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Rural Home Modification: Overview and Policy Issues in Rural and Regional Australia

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Occasional Paper: Rural Home Modification: Overview and Policy Issues in Rural and Regional Australia.
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Occasional Paper: Rural Home Modification: Overview and Policy Issues in Rural and Regional Australia.
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Contents

Occasional Paper: Rural Home Modification: Overview and Policy Issues in Rural and Regional Australia.
November 2009; 2nd printing June 2014
ISBN: 978-0-7334-2712-1 www.homemods.info

Tables

Occasional Paper: Rural Home Modification: Overview and Policy Issues in Rural and Regional Australia.
November 2009; 2nd printing June 2014
ISBN: 978-0-7334-2712-1 www.homemods.info

Background

According to the World Urbanisation Prospects (United Nations Population Division, 2007), Australia is regarded as one of the most urbanised countries in the world. As of 2005, metropolitan residents accounted for 48.6% of the world's total population, and in developed countries this trend increased to 74.0%. In Australia, people living in capital cities accounted for 88.2% of the total population, with this proportion estimated to increase to 93.8% by 2050. Rural depopulation and demographic urbanisation in Australia is associated with generational trends of migration out of rural areas. One of the key features of this demographic dynamic in rural areas is the mass departure of young people aged 15-24 years old (ABS, 2003b). As a result, the proportion of the population aged 65 year and over in non-metropolitan areas is increasing (Hugo, 2002).

Due to the functional decline associated with older age, it is generally assumed that a community with a disproportionate number of older people has greater health care needs and demands on resources. However, migration of young people to metropolitan areas also contributes to a deficit of health services for the older population (Larson, 2006). The remaining rural health work force is also ageing (Hegney & McCarthy, 2000) and thus their projected length of stay at work in rural areas is decreasing (Strasser, Hays, Kamien, & Carson, 2000). Lack of funding and of staff has led to limited health services in rural areas, and the recruitment and retention of younger skilled health professionals has been a top priority in the Australian rural health practice (Australian Health Workforce Advisory Committee, 2003; Hegney, McCarthy, Rogers-Clark, & Gorman, 2002; Struber, 2004).

Many policy efforts have been made for the adequate provision of health services in rural and remote areas (Humphreys, Hegney, Lipscombe, Gregory, & Chater, 2003). Major concerns so far have been the delivery of primary care[1], health promotion and illness prevention (Francis, 2005). Thus, focus has been placed on the 'mainstream' health services provided by medical staff such as nurses, doctors, and those employed in community health centres. However it is claimed that mainstream health programs have never been successful in meeting the needs of rural residents (Smith, Humphreys, & Wilson, 2008). A new solution for sustainable rural health care is required to incorporate more active collaborations with other lines of health service provision (Larson, 2002).

Recently, emphasis on home modification has been supported in health care practice as it can play an important role in health care through injury prevention, particularly among older people. Injury is regarded as a disease, as it leads to morbidity and hospitalisation for older people (Sattin, 1992). Strong evidence suggests that home

[1] By definition, primary health care means the first level of contact with the patient and the health system. Generally primary health care is provided by 'GPs, nurses in rural and remote areas, and others who have initial contact with the public seeking a health service' (Wilkinson & Blue, 2002, p. 332).

Occasional Paper: Rural Home Modification: Overview and Policy Issues in Rural and Regional Australia.
November 2009; 2nd printing June 2014
ISBN: 978-0-7334-2712-1 www.homemods.info

modification reduces the injuries older people experience at home (Chang et al., 2004; Haastregt, Diederiks, Rossum, Witte, & Crebolder, 2000), and environmental intervention can prevent injury and delay or reduce health care facility utilisation (Kiel, O'Sullivan, Teno, & Mor, 1991; Tinetti & Williams, 1997). Home modification is expected to fill the gap between increasing health care needs and an under-supply of health care services in rural areas.

Despite its benefits, home modification is not promoted within the rural health care system. Rural home modification in Australia has been largely neglected as an area for research. Exploratory studies that examine the significance of the rural-urban distinction from a home modification perspective are not easily accessible. A systematic study of rural home modification issues is required. Further research is needed to investigate a range of topics including the identification of rural-urban differences in housing environments, usage and demand for home modification.

Aim

This study is exploratory by nature, and aims to present comprehensive features of rural home modification in Australia. Based on the findings, this report will:

- contribute to the identification of policy issues in home modification in rural areas,
- extract the policy implications for a wider application of home modification and
- recommend policy initiatives that promote age-friendly housing environments in rural areas through home modification.

Defining rural areas

A diverse set of definitions for the term “rural area” is currently in use, and any new classification can be created based on a range of indicators, which could be quantitative and qualitative or geographical and socio-demographic. Three major remoteness classifications are currently used: the RRMA (Rural, Remote and Metropolitan Areas) classification, the ARIA (Accessibility/Remoteness Index of Australia) classification, and the ASGC (Australian Standard Geographical Classification) Remoteness Areas (Australian Institute of Health and Welfare, 2004). The oldest of these classification systems, the RRMA classification, consists of three zones based on population size: Metropolitan, Rural and Remote, as well as 7 sub-classes.

Rural areas are defined as those with a population of 5,000 to 99,999 and remote areas as those with populations less than 5,000. The ARIA classification system focuses on distance by road to nearest service centres in order to represent the accessibility and availability of goods and services. It categorises 11,338 non-metropolitan areas as ‘highly accessible’, ‘accessible’, ‘moderately accessible’, ‘remote’ and ‘very remote.’ The ASGC classification, which is a structure of division of areas for the purpose of statistics used by the Australian Bureau of Statistics, incorporated the

Occasional Paper: Rural Home Modification: Overview and Policy Issues in Rural and Regional Australia.
November 2009; 2nd printing June 2014
ISBN: 978-0-7334-2712-1 www.homemods.info

enhanced measure of the ARIA to categorise areas as ‘major cities’, ‘inner regional’, ‘outer regional’, ‘remote’ and ‘very remote.’

There is no standardised classification in use and as a result it is hard to draw a clear line between rural and urban areas. The literature explored in this review applied different classifications of rural and urban and many studies did not indicate a clear definition. In general, major cities and urban centres with population of 100,000 or more, were classified as urban areas. Therefore, rural areas are, at least, regarded as non-metropolitan areas. Remote areas were included in classifications of rural areas. This study defines rural areas as those outside of metropolitan and major cities, including inner/outer regional and remote areas. This inclusive definition has an advantage as it enables literature that does not offer a classification distinguishing between rural and urban areas to be included for review, allowing as many relevant issues as possible to be identified.

It should be noted that rural areas are heterogeneous and different features can be shown when rural areas are identified individually. The following statement by Share (1990) is therefore pertinent: “any attempt to treat the rural as a single identity is fraught with danger.…The type and range of housing provision and the range of housing needs varies considerably across rural settlements” (Share, 1990, p. 16). For example, population structure is different between regional and remote areas. The movement towards regional areas among retired persons and the higher proportion of Indigenous people in very remote areas represent diversity in home modification needs and require different approaches. Drawing from the variety of definitions of rural areas used in the literature, this study will seek to disaggregate rural areas into subdivisions whenever it is possible, in order to discover variations within rural areas.

Issues impacting on rural home modification

A higher proportion of older adults

According to the 2003 Census, of the total 2,370,900 people aged 65 years and over in Australia, 35.6% (843,900) were living in regional and remote areas (ABS, 2003c) and the proportion of older people in rural areas is higher than metropolitan areas (Australian Institute of Health and Welfare, 2007). 26.9% of people aged 65 and over live in inner and outer regional areas of Australia, compared to 12.3 in major cities (ABS, 2003a). As stated previously, out-flow of young adults means more older adults in rural areas. Contrary to the out-migration of young people from rural areas, population movement from metropolitan into regional areas among old people has also been identified. It is assumed that this is due to a preference for regional areas among retired people, and the relatively lower cost of living in regional areas compared to metropolitan areas (ABS, 2003a).

Disability rate increases with age, reaching 92% for those aged 90 years and over (ABS, 2003d). Based on this observation, higher levels of functional decline and disability are characteristic among the growing numbers of elderly people in rural and

Occasional Paper: Rural Home Modification: Overview and Policy Issues in Rural and Regional Australia. November 2009; 2nd printing June 2014
ISBN: 978-0-7334-2712-1 www.homemods.info

regional areas. Environmental gerontologists argue that housing and residential environments are crucial for the maintenance of functional ability and prevention of disability in older people. Home modification has emerged as an effective strategy to cope with functional decline in older people. A higher proportion of older adults in rural areas provide a persuasive rationale for home modification intervention.

Access to health services

Health disadvantage in rural areas has been one of the greatest concerns in health service provision in Australia. People living in rural areas have poorer health status than their urban counterparts (Phillips, 2002). Lack of access to health care services including general practitioners, pharmacists, medical specialists, and to nursing home accommodation, is seen as one of the causes of higher mortality rates and consequently of lower life expectancy (Australian Health Ministers' Conference, 1996; Humphreys, 1999; Larson, 2002). Despite a number of efforts to improve rural health, the health needs of rural residents have not been successfully met (Smith, et al., 2008). There have been consistent difficulties in attracting clinical health professionals and retaining them in non-urban areas; according to Humphreys, Wakerman, & Wells (2006) it is unlikely that governments will maintain or increase health care provision to diminishing rural communities.

A viable solution to the problem of access to health care in rural areas could be in the utilisation of multi-disciplinary services including environmental intervention in the home to decrease medical health care needs of older people. Housing environments have a strong impact on the health status of old people both physically and mentally (World Health Organization, 2002) and home modification is regarded as integral in healthy ageing by reducing environmental hazards in the home (Stevens, Holman, & Bennett, 2001). Therefore, the role of home modification is imperative for establishing a positive and sustainable rural health program for older people. Home modification is expected to compensate for the lack of health care provision in rural areas and reducing the health care needs of older people through prevention from injuries such as falls.

Higher incidence of falls

Falls account for 40 per cent of traumatic injuries occurring in the elderly population, and are a "significant cause of disability and death" in older persons (Steinweg, 1997, p. 1815). According to the Australian Institute of Health and Welfare, most deaths from injury in the over 65 years age group are related to the after-effects of falls (Strong, Trickett, Titulaer, & Bhatia, 1998). This report further associates increasing mortality from injury with remoteness, particularly for males, and identifies that hospitalisation rates for falls in people aged 65 years or more are higher in rural and remote zones. A higher incidence of falls among older people in rural areas contributes to a higher rate of mortality. The higher mortality rates from falls among rural older people compared with their metropolitan peers highlights the importance of falls prevention strategies and education particularly in rural areas.

Occasional Paper: Rural Home Modification: Overview and Policy Issues in Rural and Regional Australia.
November 2009; 2nd printing June 2014
ISBN: 978-0-7334-2712-1 www.homemods.info

It is recognised that more falls might occur outdoor than indoor in rural environments as rural work involves more fall-related physical activities such as stepping off and on a moving tractor, pruning trees, and working outdoors in the rain (Baldwin, Craven, & Dimond, 1996, p. 19). No research has been found that compares the fall prevention effects of home modification between rural and urban areas or between indoor and outdoor spaces within rural areas. However, home modification is expected to serve at least as a preventive remedy for fall incidence occurring indoors and subsequently decrease morbidity and mortality rates among physically frail older people in rural areas.

Substandard housing environment

Less attention has been given to housing quality issues in rural Australia, and much housing-related research has been focused on metropolitan areas (Beer, 1998). Burbidge and Winter (1995) summarise the three aspects of housing to be discussed when investigating rural housing;

- quality of occupancy including overcrowding or utilisation of housing space,
- dwelling quality which refers to the physical aspects of a property, and
- housing costs or affordability.

Research on rural housing has mainly focused on housing supply and home ownership (Bourassa, Greig, & Troy, 2006; Tonts, Fisher, Owens, & Hillier, 2001). Therefore, literature that examines the second aspect of rural housing (i.e. characteristics of physical conditions) of rural housing is particularly rare.

An earlier study on housing quality in rural areas by MSJ Keys Young Planners (1978) found that the age and structural deformation of dwellings are the biggest concern of rural residents. Based on a survey of residents of selected rural areas, it classified one house in four as poor in quality, thus needing replacement or major repairs or renovations. It documented that rural residents tend to undertake makeshift repairs so that problems are deferred rather than addressed. A more recent study identified that the poor physical conditions, as a proportion of housing stock were concentrated in some peripheral rural areas (Australian Housing Research Council, 1989). However, because of a long term decline in the value of houses and economic difficulties, many families in non-metropolitan Australia have no incentive to spend money on housing, leaving older houses unmaintained or unrenovated (Budge, Hugo, & D'Rozario, 1992).

No systematic quantitative assessment of the accessibility of rural dwellings or the home modification needs of rural Australians was found. However, the need for policy intervention in rural housing is apparent. According to a report on the American experience of aged housing, the need for structural repair and maintenance was much higher in dwellings owned by rural older people compared with non-rural older people (Liebig, 1998). Based on the sub-standard physical conditions of rural housing, it is hypothesised that rural older people are subject to an increased risk of injury. Inadequate housing is associated not only with the risks of injury but also with the health status and further quality of life of rural residents (Hillier, Fisher, & Tonts, 2002).

Occasional Paper: Rural Home Modification: Overview and Policy Issues in Rural and Regional Australia.
November 2009; 2nd printing June 2014
ISBN: 978-0-7334-2712-1 www.homemods.info

Higher attachment to home

The behavioural characteristics of rural residents strengthen the necessity for adequate provision of rural home modification. Evidence shows that all rural adults, not just older people have higher rates of leisure time involving physical inactivity than urban adults (Centre for Disease Control and Prevention, 1998; Martin, et al., 2005). Rural adults' inactivity results from disadvantageous rural environments; generally rural communities are characterised by an absence of sidewalks, streetlights, and exercise facilities, which promote the high level of physical inactivity among rural residents (Brownson, et al., 2000; Wilcox, Castro, King, Housemann, & Brownson, 2000). An inaccessible environment intensifies the likelihood of being house-bound for rural elders and this is compounded by the trend of time spent at home increasing as residents get older (Lindesay & Thompson, 1993).

Another characteristic among rural elders in relation to housing is a reluctance to move from their homes. In spite of poor housing, older people do not want to move because the home has psychological and symbolic meaning which strengthens as residents age (Gattuso, 1996). There is a general tendency of mobility rates decreasing with age (ABS, 2003d), and this has links to the risk of falls and other co-morbidities. These in turn, lead to further time spent in the home. In addition, a higher proportion of older people in rural areas means a lower incidence of residential change. The greater physical and psychological attachment of rural elders to the home provides rationale for supporting an increase in home modifications service provision to improve safety and comfort while fulfilling daily activities at home.

Actual conditions of rural home modification

Data

There has been an overall examination on home modification service usage in Australia (de Jonge, Ainsworth, & Tanner, 2006; Jones, de Jonge, & Phillips, 2008) however no study thus far has investigated the rural-urban differences in actual conditions of home modification. Fortunately, the Australian Government has developed a Minimum Data Set (MDS) which is a mechanism for collecting consistent information on the delivery of HACC services throughout Australia. The MDS is a set of nationally agreed data items collected by all HACC service providers on their clients. This data enables analysis on spatial variations in relation to home modification and maintenance usage.

This study analysed the HACC MDS 2006, and dealt with only home modification services excluding home maintenance. By recoding postcodes into the ASGC remoteness index, this study classified all the regions into five categories: major cities, inner regional, outer regional, remote and very remote. And then, re-grouping has been made into urban and rural by recoding major cities into urban and all the other categories into rural. Adopting the ASGC index has advantage as it allows the outcomes of the HACC MDS to be compared with population demographics which is

Occasional Paper: Rural Home Modification: Overview and Policy Issues in Rural and Regional Australia. November 2009; 2nd printing June 2014
ISBN: 978-0-7334-2712-1 www.homemods.info

produced by the ABS. The outcomes will be shown at two levels; first, urban and rural difference, and second, variations within rural areas. Among 95,808 in total, 28 cases have been excluded because their postcodes were not covered by the ASGC remoteness references.

Although the HACC MDS is regarded as the most comprehensive and the only data in Australia that can provide information about home modification service, technical improvements to secure the quality of data were seen to be required. The most serious defect identified by this study is that there were too many ineffective values, which were either out of the response domain, inadequately described or not answered. For the most part, this resulted from non-standardised data collection process between states and territories (Hodges & Bridge, 2007). Therefore, it is noted that a considerable quantity of inadequate data has flawed the comparison of differences between urban and rural and between remoteness classifications. During the analysis process where ineffective cases were excessive and skewed the data set they were excluded to minimise the misinterpretation of the analysis outcomes.[2] However, despite the above shortcoming, the sample size of the HACC MDS was seen to be large enough to provide information about actual conditions of home modification service usage.

Service usage

As was expected, the majority (66.5%) of home modification service users were urban residents. Compared with the proportion of rural population, relatively more inner regional residents used home modification services. This seems related to movement of older people towards inner regional areas, possibly to be closer to health infrastructure and services, or the increased utilisation of available services by people living in these areas.

Although small in absolute numbers of population, Remote/Very Remote areas showed signs of disadvantage in the provision of home modification service; compared with the share of population, these two areas had lower service usage. It should be noted that this outcome did not reflect the efforts that home modification users made to arrange home modification services. This is to say that home modification users in remote areas might have more difficulties in sourcing occupational therapists to assess their needs and need longer timeframes to complete home modifications depending on the availability of builders and materials required.

[2] There is no standard criterion for the toleration of ineffective data. This study excluded the ineffective cases in the individual analysis when they are over 5% of the total cases.

Occasional Paper: Rural Home Modification: Overview and Policy Issues in Rural and Regional Australia.
November 2009; 2nd printing June 2014
ISBN: 978-0-7334-2712-1 www.homemods.info

Table 1. Home modification users in comparison with population distribution (%)

N=95,780	Region		ASGC					Total
	Urban	Rural	Major cities	Inner regional	Outer regional	Remote	Very Remote	
Service users	66.5	33.5	66.5	23.2	9.4	0.6	0.3	100
Share of population*	-	-	68.4	19.7	9.5	1.5	0.8	100

*** Source: (ABS, 2008)**

Demographic characteristics

Age

With most (85.3%) of home modification users being aged 65 and over, the average age was significantly higher in urban areas than rural areas. When age distribution of home modification users by remoteness was examined, a decrease in average age was identified. Based on this observation, disadvantage in the use of home modification services in Remote/Very Remote areas is associated with less accessibility to home modification services with remoteness among the elderly.

Table 2. Age (%)

N=95,780	Region		ASGC					Mean
	Urban	Rural	Major cities	Inner regional	Outer regional	Remote	Very Remote	
Under 64	13.7	16.7	13.7	16.5	16.5	23.6	19.7	14.7
65 and over	86.3	83.3	86.3	83.5	83.4	76.4	80.0	85.3
Out of range[3]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Average age	75.6	74.4	75.6	74.4	74.7	71.4	72.6	75.2

(Pearson's Chi-square = 12.308, p<.000)

Gender

The majority (62.5%) of home modification clients were female, and while this tendency was stronger in Urban areas higher numbers of females clients in home modification service usage was true of all the areas. The male to female gender ratio changes as areas get further away from a regional centre, because of male-dominated industries in remote areas such as mining, agriculture, forestry and fishing (ABS, 2008). However, gender ratio by remoteness does not explain the whole situation; even where there are

[3] **Some invalid data were excluded in the calculation. For example, ages less than '0' and '111 and over' were deemed to be invalid. Totally 9 cases were treated as being 'out of range.'**

Occasional Paper: Rural Home Modification: Overview and Policy Issues in Rural and Regional Australia.
November 2009; 2nd printing June 2014
ISBN: 978-0-7334-2712-1 www.homemods.info

more males than females, female clients outnumbered males. Therefore, it can be safely inferred that females are significantly more likely to be consumers of home modification services regardless of location or gender ratio.

Table 3. Gender in comparison with gender ratio (%)

	Region		ASGC					Mean
	Urban	Rural	Major cities	Inner regional	Outer regional	Remote	Very Remote	
Male	35.7	39.0	35.7	39.8	37.2	33.2	43.7	36.8
Female	64.1	59.5	64.1	59.5	59.1	66.6	56.0	62.5
NS/ID*	0.2	1.5	0.2	0.7	3.6	0.2	0.4	0.6
Sex ratio**	-	-	97.6	98.9	104.4	111.4	113.0	98.8

(Pearson's Chi-square = 684.605, p<.000)
*** Not stated or inadequately described**
**** Males per 100 females.**

Indigenous Status

Indigenous people account for a very small minority (1.2%) of home modification users. Considering that Indigenous people make up 2.5% of the total Australian population their home modification service usage was significantly low and this indicates that Indigenous people tend to use home modification services less than non-Indigenous people. As was anticipated, the percentage of home modification service use by Indigenous people was higher in rural areas, and the proportion of Indigenous home modification users increased along with the remoteness. However, spatial disparity was clear in the use of home modification services among Indigenous population. As Table 4 indicates the gap between Indigenous home modification users and their share of population widened with remoteness, although there was an exception in Remote areas.

Occasional Paper: Rural Home Modification: Overview and Policy Issues in Rural and Regional Australia.
November 2009; 2nd printing June 2014
ISBN: 978-0-7334-2712-1 www.homemods.info

Table 4. Indigenous status (%)

N=86,421*	Region		ASGC					Mean
	Urban	Rural	Major cities	Inner regional	Outer regional	Remote	Very Remote	
Indigenous	0.6	2.3	0.6	1.5	2.4	24.3	16.4	1.2
Non-Indigenous	99.4	97.7	99.4	98.5	97.6	75.7	83.6	98.8
Share of population**	-	-	0.9	1.9	4.7	11.2	41.6	2.5

(Pearson's Chi-square = 459.074, p<.000)

* 9,359 cases were excluded because of data inconsistency, incompleteness and/or or non-applicability

** Source: PO Box 1257 Wollongong 2500

Language spoken

Most (85.4%) of home modification service users had an English-speaking background. Cultural and linguistic diversity (CALD) was relatively strong in urban area Major cities and Remote areas have the highest CALD among home modification users, while Inner regional and Very remote home modification users have relatively homogeneous background.

Table 5. CALD (%)

N=95,780	Region		ASGC					Mean
	Urban	Rural	Major cities	Inner regional	Outer regional	Remote	Very Remote	
English speaking	82.3	91.3	82.3	92.4	89.3	82.1	96.8	85.4
Non-English speaking	17.7	8.7	17.7	7.6	10.7	17.9	3.2	14.6

(Pearson's Chi-square = 1381.388, p<.000).

Circumstances for home modification services

Living arrangements

While more than half (54.8%) of home modification users lived with their families, quite a few (42.6%) people lived alone. There was no remarkable difference in living arrangement between urban and rural areas. While no constant pattern with

Occasional Paper: Rural Home Modification: Overview and Policy Issues in Rural and Regional Australia.
November 2009; 2nd printing June 2014
ISBN: 978-0-7334-2712-1 www.homemods.info

remoteness was identified, the proportion of home modification clients who lived alone was particularly high in Very Remote areas.

Table 6. Living arrangements (%)

N=87,055*	Region		ASGC					Mean
	Urban	Rural	Major cities	Inner regional	Outer regional	Remote	Very Remote	
Lives alone	43.2	41.3	43.2	39.6	45.0	42.1	61.3	42.6
Lives with family	54.0	56.4	54.0	58.1	53.0	53.5	37.9	54.8
Lives with others	2.8	2.3	2.8	2.3	2.1	4.5	0.7	2.6

*** 8,725 cases were excluded because of data inconsistency, incompleteness and/or or non-applicability.**

Carer availability

As a whole, more (54.0%) home modification users had carers to provide them with assistance. However, around half (46.0%) of home modification service users were identified as not receiving care from a formal or informal source (such as a family member, friend or neighbour). As a whole, no urban-rural difference was identified in the existence of a carer. However, carer availability decreased with remoteness, although it was highest in Inner regional area, followed by Major cities. Based on these outcomes, it can be understood that people in remoter areas use home modification service to make up for the absence of a carer. That is, variations in the carer availability with remoteness play an important part in the use of home modification service.

Table 7. Existence of carer (%)

N=32,762	Region		ASGC					Mean
	Urban	Rural	Major cities	Inner regional	Outer regional	Remote	Very Rem-ote	
Has no carer	46.0	46.0	46.0	42.0	54.2	61.3	69.0	46.0
Has a carer	54.0	54.0	54.0	58.0	45.8	38.7	31.0	54.0

*** 63,018 cases were excluded because of data inconsistency, incompleteness and/or or non-applicability.**

Most (80.7%) of carers who provided assistance to home modification service users lived in the same household, with family members comprising the majority of co-resident carers. There was no notable difference regarding carer residency status between urban and rural areas. The proportion of home modification users who have

Occasional Paper: Rural Home Modification: Overview and Policy Issues in Rural and Regional Australia.
November 2009; 2nd printing June 2014
ISBN: 978-0-7334-2712-1 www.homemods.info

access to assistance from a co-resident was higher in Inner regional and Very Remote areas.

Table 8. Carer residency status (%)

N=29,200	Region		ASGC					Mean
	Urban	Rural	Major cities	Inner regional	Outer regional	Remote	Very Remote	
Co-resident carer	80.1	81.8	80.1	84.2	74.4	79.6	84.4	80.7
Non-resident carer	19.9	18.2	19.9	15.8	25.6	20.4	15.6	19.3

*** 66,580 cases were excluded because of data inconsistency, incompleteness and/or or non-applicability.**

1. Accommodation status

Home modification users showed a high level (85.7%) of home ownership. This contrasts with the fact that 69% of households in Australia owned their dwellings (ABS, 2003a). This is a due to home owners having greater flexibility in decision-making to modify their home than tenants. Owner occupancy among home modification users was higher in urban area than in rural areas. A pattern was identified in relation to residential settings of home modification users; while private home ownership among home modification users decreased with remoteness, people in rented accommodations or in care facilities increased. Diminishing home ownership with remoteness among home modification users was consistent with the trend of the whole population of Australian households.

Table 9. Accommodation (%)*

	Region		ASGC					Mean
	Urban	Rural	Major cities	Inner regional	Outer regional	Remote	Very Remote	
Private owner	87.3	82.4	87.3	83.2	82.3	61.3	63.2	85.7
Private rental	6.9	10.2	6.9	9.1	11.4	23.6	30.7	8.0
Common /group facilities	0.6	0.9	0.6	0.8	1.2	1.5	4.3	0.7
Other	2.0	2.4	2.0	2.7	1.8	2.5	1.4	2.1
NS/ID	3.3	4.1	3.3	4.2	3.3	11.0	0.4	3.6

Occasional Paper: Rural Home Modification: Overview and Policy Issues in Rural and Regional Australia.
November 2009; 2nd printing June 2014
ISBN: 978-0-7334-2712-1 www.homemods.info

	Region		ASGC					Mean
Home ownership	-	-	69.0	72.3	68.4	57.6	35.7	69.2

(Pearson's Chi-square = 423.347. p<.000)
*** This table was produced excluding 5,173 cases coded out of data domain.**

Most (93.6%) of home modification users were in receipt of an income support payment from the government in the form of a government pension or benefit. Slightly more rural home modification users were government pension/benefit recipients. Government pension/benefit status indicates financial independence of home modification users. In general, financial disadvantage among home modification users increased with remoteness.

Table 10. Government pension/benefit status (%)

N=85,419*	Region		ASGC					Mean
	Urban	Rural	Major cities	Inner regional	Outer regional	Remote	Very Remote	
Pension/benefit	93.1	94.8	93.1	94.7	94.6	97.3	96.0	93.6
No pension /benefit	6.9	5.2	6.9	5.3	5.4	2.7	4.0	6.4

*** 10,361 cases were deemed to be ineffective. (Chi-square = 91.510, p<.000)**

Policy issues in rural home modification

Skill shortage

Lack of access to medical and allied health services has been a common problem for rural Australians. While information on medical health professionals was available, there had been no adequate information on the nation's allied health workforces until the Australian Institute of Health and Welfare conducted national Labour Force Surveys in 1998 (Larson, 2002). These surveys made estimates on the number and the distribution of occupational therapists available for the first time (Australian Institute of Health and Welfare, 2005). The role of occupational therapists is critical in the home modification process as the implementation of home modification through Home and Community Care assistance requires home assessment and recommendation from an occupational therapist.

The following table shows the numbers of health-related workers decreasing with remoteness in Australia; note the extent of an undersupply of a health care workforce varies across disciplines. The percentage ratio has been calculated using the number in each workforce per 100,000 populations as the numerator and the number of workforce in Major cities as the denominator. While workforce number per 100,000 populations means the gap between supply and expected demand of the areas, the

Occasional Paper: Rural Home Modification: Overview and Policy Issues in Rural and Regional Australia. November 2009; 2nd printing June 2014
ISBN: 978-0-7334-2712-1 www.homemods.info

percentage ratio indicates the degree of disadvantage compared with urban areas. Based on these indicators, even greater disadvantage was identified in the provision of occupational therapists than medical workers and the percentage ratio decreased more sharply in the case of occupational therapists. Very Remote areas experienced approximately four times less supply of occupational therapists compared with Major cities. Therefore, boosting the supply of occupational therapists in rural areas was required for a balance between health workforces.

Table 11. Distribution of selected health workforce

		Major cities	Inner region-al	Outer region-al	Rem-ote	Very Remote	Un-known	Mean
General practitioners	Per 100,000 population	118	92	85	76	81	n.a.	112
	Percentage ratio	100.0	78.0	72.0	64.4	68.6	-	-
Registered nurses	Per 100,000 population	886	836	753	731	756	n.a.	944
	Percentage ratio	100.0	94.4	85.0	82.5	85.3	-	-
Occupational Therapists	Per 100,000 population	31.7	20.6	18.7	24.9	8.3	n.a.	28.5
	Percentage ratio	100.0	65.0	59.0	78.5	26.2	-	-

However, the most important reason for an increase in the supply of occupational therapists is that shortage in rural areas affects the quality of outcomes of home modification. Interviews with rural occupational therapists by Cowell, Bridge and Mathews (2007) revealed that lack of staff resulted in extensive waiting lists, which in turn, resulted in less time available to each consumer and delayed home modification intervention. Not receiving timely intervention can lead to serious health problems in older people with disabilities. Understaffing also discourages the routine follow-up visits, which provide a mechanism to increase quality assurance (Klein, Rosage, & Shaw, 1999).

The difficulty surrounding rural recruitment and retention of occupational therapists, (and subsequent impact) has been well documented (Elliot-Schmidt & Strong, 1995; Lannin & Longland, 2003; Mills & Millsteed, 2002). Factors that contribute to low retention rate include lack of professional development, little professional support or recognition, pay and conditions, and family-related factors (Mills & Millsteed, 2002). In

Occasional Paper: Rural Home Modification: Overview and Policy Issues in Rural and Regional Australia. November 2009; 2nd printing June 2014
ISBN: 978-0-7334-2712-1 www.homemods.info

spite of a range of policy suggestions to improve the low retention rates of occupational therapists continue in rural areas.

Looking for alternatives to providing in-home assessment services to elders in the Atlanta area of the United States, research into a 'remote home assessment' system was undertaken (Sanford & Butterfield, 2005). Unlike a traditional in-home assessment, this research looked at remote technology using a real time tele-video protocol to collect information needed by a specialist to identify problems and prescribe home modification solutions. The advantages of remote assessment over in-home protocol are that it can reduce the barriers of time and distance for experts and the cost of home assessment. However, this technology has limitations as there are more than just measurements and observations taken by occupational therapists during an in home assessment. In addition completion of the modifications involves on-site services from builders and other labourers, then a sign-off by the scripting therapist. Despite these limitations, remote assessment may contribute to the resolution of unmet needs for home modification in rural areas by reducing the amount of visits required by the home modification practitioner, and allowing for review of the footage during the problem sensing and problem solving process. For example, it can also allow for peer review and mentoring activities to take place for less experienced therapists who cannot have a senior person with them during the in home visit.

In addition to the wider use of technologies, solutions for rural home modification require wider-ranging strategies. These strategies need to address the expressed dissatisfaction among professionals such as a lack of professional support, lack of resources and equipment, the feeling of professional isolation, and poor pay and working conditions (Elliot-Schmidt & Strong, 1995; Mills & Millsteed, 2002). Emphasis on positive aspects of rural practice including informal nature of work, autonomy and independence, good professional relationship with other allied professionals is expected to contribute to the creation of 'balance between incentives and disincentives to stay in rural practice' (Mills & Millsteed, 2002). Most of all, the role of home modification should be further integrated into a broad rural health system and recognise the unique perspective and skill set of the occupational therapist in the prescription of environmental modification to improve functional outcomes. Improvement of accessibility to home modification results in the prevention of potential illness, and the consequent reduction of health care cost requires greater recognition from policy makers.

Disadvantaged consumer groups

Based on the demographic characteristics of rural home modification user ageing, sex and Indigenous status were the contributing factors to the decreasing home modification use rate with geographical remoteness. That is, as remoteness increased, the elderly, male, and Indigenous people were less likely to be home modification consumers. Lower rates of home modification use among these groups could be explained by the following three hypotheses;

Occasional Paper: Rural Home Modification: Overview and Policy Issues in Rural and Regional Australia. November 2009; 2nd printing June 2014
ISBN: 978-0-7334-2712-1 www.homemods.info

(1) as remoteness increases, these groups would feel less physical demands for home modification or would experience fewer injuries or fewer symptoms of functional decline,

(2) as remoteness increases, they would have more care resources to provided them with assistance with activities,

(3) as remoteness increases, they would be less aware of the efficacy of home modification or have less access to home modification.

The first assumption can be easily refuted by the AIHW report which identified the increasing mortality from injury with increasing remoteness, particularly for males, and higher hospitalisation rates for falls in people aged 65 years or more in rural and remote zones (Strong, et al., 1998). The second hypothesis is also contested by the findings from HACC MDS data, which shows that male and Indigenous home modification clients in remoter areas were more likely to live alone and to have no carer (see Table 12). Thus, the elderly in remoter areas have more frustration with access to home modification services, and male and Indigenous people have less information or awareness about home modification. Therefore, more attention needs to be paid and more information needs to be provided to these most disadvantaged cohorts in rural areas.

Table 12. Availability of care resources among disadvantaged home modification

		Inner regional	Outer regional	Remote	Very Remote	Total
64 and over	Lives alone	42.2	47.8	45.4	64.7	43.9
	Has no carer	44.0	56.2	61.4	71.4	47.9
Male	Lives alone	22.9	26.9	31.6	50.4	24.3
	Has no carer	30.3	45.2	49.3	62.5	35.0
Indigenous people	Lives alone	26.8	29.2	21.5	17.8	25.7
	Has no carer	53.3	44.3	75.0	66.7	56.1

Regulatory and educational issues

Despite recent improvements, substandard housing has continued to be persistent in rural areas (Budge, et al., 1992). Compared with urban seniors, rural seniors were reported to have higher physical problems with their homes (Housing Assistance Council, 2003), which are the potential risk factors for injuries among older residents. The low-quality housing was experienced by both home owners and renters in rural seniors. However, housing deficiency rates for elderly renters in rural areas were higher than urban elderly renters (Golant & Greca, 1994), which led rural renters to the highest housing deficiency rate. High housing deficiency rate among rural renters raises difficult issues to rural home modification. As a rule, renters have restrictions on the decision-making about home modification because they would be required to have discussion or negotiation with the landlord to fulfil modification. Although the Disability Discrimination Act, Section 25 Part 2 (Australian Federal Government, 1992) protects

Occasional Paper: Rural Home Modification: Overview and Policy Issues in Rural and Regional Australia.
November 2009; 2nd printing June 2014
ISBN: 978-0-7334-2712-1 www.homemods.info

the renter from the refusal of a landlord to have reasonable alterations made to the property (ergo home modifications), it is inherent that the renter returns the property to its original state upon their departure, an activity in itself of significant cost.

The data demonstrates that home ownership decreases with the progress of remoteness. Diminishing owner occupancy can be a barrier to rural home modification practice. As a consequence, rural renters are seen to have higher needs but less opportunity to access home modification. Therefore, policy initiative is required to facilitate enactment of home modification by rural renters, and be supported by home modification practitioners such as occupational therapists and providers of retrofit services.

A related but different aspect of rural home modification is that private home ownership among home modification users decreased as people moved further from the regional centre (see Table 9), resulting in lesser demand for home modification services as these are primarily sourced by those who own their homes (NSW Department of Ageing Disabiity and Homecare, 2007). As was previously indicated, lack of perceived financial benefit is the leading cause of the lower rate of home modification among remoter home owners. In addition, mortgage payments were higher in rural than in urban areas (Budge, et al., 1992). Higher housing costs are also seen to discourage rural home owners from modifying and renovating their homes. Increased financial assistance will be helpful to activate home modification in remoter areas. More importantly changes of perception and attitudes toward home modification among rural home owners are necessary; the effectiveness of home modification is not limited to enhanced accessibility and healthier lives of the residents. More information about the investment value of home modification needs to be supplied with the rural residents. At this time there is little research evidence about financial rewards of home modification in relation to added housing value and is an area that requires further study.

The last issue identified is associated with the quality of rural home modification practice. Although the Australian Standards 1428 (AS1428) do not apply to private homes, it has been recommended to use the Standard as a guide to practice. However, interviews with occupational therapists revealed that it was not always possible and appropriate to comply with the Standards (Cowell, et al., 2007). Compliance with the AS1428 in rural practice seems to be more difficult due to the informal work nature. MSJ Keys Young Planners (1978) pointed out the relaxed regulations in rural building practice: “There is a tendency towards pragmatism in country life…the level of regulation is lower and probably better related to the circumstances that it is in the city (MJS Keys Young Planners, 1978, p. 58).” They also raised issues regarding qualification and experience of workmanship among rural builders. The consequence of loose compliance with regulations can be a lower quality of the building work. Therefore, provision of training opportunity to develop the skill and experience to home modification service suppliers are strongly suggested. As per previous comments, it should be noted this study was undertaken in 1978 and a repeat of the research would be beneficial and provide more up to data information on the state of retrofit and home modification practice in rural and remote areas of Australia.

Occasional Paper: Rural Home Modification: Overview and Policy Issues in Rural and Regional Australia.
November 2009; 2nd printing June 2014
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Summary and conclusion

This study analysed the HACC MDS data in order to overview the actual conditions of rural home modification in Australia. Despite some technical failings in the process of data collection, the HACC MDS provided useful information. In addition the publications of the Australian Bureau of Statistics and the Australian Institute of Health and Welfare were accessed for other statistics relevant to rural home modification. Australian and international literature was also reviewed in search of rural home modification policy issues.

Australian rural home modification was unable to be characterised in a simple way primarily due to variation in the population structure within rural areas. As was expected, remote areas were shown by the HACC MDS data to experience less accessibility to home modification services. However, home modification services in Inner regional areas were relatively more activated, which was estimated to have resulted from the influx of the older population, the main consumer group of home modification. Demographic factors that played significant part in the use of home modification in rural areas were age, gender, and Indigenous status. Elderly, male, and Indigenous people were less likely to use home modification service as remoteness increased and these sub groups formed the most disadvantaged cohorts in the provision of home modification. Another important finding from the HACC MDS data was that carer availability among home modification users decreased with remoteness. That is, home modification was interpreted to have stronger utility to people in remote areas in the absence of assistance from carer.

The most commonly identified policy issue in relation to rural home modification was the recruitment and retention of occupational therapists. This seemed natural because the role of occupational therapists is essential in HACC funded home modification (NSW Department of Ageing Disabiity and Homecare, 2007). They are involved in every phase of home modification from initial home evaluation to follow-up visits. Recently researched alternatives, such as a remote home assessment system (Sanford & Butterfield, 2005) was expected to address, to some extent, unmet needs for home modification services among rural residents, resulting from lack of occupational therapists. However, skill shortage in other allied professionals, particularly builders and architects has been poorly documented. Lack of these professions suggests issues regarding qualification and experience of workmanship, which might affect the outcomes of home modification. This problem can be more difficult to solve because the task of construction and installation of home modification requires on-site works; these groups cannot be replaced with a remote communication system.

Based on the findings of this study, rural residents have higher needs but more barriers for home modification than urban residents. Rural housing was seen to have more risk factors of injury due to more housing defects and deferred repairs. However the nature of the rural housing market has endowed rural occupants with less motivation to spend money on maintenance or renovation. In addition, and more importantly, home

Occasional Paper: Rural Home Modification: Overview and Policy Issues in Rural and Regional Australia.
November 2009; 2nd printing June 2014
ISBN: 978-0-7334-2712-1 www.homemods.info

ownership significantly decreased with remoteness, which was regarded as a structural obstacle for wider use of home modification in rural areas. Solutions to the discrepancy between needs of home modification and capacities of rural communities are not likely in short term. This seems to be so because the inadequate provision of home modification is not merely a matter of increasing the supply of human and material resources. More comprehensive solutions can be found through the forging of shared goals amongst policy makers, home modification service providers, and consumers about the crucial role of home modification in sustainable rural communities.

Occasional Paper: Rural Home Modification: Overview and Policy Issues in Rural and Regional Australia.
November 2009; 2nd printing June 2014
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