The 10<sup>th</sup> National Rural Health Conference Paper and Presentation:

“Rural Optometry in Australia” (Cairns 2009)

3. Recommendations from this thesis were collected at the above conference and were forwarded as part of a national submission on health reform for rural and remote Australia to the federal Minister for Health in 2009. [http://10thnrhc.ruralhealth.org.au/papers/docs/Main\\_Robyn\\_C1.pdf](http://10thnrhc.ruralhealth.org.au/papers/docs/Main_Robyn_C1.pdf)

4. General Practitioners and Primary Health Care Research Conference 2009 (Melbourne)

Poster Presentation, “Without Vision, the People Perish”.

5. Euro-Pacific Eyecare Conference 2009, Selva, Val Gardena, Italy.

Lecture “Issues Pertaining to Recruitment and Retention of Rural and Remote Optometrists in Australia”

6. Submission to National Eye Health Initiative 2009, PowerPoint: “The Healing Tribe”.

7. The 2010 Primary Health Care Research Evaluation and Development (PHCRED) WA Division Annual Research Conference “Partnerships in Practice” (Perth, 2010) Abstract and Powerpoint Presentation, “The role and recruitment of optometrists in the primary eye health team”.