Who's going to care? Informal care and an ageing population

Report prepared for Carers Australia by the National Centre for Social and Economic Modelling

NATSEM
• University of Canberra •

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About NATSEM

The National Centre for Social and Economic Modelling was established on 1 January 1993, and supports its activities through research grants, commissioned research and longer term contracts for model maintenance and development with the federal departments of Family and Community Services, and Education, Science and Training.

NATSEM aims to be a key contributor to social and economic policy debate and analysis by developing models of the highest quality, undertaking independent and impartial research, and supplying valued consultancy services.

Policy changes often have to be made without sufficient information about either the current environment or the consequences of change. NATSEM specialises in analysing data and producing models so that decision makers have the best possible quantitative information on which to base their decisions.

NATSEM has an international reputation as a centre of excellence for analysing microdata and constructing microsimulation models. Such data and models commence with the records of real (but unidentifiable) Australians. Analysis typically begins by looking at either the characteristics or the impact of a policy change on an individual household, building up to the bigger picture by looking at many individual cases through the use of large datasets.

It must be emphasised that NATSEM does not have views on policy. All opinions are the authors' own and are not necessarily shared by NATSEM.

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Foreword

Over the past few years Australia's demographic pattern and the ageing population has become a major public policy issue, which is likely to be a focus of attention for many years to come as the changes and full implications are felt.

The debate so far has largely concentrated on sustaining our economic growth and living standards; managing the pressure on public finances, particularly in relation to spending on health, aged care and pension payments; and encouraging individuals to save more to fund their own retirement and reduce the demand on the public purse now and in the future.

As a major contribution to the public debate, The Myer Foundation added its perspective in 2002 by publishing *2020 – A Vision for Aged Care in Australia*. This vision outlines a range of options to achieve "an aged friendly society rather than purely an aged care system" so that older Australians can access the care and support they need, when they need it.

Subsequent to this publication, Carers Australia approached The Myer Foundation to consider more fully the role of carers in its vision. Carers Australia has become increasingly concerned, as the public discourse on Australia's ageing population has progressed, that the contribution of carers and the role of informal care in supporting ageing people with disabilities and illness has largely been overshadowed by other aspects of care. Informal care has been given little recognition, discussion or analysis and Carers Australia's aim is to rectify this.

The role of carers is paramount in considering how care to our ageing population is provided as the bulk of care is provided as unpaid care by family and friends in the person's home. In 1998, when the last published ABS survey was done, over 711,000 people aged over 65 years were living at home supported by unpaid carers, either with or without support from formal services, compared to only 127,900 people living in residential aged care.

Carers Australia is a national organisation dedicated to representing family members and friends who are unpaid carers. As such, Carers Australia is participating in this debate to highlight that the ongoing role of unpaid carers and the informal care they provide cannot be assumed as an infinite resource that will always be readily available as a first preference. We must ensure that the important role of unpaid carers and community care is recognised as a high priority in supporting the ageing population and the needs of carers are taken into account in planning and allocating resources.

To focus the debate and broaden it to include community care, both informal and formal, Carers Australia with the support of the Myer Foundation and the Brotherhood of St Laurence, has published this report. The aim is to highlight the important and integral role that carers have in supporting our frail ageing people and people with disabilities and how Australia's changing demographics are likely to impact on carers.

This study by the National Centre for Social and Economic Modelling adds a new dimension to the debate by exploring not only the demand for care but contrasting it to the likely supply of informal care over the next 30 years. The projections, which are based on a set of assumptions using current circumstances and policies, have provided us with staggering findings that, if they become reality will have vast ramifications for all of us as either carers or people needing care. Carers Australia will be giving careful consideration to the findings of the report and shaping our policies for carers and our advocacy work accordingly. The Brotherhood of St Laurence will also be utilising the findings of the report to consider, in particular, the financial implications of caring as part of their ongoing work to alleviate poverty and hardship in the community.

Carers Australia would like to thank The Myer Foundation and the Brotherhood of St Laurence for supporting this work, Richard Percival and Simon Kelly at the National Centre for Social and Economic Modelling for doing the research, Alzheimer's Australia for its valuable contribution and to all the people who gave us feedback on the work as it progressed.

Louise Gilmore
President
Carers Australia

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Abstract

This study is concerned with projecting the future demand for and supply of informal carers of older persons (persons aged 65 years and over) in Australia. The motivation for study is the co-existence of two continuing trends—the ageing of Australia's population and a shift in the balance of care, from formal care provided in institutions to informal care provided in homes. The projections were undertaken using a purpose built model, based on ABS population and household projections, and information on the probability of needing and providing care, based on the ABS Disability, Ageing and Carers survey. The study projected a significant increase in the numbers of older persons likely to need informal care in Australia between 2001 and 2031 along with a smaller increase in the numbers likely to be carers. At the same time shifts in the composition of the disabled and carers populations were also projected: both being characterised by a greater concentration of the elderly.

Author note

Richard Percival is a Deputy Director and Simon Kelly a Principal Research Fellow at NATSEM.

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General caveat

NATSEM research findings are generally based on estimated characteristics of the population. Such estimates are usually derived from the application of microsimulation modelling techniques to microdata based on sample surveys.

These estimates may be different from the actual characteristics of the population because of sampling and nonsampling errors in the microdata and because of the assumptions underlying the modelling techniques.

The microdata do not contain any information that enables identification of the individuals or families to which they refer.

Contents

1 Overview

In recent years there has been growing interest in Australia in the likely effects of an ageing population. This echoes similar interest in most of the Western world, where declining fertility and increasing longevity have shifted the age structures of populations. As a consequence of this shift, an ageing crisis has been predicted to occur when the costs of modern welfare systems can no longer be met by relatively declining tax revenues.

In Australia, the Federal Government's Intergenerational Report has predicted that just such a growing pressure on government finances will occur over the next 40 years as a result of population ageing (Treasury, 2002). In the area of aged care, the report predicts a doubling in expenditure as the number of people requiring residential care quadruples. Implicit in an estimate such as this are assumptions about how aged care services will be delivered in the future, including continuance of the very significant contribution made by carers who provide informal care in the community. This contribution is important, both in a fiscal sense, with older persons[1] and their carers meeting a large part of the costs of care which would otherwise be born by government (Productivity Commission, 2003:49), and as research shows that most older Australians would prefer to remain in their own homes and be cared for there, should care be required (McCallum, 2002).

Yet despite its importance, this is an area where there appears to have been little research done to establish whether the contributions made by carers of older persons are likely to change over the coming decades. That this contribution might change is made more likely as many areas of Australian life that are currently in flux — such as demography, family economic circumstances and social and work preferences— could affect the supply of informal care.

The purpose of this study is to provide projections of the demand for and supply of carers of older persons in Australia. This will be done using a purpose built model that will be used to analyse the following:

- What are the factors that are likely to affect the supply of carers?
- What, based on current ageing projections, will be the likely demand for informal care over the next 30 years?

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[1] In this study, 'older persons' are persons aged 65 years and older.

- What are the expected trends in the supply of and relative contribution made by informal care in Australia?
- How might the future supply of carers be affected by anticipated changes in living arrangements and labour force participation?

It should be emphasised that the modelling undertaken in this study is concerned with *projecting* rather than *forecasting* future population characteristics. It is a projection of outcomes under specified conditions—most importantly, the propensities to be in need of care or to be a carer and the demographic environment. These specified conditions describe a particular case, which is not the same as the "most likely condition" which would underlie a forecast. For this reason, projections are often presented in sets, with the key assumptions varied to show the extent they drive the outcomes.

The study is in three parts. This first looks at what relevant research has been undertaken in this area—in particular, how informal care has been modelled -- both in Australia and elsewhere. The second stage is concerned with describing the model and the data it uses. The final stage uses the model to project carer outcomes over the period 2001 to 2031, under selected assumptions.

2 Review of key issues

2.1 An ageing population

Motivating much of the interest in population ageing has been the knowledge that the underlying demographic changes that it describes are increasing not only the absolute numbers of aged persons but also their share of the overall population. This has generated a growing body of research over the last decade or so looking at the implications of this shift (see, for example, Clare and Tulupe 1994; ABS 1998a, p.10-13; Productivity Commission 1999; Treasury, 2002).

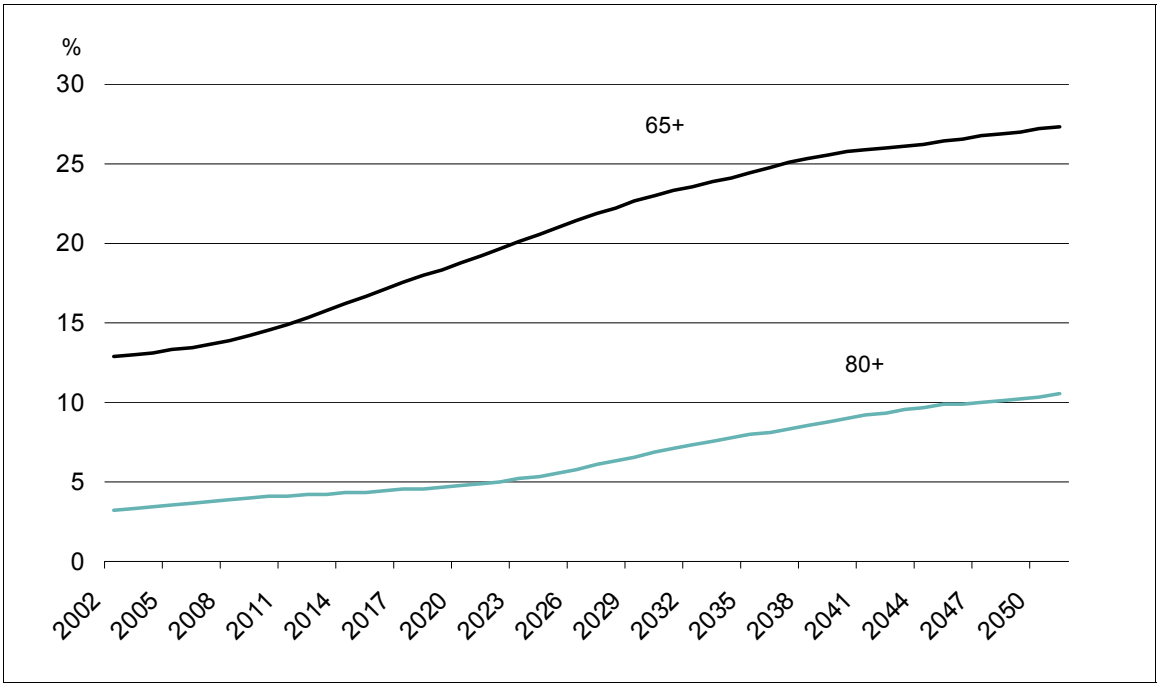
The reasons for Australia's population ageing are well known, straightforward and generally well agreed. These are: over the last quarter century birth rates have been falling while life expectancy has been rising (ABS 2003a). Moreover, the former has occurred following a period of notably high birth rates during the post-war 'baby boom'[2] (McDonald and Kippen, 1999). The 'boom' came to an end with the 1970s

[2] Generally taken to be persons born between 1946 and 1961. In Australia their number were swelled by a continuing marriage boom, high immigration levels and the only slightly

recession and the associated postponement of marriage formation and an increase in childlessness (Rowland 1991, pp. 31-32). At the same time, there was a fall in fertility levels (i.e., fewer people were being born per family) and a decline in mortality rates (i.e., people have been, on average, living longer) (ABS 1998a, p.10). As a result, Australia's population has begun and will continue to age, as the larger 'baby boomer' cohort replaces smaller, earlier generations and as the comparative size of more recent cohorts falls (McDonald, 2002).

While the Australian population is ageing, as McCallum and Geiselhart point out, it is doing so slowly (McCallum and Geiselhart 1996, p.8). This process can be seen in Figure 1, which shows projections of the changing proportions of the population aged 65 years and over and aged 80 years and over between 2002 and 2051. In this scenario, the population share of the old (persons 65 and over) will double, from about 13% to about 27%, while the share of the 'old' old (persons 80 years and older) will more than treble, from about 3% of the total population in 2002 to about 11% per cent in 2051.

Figure 1 **Percentage of population aged 65 years and over and percentage aged 80 years and over, Australia, 2002 to 2051.**



Note: uses ABS population projections series B

Data source: ABS AUSSTATS, table 322202A(B) and authors' calculations

smaller cohorts that followed them (i.e., those born between 1961 and the early 1970s) (Rowland 1991).

The figure also shows that Australia's population is already ageing and that this trend will accelerate as the baby boomers become old. As this occurs, the population share of the 65 years and over group ('65+') will increase most sharply from about 2011 (when people born in 1946 would be turning 65) and that of the 80 years and over group ('80+') some 15 years later, from around 2026.

In itself, population ageing may simply be an interesting demographic phenomenon. What has placed it much more centrally onto the policy stage and in the public consciousness has been the linking of it to negative outcomes that, it is argued, will flow from population ageing. Most notably, these include:

- Labour shortages and falling labour productivity leading to a negative impact on economic growth (see Johnson 1999 and Dowrick 1999 for a discussion of the main economic issues).
- Increased demand by the elderly for economic resources, particularly for social, health and aged care services, leading to an increased demand for government expenditure and taxes (see Johnson 1999; Creedy 1999; Richardson and Robinson 1999; Treasury 2002).

While the causes and inevitability of population ageing are agreed, that its negative outcomes are as certain or sufficient to constitute a crisis are not. For example, The Treasury's influential *Intergenerational Report* has spawned a flurry of research publications disputing its assumptions, findings and implications (see, for example, Dowrick and MacDonald 2002; Kinnear 2002; McCauley 2000). And even where ageing is accepted as a potential crisis in some sense, how this should be dealt with is not agreed. Some commentators have now stepped forward arguing that the expectations of the future elderly may need to be lowered (Macfarlane 2003) while others argue that it can best be averted by changing society's institutions, including its workplaces and community aged care sector, to make them more 'age friendly' (McCallum 2002).

Whether a crisis or not, the attention focussed on ageing has led to the questioning of many existing economic and social policies. Given their importance, it is critical that this process be informed by the best information available on what Australia in the coming years might look like.

2.2 The demand for informal care

That Australia's population is ageing does not mean that the demand for informal carers will increase at an equivalent rate.

The need for care is set by the number of people who have disabilities of sufficient severity that they require assistance with key daily activities. However, of this group,

only some will have a preference for informal care and only some of these will have a carer available.

In Australia, support is provided for disabled older people through a mix of residential and community based aged care services. In 2001, there were some 126,000 permanent residents in residential aged care aged 65 years and over and most (75%) were aged 80 years or over (AIHW 2002, p.83). Since 1992, the Commonwealth has also funded support services through Community Aged Care Packages (CACPs) for people in the community requiring a level of care equivalent to low level care provided in a residential care facility. Beginning in 2000, a similar program, but for people requiring higher level care, has been operating. This program has been running as a pilot and provides Extended Aged Care at Home (EACH) packages, to people in the community who require higher level care (AIHW 2002). The actual delivery of services for both residential and community care comes mostly from non-government service providers, a majority of which are from the 'not-for-profit' sector (AIHW 2003a).

The level of provision of residential aged care and CACPs are often considered jointly. This level, when considered against the number of persons aged 70 years and over, had declined in the late 1980s and early 1990s, but has now started to rise with the growth in CACPs (AIHW 2003a). In the most recent budget (2003-04) the Commonwealth indicated that operational aged care places would be increased from the current planning level of 100 places per 1000 persons aged 70 and over to 108 places, with the increase favouring community and lower level residential care places (DHA 2004).

Commonwealth, state and local governments also provide additional community care support through a range of programs, notably, the Home and Community Care (HACC) Program.

With respect to all aged care services, AIHW (2001) suggests that the major indicators of need are the number of aged persons and the proportion that are disabled by a severe or profound core activity restriction (p. 200).

In attempting to estimate projections of both, a complicating factor is the uncertainty that surrounds the factors that have historically underlined trends in these areas. For example, population projections will vary according to factors such as fertility and migration levels. To cope with the inevitable uncertainty about how these factors will change in the future, population projections often use a range of assumptions and present a range of projections (ABS 2003a).

Trends in disability are also uncertain and, in particular, the effect of increased longevity on disability trends is unknown, although subject to a continuing debate. This debate has centred on whether longer life expectancies will mean that age

related disabilities would be postponed ("compressed" into the last years of life) or whether there would instead be a lengthening of the period over which people would be disabled (see DHAC 1998 and Rowland 1991, pp. 44-45 and pp. 83-84 for a discussion of the issues). While this debate remains unresolved, research by the Australian Institute of Health and Welfare using Australian data has suggested that increasing life expectancies will see an increase in the period spent with light and moderate disabilities but not severe disabilities (AIHW 1993, p. 219-20).

This finding is supported by recent research by Davis *e. al. (2002),* which was based on an analysis of the ABS's Disability, Ageing and Carers surveys between 1981 and 1998, and which failed to find support for the 'rectangularisation of the disability free survival curve' (p.52). That is, additional years of life in Australia do not appear to be additional years of disability free life. Instead, it was estimated that 'roughly two thirds or more of the increase in life expectancy over the decade 1988-98 is taken in a state of disability' (p. 1).

In 1995 AIHW reported that analysis of the three ABS Disability, Ageing and Carers surveys between 1981 and 1993 indicates that age standardised rates of profound and severe core activity restrictions (previously described by the ABS as 'handicaps') have remained fairly constant across the period. Accordingly, AIHW concluded that these measures could be used with some confidence in developing projections for policy and planning purposes (AIHW 1995, p.181). However, the subsequent release of information from the latest in this series, the 1998 Survey of Disability, Ageing and Carers (ABS 1999a) appears, on the surface, to indicate an underlying trend of *increasing* levels of core activity restrictions exists (Table 1).

Table 1 **Age standardised disability rates, Australia, 1981, 1988, 1993 and 1998**

Disability status	1981 (%)	1988 (%)	1993 (%)	1998 (%)
Core activity restriction				
Severe/profound	3.6	4	4	5.5
Moderate	2.1	3.6	2.2	2.9
Mild	2.5	4.4	5.7	6
Total	*8.2*	*12*	*11.9*	*14.4*
Specific restrictions	10	13.6	13.6	16.1
Total disabled	14.6	16.5	17.2	18.8

Source: ABS 1999a, p. 19

In particular, the increase in rates for persons with some level of core activity restriction are shown to be most pronounced for persons with mild restrictions and least for those with moderate restrictions.

This latter finding is consistent with the earlier AIHW findings. However, the increase in rates for persons with severe or profound activity restrictions of 1.5 percentage points between 1993 and 1998 is unexpected, given that there had only been a reported increase in this rate of 0.4 percentage points between 1981 and 1993.

With regard to the increases in severe disability rates between the 1993 and 1998 surveys, this unexpectedly large increase may in large part be a result of changes in the methodology used by the ABS in compiling the 1998 survey (ABS 1999a, pp. 56-57). This has led some analysts to conclude that the increase in age-adjusted rates of severe or profound restrictions may be mainly a result of changes in survey method and the attempt to increase case identification, rather than an increasing underlying prevalence (AIHW 2000, p.16).

Given the uncertainty about past disability trends (and the even greater uncertainty about future trends), it would seem prudent in modelling which includes disability to allow for a range of estimates to be included.

While the total numbers of persons needing higher-level care had grown significantly between the two most recent Disability, Ageing and Carers surveys, their distribution across different living arrangements had stayed much the same (Table 2). In 1998, only a little over 15 per cent of persons (of all ages) with a severe or profound disability were living in cared accommodation. By contrast, almost 83 per cent were living in private dwellings, most of who (about 84 per cent) were living with at least one other person.

Research indicates that these living arrangements accord with the preferences of most people (Rowland 1991, McCallum and Mundy 2002). Rowland further points out that maintaining successful independent living is partially a function of access to economic resources (pp. 113-5) and thus living standards and supportive social policies.

In 1998, the living arrangements for severely or profoundly disabled people aged 65 years and over were as shown in Table 3. Most were living in private dwellings (66%) and, of those in non-private dwellings, nearly all (94%) were in some form of cared accommodation.

Table 2 **Living arrangements of persons with severe or profound disability, Australia, 1993 and 1998**

Living arrangements	1993 (Nos.'000)	1993 (%)	1998 (Nos.'000)	1998 (%)
Lives in a private dwelling				
Alone	100.4	13.9	150.2	13.2
With at least one other person	496.9	68.9	792.0	69.7
Total	*597.3*	*82.8*	942.1	*82.9*
Lives in a non-private dwelling				
Cared accommodation	95.4	13.2	174.9	15.4
Other	7.6	1.1	18.8	1.7
Total	*103.0*	*14.3*	*193.7*	*17.1*
Lives in a retirement village	20.7	2.9	41.4	3.6
Total	721.0	100.0	1135.9	100.0

Note: includes persons of all ages.

Source: ABS 1993, ABS 1999a, p. 21 and authors' calculations

Table 3 **Living arrangements of persons 65 years with severe or profound disability, Australia, 1998**

Living arrangements	%
All persons	
Private dwellings	65.7
Non-private dwellings	34.3
Only persons in non-private dwellings	
Cared accommodation:	
Hospitals - General	11.0
Hospitals - other	5.4
Homes for the aged	57.1
Homes - other	2.8
Retirement home	17.7
Other accommodation	
Hostels for the homeless/night shelters/refuges/guest and boarding houses	0.2
Retired or aged accommodation (self care)	5.0
Aboriginal settlements/other	0.8

Source: ABS 1998b

The sources of assistance for severely or profoundly disabled people aged 65 years and over living in non-private dwellings are shown in Table 4. (Note: these are only shown for the types of assistance that are used by the ABS to classify severe or profound disability—communication, mobility and self-care. It is highly likely that persons with higher-level disabilities would also need other types of assistance as well.)

Table 4 **Sources of assistance of persons 65 years and over with severe or profound disability[a], by type of assistance needed, Australia, 1998**

	Communication	Mobility	Self-care
	%	%	%
All persons			
Assistance not needed	91.0	16.2	51.3
Assistance needed	9.0	83.8	48.7
Only persons needing assistance			
Not received	10.8	5.7	8.8
Co-resident carer	88.5	55.3	73.1
Non co-resident carer	0.7	30.9	6.5
Formal care	0.0	8.0	11.6

Note: only includes persons in private dwellings
Source: ABS 1998b

Most people needing care were found to be receiving it, between 89% and 94%. And, most of the care was being provided by carers (both co-resident and non co-resident), between 88% and 100%.

2.3 The availability of carers

The preference to live at home brings to the fore factors that are important in its realisation, and that there have been suggestions that change to these may make it harder to achieve in the future.

Saunders (1996), for example, argues that research by the Social Policy Research Centre points to the importance of having relatives living close by to elderly persons needing support. He goes on to suggest that "new lifestyle patterns" among younger generations threaten the continued viability of the provision of informal care that has been traditionally provided by families (p.38). DHHCS (1991) puts forward a similar factor, which may make older people more reluctant to take on caring in the future—the trend for retirement to become a more active time for many people (p.13).

Daatland (1996), in a European context, identifies several trends in the nature of families that are likely to adversely impact on the supply of carers of the elderly in the future. These are:

- fewer children per family[3];
- an increased incidence of divorce;
- different generations being more likely to live alone than in the past; and,
- increased women's labour force participation.

In Australia, some of these trends also can be found, while others are questioned. From the literature, the following discussions emerge.

Australia's fertility rate, and thus children per family, fell steadily from its peak of 3.5 babies per women in the early 1960s until the late 1990s. Since then it has remained steady, at around 1.75 (ABS 2002).

Australia's divorce rate, which rose sharply in the 1970s, has been trending up. And this has come on top of a falling marriage rate (ABS 2001).

However, demographers in Australia have discounted the importance of the demise of multiple generation households, arguing that research on household composition has shown that in Australia, such households have never been the norm (Rowland 1991, p.110; McDonald and Kippen 1999). McDonald and Kippen (1999) argue that families have and will continue to care for their members and that the likelihood of family support has increased, as a result of increases in the number of years of healthy life and (at least in the short and medium term) and an increased number of surviving children. Similar conclusions are reached by Rowland (1991), who suggests potential family support has been increasing (and should continue to increase) as a result of the post-war marriage boom. This may, however, be offset by increased marriage breakdowns. Accordingly, he suggests, cohort projections based on age, sex and marital status are needed to better determine the actual outcome (Rowland 1991, p.110).

Schofield et al. (1998) point to other important cohort changes and suggest that, due to differences emerging between age cohorts, there may be pressure on the future availability of carers. In a survey of Victorian carers, they found that younger carers were more likely to want to maintain or increase their workforce participation compared to those aged over 50, who presumably felt less pressure on financial and career consolidation. As the authors' noted, 'better qualified and educated carers

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[3] In Australia, the decline in the number of children per family will not occur until the baby boomers begin to replace their parents at the top of the population pyramid.

were most likely to intend maintaining their current working hours' (Schofield et al., p.101).

Against the concerns about increased female labour force participation, Chappell (1990) argues that, despite the claims, little evidence exists to support the assertion that the trend for middle-aged women to return to the workforce will see a reduction in care for the elderly (p. 445). This conclusion is echoed by Howe and Sargeant (1999) who point out that carers are generally older persons themselves and the labour force participation of older women (i.e., those aged 55-60) is currently and is projected to remain comparatively lower[4]. They also note that, while overall female labour force participation is expected to continue to increase, so has the availability of work forms (i.e. part-time work and more flexible work arrangements) that allow work and care giving to be combined (Howe and Sergeant 1999, p.10). Research by the Australian Institute of Family Studies that looked at the relationships between work and family life provides support for this view. The study's authors noted that, when compared to men, there is a much greater diversity of workforce preferences among women and, additionally, female workforce participation and preference is much more likely to change as family circumstances change (Glezer and Wolcott 1997, p.29).

Finally, Howe and Sergeant suggest that the associated concern, of an increase in the simultaneous demands for multiple care (i.e. child rearing *and* care for elderly parents), has been shown to be the exception rather than the rule and is unlikely to change more than marginally (Howe and Sergeant 1999, p.10). Nevertheless, Millward (1999) finds that evidence exists of both a significant number of carers having dual caring or other competing responsibilities. Millward concludes that, in these circumstances, it is often the presence or absence of additional family support for the carer as well as access to complementary support services for the care recipient that can strongly influence the attitudes of carers to caring and, hence, their willingness or reluctance to continue in the role.

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[4] However, it should be noted that the authors' conclusions are probably on the low side as participation of women aged 55 to 60 years has already risen from 28 per cent in 1979 to 43.4 per cent in 1998. Using a conservative projection methodology, NATSEM has projected they could rise to 56 per cent in 2020 and 66 per cent in 2050.

2.4 Previous modelling of informal care

Indicators of the need for care

There is a variety of ways that future need for informal care can be modelled and an associated spectrum of complexity. At the simpler end, use is often made of indicators. For example, a general and simple indicator of need for informal care might be the numbers of people belonging to the population group within which the need for informal care was most likely to be found, such as the aged. Indeed, the need for aged care services is often given by reference to the numbers of persons aged 70 years and over. A more specific indicator might be the numbers of people whose health status means they are likely to require care.

When considering changing needs, an indicator such as this assumes that needs change uniformly as the indicator changes. However, this is often not the case.

Rowland (1991) points to the use of the *caretaker ratio* (which he defines as the number of women aged between 50 to 64 per person aged 80 years and over) in looking at the future need for informal care for the elderly. As he makes clear, its use is limited in that it: 'conceals the difficulties of providing family support to the frail aged; [does] not measure actual supply and demand in relation to support, nor recognise that the children of the very old are often elderly as well, older than the 50-64 range in the ratios' (Rowland 1991, p.126). In effect, the ratio is concerned with only the intergenerational dimension of caring and doe not recognise that care is provided from both within and across generations. Rowland, nevertheless, notes that Australia has a currently favourable caretaker ratio but this may decline steeply in the 2020s.

This effect can be seen in Figure 2, which shows that the caretaker ratio is projected (using current ABS population projections) to decline quite precipitously between 2002 and 2052, from a ratio of 2.6 to one of 0.7 to 0.9[5].

Part of the problem identified by Rowland is that many indicators attempt to deal with need by relating it to a single statistic or factor. As noted, in many instances, a complex of factors will only establish 'real' need. This suggests that projections of future need should be based on several indicators or by a composite indicator. Chappell (1990), for example, suggests that family characteristics, labour force participation, ethnicity and gender are important variables when considering care giving (p.44).

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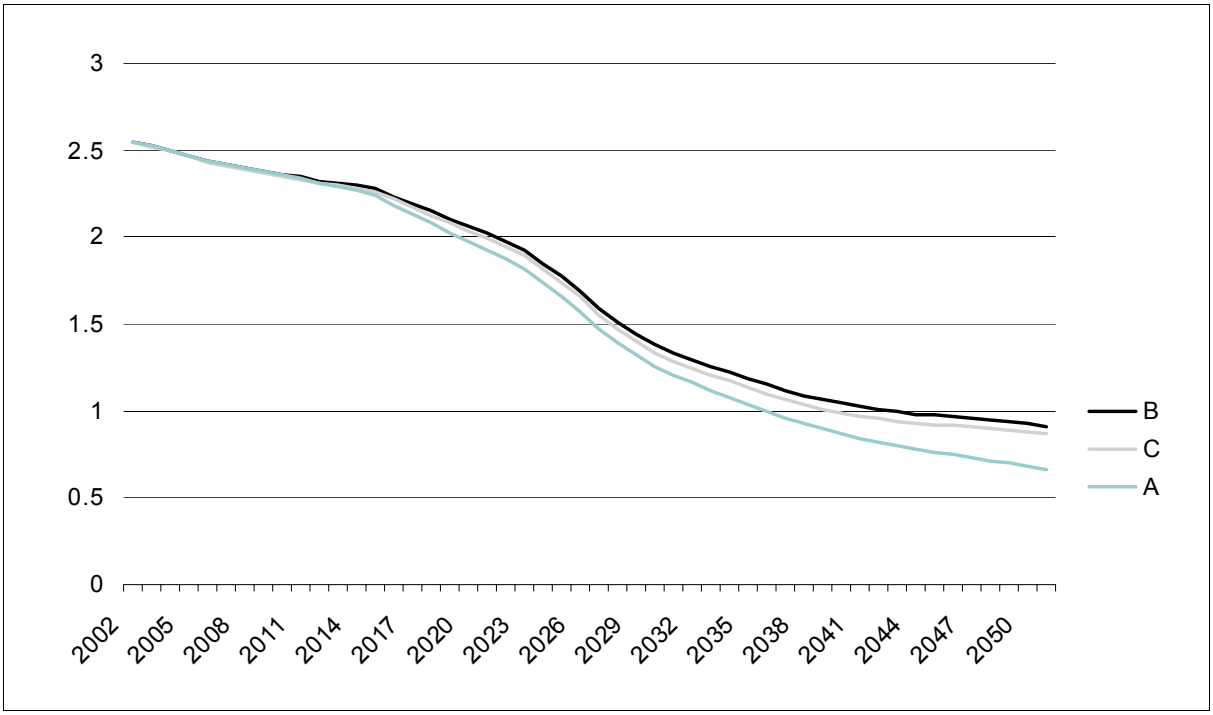
[5] In an International context, each person 65 years and over has been estimated to expect to have 3.3 potential support persons in 2025 in more developed countries, 8.3 in less developed countries (Kendig (1992), p.43)

Figure 2 **Ratio of females 50 to 64 years of age to persons aged 80 years and over (caretaker ratio), Australia, 2002-2051**



Note: Series A, B and C represent high, medium and low population projections, respectively[6].
Data source: ABS AUSSTATS, *Population Projections: 2002 to 2052* and authors' calculations

Similarly, the Mid Term Review of the Commonwealth's Aged Care Reform Strategy in 1991 identified four factors as useful when considering the need for care by an aged person. These are:

- whether a person is living in the community or in residential care;
- if living in the community, whether living alone or with others;
- their housing arrangements; and
- whether they are a person with dementia (DHHCS 1991, p.58).

AIHW (1993), in an examination of the future need for aged care services, suggested that:

> the *major* indicators of need for aged care services are the number of aged persons and the extent of handicap among aged persons. Handicap rates vary by age and sex within the aged population, so changes in the proportion of aged persons in particular aged groups, as well as changes in the

[6] The series differ according to assumptions they include about future fertility rates, life expectancies and net overseas migration rates. Series B, for example, assumes that the mortality rate will continue its downward trend until 2050-51 (although at a reduced rate from 2006), fertility declines to 1.6 by 2011 and then remains constant and that net overseas migration will reach and maintain at 100,000 per year by 2006 (ABS, 2002, p. 5).

> overall numbers of aged persons, are important indicators of need for aged care services (AIHW 1993, p. 216).

AIHW (1995) further noted that the demand for aged care services would be influenced as well by factors such as 'personal preferences, knowledge of what is available, and the existence of alternative sources of help' (AIHW 1995, p.176).

Gibson, Liu and Choi (1995) argue that the key issues when considering indicators of need for aged care services (in this instance, residential care) are the extent to which an indicator is (1) inclusive of the potential client population and (2) the extent to which the indicator focuses on that part of the potential client population where use of the service will be heaviest. They further suggest that (1) and (2) will often be found to be opposed. For example, an indicator (of nursing home provision) of all persons aged 60 years and over would include virtually all residents of nursing homes, but would have a very low specificity (i.e. only 2.5 per cent would actually be in nursing homes). In contrast, a more specific indicator, for example, of all persons aged over 85 years, would include some 20 per cent of this population in nursing homes but would only cover 45 per cent of all persons in nursing homes. They suggest that a better indicator would be one related directly to the population at risk—that is, the numbers of severely disabled persons aged 70 year and over (Gibson, Liu and Choi 1995, pp. 215-217).

Models of care

Australia

In reviewing the literature, it appears that only limited modelling has been undertaken in Australia that is explicitly concerned with either the future demand for informal care or the likely supply of carers.

One account of such modelling is reported in DHHCS (1991). DHHCS developed for Mid Term Review of the Aged Care Reform Strategy a cell based model[7] to analyse 'relationships in the balance of care to better understand the effects of changes in age care policy' (DHHCS 1991, p.271). The model was based on ABS data (population projections and disability and handicap distributions) and aged care administrative data. Among the findings of the modelling were that the planned decline in the nursing home provision ratio would decrease the admission rates and see a greater concentration of persons with higher care needs in nursing homes. Between 1991 and

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[7] Cell based models have as their unit of analysis groups (of persons, households, etc) which are defined by a set of characteristics. These are selected for their importance to a particular analysis. Cell based models typically operate by applying average probabilities of events happening to the groups defined by each cell.

2001, it predicted an increase in persons needing to be cared outside nursing homes from 1487 to 11 301. Consequently, it also predicted an overall increase of 40 per cent in the demand for Home and Community Care (HACC) services and an 11 per cent increase among high resource users.

Clare and Tulpule (1994) undertook a similar modelling exercise. They used age specific disability rates and population projections to estimate the change in the need for assistance by people at home between 1988 and 2051. They projected that the proportion of persons in the population aged 5 years and over needing assistance would grow from 9.6 per cent in 1988 to 14.9 per cent in 2051. At the same time, the proportion of persons in the population aged 65 years and over needing assistance would grow from 37.1 per cent to 43.5. They further argued that providing care would be made more difficult as a higher proportion of people lived alone, which they projected to rise from 6.6 to 10 per cent between 1988 and 2051.

More recently, McDonald (AIHW 1997) and McDonald and Kippen (1999) have looked at the key question of how living arrangements and family structures are likely to change.

In AIHW (1997) a cell based model was used to provide household projections by family type, between 1996 and 2006. The main conclusions drawn were that there would be little change in the numbers of families with children, although the parents would tend to be older, and that there would be substantially more persons not living in a family. This work was extended in McDonald and Kippen (1999) to include projections of living arrangements to the middle of the next century. Among the conclusions the authors' drew were that the demand for informal care would grow most for women between the ages 75 and 84 years, an increasing number of whom would be living alone from about 2018. An additional trend that they predicted to emerge would be the demand for care services (both informal and formal) for post-war migrants, many of whom would have language difficulties. The other trend highlighted by the study is a rising concentration of elderly in particular areas. These include country towns, coastal retirement areas and outer metropolitan areas of cities.

In the context of looking at options for long term funding of disability and ageing services, Walsh and DeRavin (1995) modelled both the costs of formal care programs and the future prevalence of profound and severe handicap. The latter were based on the assumptions that prevalence rates for the elderly would remain unchanged while the rates for persons under the ages of 35 would increase by 35 per cent (Walsh and DeRavin 1995, p. 112).

While technical details given in the report are not extensive, it appears a cell-based model was used in The Treasury's Intergenerational Report to examine future health and aged care costs. In this modeling, aged care spending was projected forward by

age and gender using population projections and information from existing cost trends. The model calculated that, Commonwealth spending on aged care, as a proportion of GDP, would double between 2001-02 and 2041-42, with the roughly similar increases occurring in residential and community care (Treasury 2002).

Howe and Sergeant (1999) developed an aggregate model of Australia's aged care system to estimate future aged care liabilities and alternative funding mechanisms. The modelling was concerned with the costs of residential care, but did include the possibility of future inclusion of community care costs. The model had an aged based structure and related age specific population projections to expected lifetime use and costs of aged care services.

The most recent modelling of carers appears to be by Jenkins *et al* (AIHW 2003b). They used a cell based population model to estimate into the near future, informal care numbers across four scenarios. These were: a base scenario (using projections of population dynamics, living arrangements and labour force changes); an overall decline in willingness to provide care; a decreased willingness to provide care by women in the workforce; and, the impact of higher numbers of persons living with spouses or partners. Their most interesting findings were that changes in women's labour force commitments or an increase in co-residency later in life will only have a small impact on the supply of carers over the period being projected (1998 to 2013).

Outside of Australia there appears to be long standing and growing interest in modelling informal care.

United States

In the US, there are several models that have been used to analyse future aged care needs. The Brookings Institute and ICF have a now well-established microsimulation model of US long-term aged care financing. The model projects future trends in the size of the elderly population, as well as their financial position, disability status, and nursing home and home care use and expenditures. The model performs policy simulations, including the effects of expanded coverage for nursing home and home care, changes in Medicaid eligibility and services, and private long-term care insurance. A description of the model is given in Wiener, Illston and Hanley (1994).

DYNASIM, a US microsimulation model, has been used by The Urban Institute to project future needs of elderly people and how these might vary when assumptions about future mortality and disability rates were changed (reported in Wittenberg, *et al* 1998)

More directly concerned with caring, Wolf, Soldo and Freeman developed a multinomial logit model to predict whether a child is likely to be a caregiver for their

parents. Their findings were that there are interdependencies in the care giving behaviour of siblings. For example, their model suggests a reasonably high probability of a son providing care to a parent if he is an only child. If he has siblings, however, this probability falls considerably. In addition, if he has sisters he is much more likely to be involved in joint care (Wolf, Soldo and Freeman 1996).

Britain

In Britain, until recently, little detailed modelling of informal care appeared to have been undertaken. One study, by Evandrou and Winter (1993), used the 1985 General Household Survey to examine the economic impact of caring on carers. Using descriptive and multi-variate analysis, they found that carers had lower labour force participation rates and lower disposable incomes than non-carers.

Wittenberg *et al* 1998 describes several modelling exercises, which projected the future disabled population in the UK, and the likely cost of caring for them. These were undertaken by: the Institute of Actuaries; London Economics; the Institute for Public Policy Research; and, the Department of Health.

However, beginning in the late 1990s, some of the most extensive modelling to date of carers and long-term care has been undertaken by the Personal Social Sciences Research Unit (PSSRU), which has centres located at the University of Kent, the London School of Economics and Manchester University

The PSSRU has built and maintains a long-term care projections model (described in Wittenberg *et al* 1998 and Wittenberg *et al*, 2001). This is a cell-based model, which uses information on age, gender, dependency, household type and tenure to subdivide population projections for England to 2031 into 280 groups and then applies to them probabilities of needing a particular type of care, and the volume and cost of that care. As part of the model development the PSSRU has researched the relationship between informal care and formal services and the impact of changes in the availability of informal care on projected future demand for services (Pickard *et al*, 2000). The model has been used to provide projections of long-term care (the Royal Commission on Long-Term Care 1999; Wanless 2002; Wittenberg *et al*, 2002 and Hancock *et al*, forthcoming) and to investigate the long-term care costs of cognitive impairment, (Comas-Herrera *et al*., 2003).

3 Methodology and data

3.1 Methodology overview

The model developed for this study was a group or cell-based model, with the choice being made between this model type and a microsimulation model[8]. The cell-based method was selected due to its relative simplicity and the ease with which it can accommodate alternative parameters, such as different population assumptions.

The data used to build the model came from two principal sources: ABS population projection series (ABS, 2003b) and the most recent ABS survey of Disability, Ageing and Caring (ABS 1998b)

3.2 Data

As with the models described in the previous section, an Australian model of informal care requires information on the size and structure of future populations as well as information on who will need care and who may provide that care. The sources used in this study are summarised below.

Australia's future populations

ABS population projection series

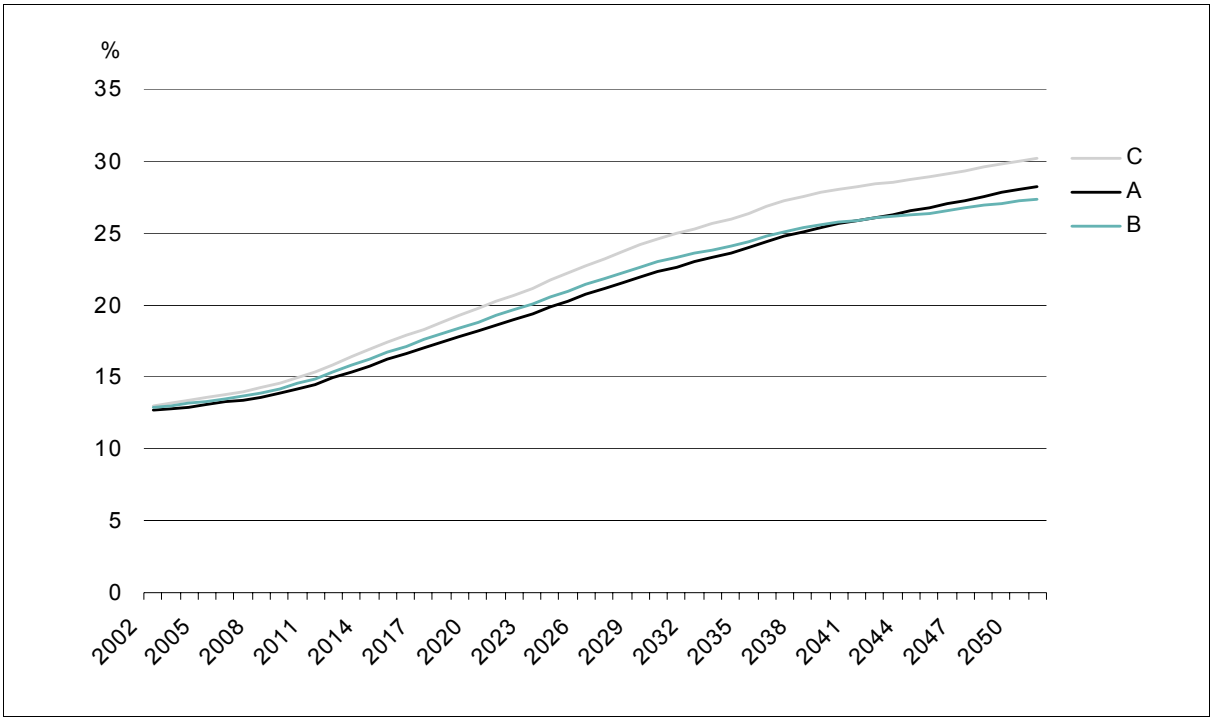
The Australian Bureau of Statistics (ABS) produces several series of population projections. The three main series from their current projections are titled Series A, B and C and, respectively, they represent high, medium and low population projections. These differ according to assumptions that are included about future fertility rates, life expectancies and net overseas migration rates. Series B, for example, assumes that the mortality rate will continue its downward trend until 2050-51 (although at a reduced rate from 2006), fertility declines to 1.6 by 2011 and then remains constant and that net overseas migration will reach and maintain at 100,000 per year by 2006 (ABS, 2003a, p. 5).

Figure 3 shows the variation in population shares of the 65 years and over populations that result from the different projections. It should be noted, as the ABS

[8] Microsimulation models typically have individuals as their unit of analysis and operate by applying probabilities of events happening directly to them.

makes, clear, that these are not predictions about what is more or less likely to happen in the future. What the different series do show is how sensitive particular populations are to selected demographic changes.

Figure 3 **Percentage of the Australia population aged 65 years and over, 2002 to 2050**



Data source: ABS 2003b

Prevalence of disability

The ABS Survey of Disability, Ageing and Carers (1998)

This series of surveys has been conducted since 1981 (most recently, at five year intervals) to provide up-to-date information on the types of disability, level of core activity restrictions, current and future care needs, the need for and provision of help and the effects of the caring role on carers. The most recent, 1998, survey was conducted as two separate components: households and establishments. In the survey, approximately 16,000 households and 38,000 persons were included in the household component, while around 600 institutions and approximately 5,700 persons were included in the establishment component (ABS 1999a, p.13).

Core activity restrictions were identified if a person had a limitation or restriction in performing certain specific tasks associated with daily living, due to their disability. There were four levels of severity. *Mild*, no help required with daily activities but require use of aids. *Moderate*, no help required but has difficulty with activities of

daily living. *Severe*, sometimes needs help with daily activities. *Profound*, always needs help with daily activities (ABS 1999a, p.8).

Given its broad and detailed information on caring, The ABS's *Disability, Ageing and Carers Survey* was chosen as the principal data source for this study. In particular, the Disability, Ageing and Carers Survey had the most comprehensive information on carers and care recipients and the latest version (the 1998 survey) is publicly available in confidentialised unit record form.

Carers

The ABS Survey of Disability, Ageing and Carers (1998)

In the Survey of Disability, Ageing and Carers, *carers* could be persons of any age who provided ongoing (i.e., help has or is likely to last for 6 months or more) informal help to family, friends and neighbours because of disability or age (if they are aged 60 years or over). A recipient may have more than one carer. Carers were divided into 'carers' and 'primary carers', based on the care they provided and also the disability status of the care recipient. *Primary carers* were persons who provided the most personal care to a person with one or more disability on an ongoing and unpaid basis and 'therefore caring plays a major part in their lives' (ABS 1999a, p. 10).

3.3 Model description

Model definitions

Who needs care

A consequence of selecting the Disability, Ageing and Carers Survey as the study's principal data source is that the definitions of care recipients and caregivers are constrained to those available in the survey.

Accordingly, for *care recipients*, it was decided that this should be *persons with a severe or profound core activity restriction*. That is, persons who not only had a core activity restriction, but who needed help with specified everyday activities, either sometimes (severe restriction) or always (profound restriction)—that is, they are people who need higher levels of care, either some of the time or all of the time. This definition, excepting some differences in the ages of persons being included, is similar to that

used by Jenkins *et al.* (AIHW 2003b), Gibson and Liu (1995), Walsh and DeRavin (1995).

Who is a carer

Having defined care-recipients as persons who have a severe or profound core activity restriction, carers are thus, implicitly, defined as those persons recorded in the survey as caring for a person with a severe or profound restriction. However, as previously noted, in practice, the [1998] Disability, Ageing and Carers Survey differentiates between primary and other carers. In this study, only probable primary carers were included in the modelling. This is consistent with similar work but, as Jenkins *et al*. (2003) point out, it leaves open the question of the extent to which other potential carers can make up for a decline in primary carers.

Included in the definition were both 'co-resident' and 'non co-resident' carers. However, the ABS survey collected only very limited information on the persons being cared for by non co-resident carers. In particular, information was not available on the severity of the restriction of the person being cared for by a non-resident carer. Accordingly, it was assumed that the persons being cared from by non-resident carers had a similar distribution of disability levels as persons being cared for by co-resident carers and the data adjusted accordingly[9]. It was felt that this assumption would be appropriate given the ABS definition of a primary carer as a person who provides care for 'the activities of self-care, mobility or verbal communication'. Very few persons requiring such help would be expected to meet the definition of moderate handicap (i.e., 'no personal help or supervision required'). Analysis by NATSEM of the Disability, Ageing and Carers survey showed that, for co-resident primary carers less than 1.5 per cent were moderately restricted.

Model structure

As previously noted, the model developed in this study to project informal care has a cell or group structure. That is, it is based on a series of population projections, which are divided into cells, each cell being defined by characteristics important in predicting informal care.

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[9] It has been pointed out to the authors that, in reality, non co-resident carers are more likely to be caring for person with a severe disability as persons with a profound disability would find it much more difficult to remain in the community without a co-resident carer. However, this should not effect the projections as the modelling does not rely on distinguishing between the two levels of disability.

Base populations

The starting population projections are based on ABS Census data, by age and gender (series B). The populations start in 2001 and run to 2031.

Each annual projection is sub-divided into private and non-private populations using ABS Household and Family projections (ABS 1999b) and data from 1998 Disability, Ageing and Carers Survey (ABS 1998b).

Age/gender groups are further divided by selected household characteristics. After analysis of the Disability, Ageing and Carers Survey data the full set of selected variables were:

- Age (15-24/25-34/35-44/45-54/55-64/65-74/75-84/85+)
- Sex (male/female)
- Household type (couple with children/couple only/male living alone/female living alone/group).
- Whether living with someone needing care (yes/no)
- Labour force status (working full-time/working part-time/not working)
- In non-private dwelling[10] (yes/no)

Other variables examined but not used in the final modelling included 'income' and 'household tenure'. Both were excluded as analysis of the Disability, Ageing and Carers Survey (using logistic regression) indicated that neither were significant determinants of the provision of informal care.

Modelling need for care

The need for care is modelled by applying to each age/sex cell in the model, a disability rate (equivalent to having a profound or severe core activity restriction) to serve as a proxy for the need for care.

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[10] Defined by the ABS as:
- Cared accommodation: Hospitals – General, Hospitals – other
- Homes for the aged, Homes – other, Retirement home,
- Hostels for the homeless, night shelters, refuges
- Guest and boarding houses
- Hotels/motels/short term caravan parks, youth camps/camping grounds
- Retired or aged accommodation (self care),
- Religious and educational institutions/staff quarters,
- Aboriginal settlements/other

Disability rates were derived from the 1998 Disability, Ageing and Carers Survey (ABS 1998b) by age and sex. These rates establish the base level of need for each age/sex cell or grouping in the model. In the initial modelling, these rates were held constant across the period being projected.

Modelling supply of care

There have been several schemas suggested as to how the relationship between need for care and the provision of a particular type of care should properly be modelled, with a key concern being the relationship between informal and formal care. This issue is discussed extensively in Wittenberg *et al.* (1998). Essentially, a choice must be made between a model that gives precedence to informal care, and a model in which informal and formal care are jointly determined. The former assigns as much care to the informal sector as is available—assuming it to be a universal preference—while the latter assumes that a level of preference for formal care exists, even where an informal care alternative is available.

In this study, we modelled the demand and supply of informal care sequentially. That is, the underlying need for care (of some form) was determined by number of severely or profoundly disabled persons in the population who were aged 65 or older. Some of this need was met in the modelling by assigning a proportion of the disabled population to non-private dwellings, where the care would be mostly provided formally. The remainder were then assumed to be recipients of some form of community-based care.

It was felt that this approach follows the way in which the Australia aged care system currently operates by rationing the level of residential care services (Cullen 2003, p.66), giving preference to persons who can't access informal and formal support services in the community (DHA, 1999). In the modelling, this 'rationing' was implemented by assuming that the percentage of the population aged over 65 years and with a severe or profound disability and living in non-private dwellings (34.3% in 1998, as recorded in the 1998 Disability, Ageing and Carers Survey) would remain constant across the period of the projections. In the Disability, Ageing and Carers Survey, most of this group (94%) were found to be living in cared accommodation (Table 3).

A further issue was how to determine the level of informal care that should be projected; should it be assumed to simply rise to meet increased demand or should it be assumed that the supply of potential carers would simply vary in line with population changes? In this study, the purpose of which was to examine the relationship between the demand and supply of informal care, doing either would not make much sense. Instead, the likely supply of informal care was projected by

bringing together some of the key information on both the need for care and the potential supply of carers.

This strategy was made possible as the Disability, Ageing and Carers Survey provides information which allows disability levels and care provision to be related to household and family situations. Importantly, it allowed the supply of care to be estimated on the basis of changes to population numbers, disability levels, living arrangements and labour force participation rates.

The modelling sequence was as follows:

1. Project future populations numbers by age and sex using ABS population projections (series B).

2. Estimate persons 65 years and over needing care on the basis of age/sex disability levels and identify those in:

    a. non-private dwellings; and,
    b. private dwellings.

3. For each *age/sex/'household type'* group in private dwellings, estimate proportion living with a person needing care.
    a. For each *age/sex/'household type'/'living with person needing care'* group in private dwellings, estimate labour force participation rates.

4. For each *age/sex/'household type'/'living with person needing care/labour force participation type'* group in private dwellings, estimate proportion of carers for:

    a. co-resident carers, and
    b. non co-resident carers.

The variables used in estimating the proportions in steps 1 to 4 were:

- Age (15-24/25-34/35-44/45-54/55-64/65-74/75-84/85+)
- Sex (male/female)
- Whether living with someone needing care (yes/no)
- Household type (couple with children/couple only/male living alone/female living alone/group).
- Labour force status (working full-time/working part-time/not working)

These variables were chosen as they were found to be significant determinants of being a carer and the groups they formed were expected to vary across the period being projected. For example, the proportion of single households is expected to grow and women's labour force participation rates to increase.

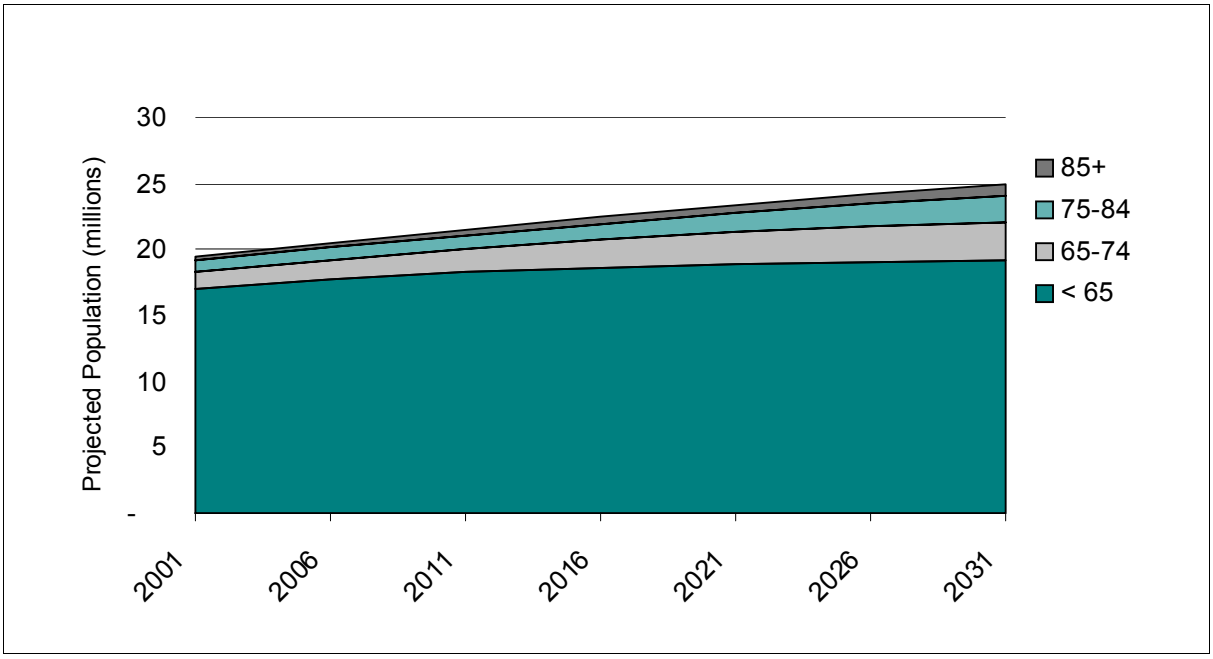
In the model, the likelihood of living with someone needing care varied as disability levels and the number of persons in non-private dwellings varied. The modelling thus accounted for changes in population demographics, living arrangements and labour force participation rates in determining likely carer numbers. The model was also able to simulate changes in age related disability levels and institutionalisation rates.

4 Findings

4.1 Population projections

Between 2001 and 2031, the modelling projects Australia's population to rise by some 29 percent, from 19.4 to 25 million. The population shifts described in section 2.1 project the population share of the over 65s will grow from 13% to 23%, and share of the over 85s from 1.4% to 3.5% (Figure 4).

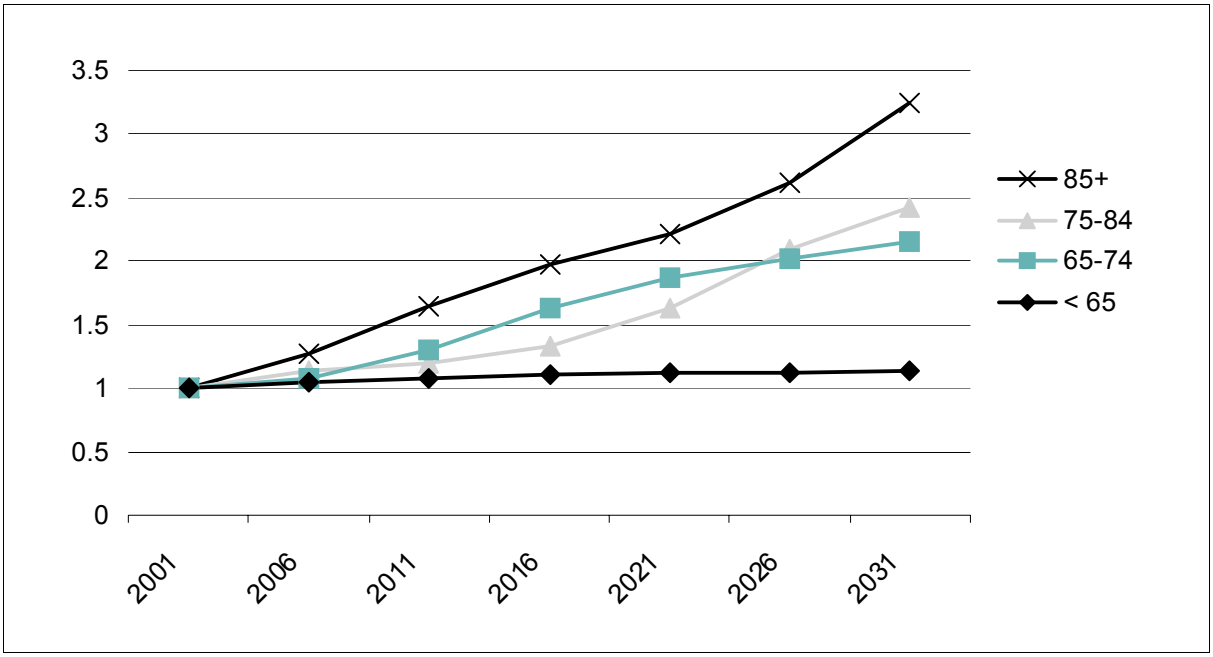
Figure 4 **Projected populations, by age groups, Australia 2001-2031**



Data source: NATSEM simulated projections

The projections show closely similar growth rates for the over 65 year old sub-populations used in the study—65-74 years, 75-84 years and 85 and over—with the passage of the baby boomers causing successive rises (Figure 5).

Figure 5 **Projected population growth rates, Australia 2001-2031**



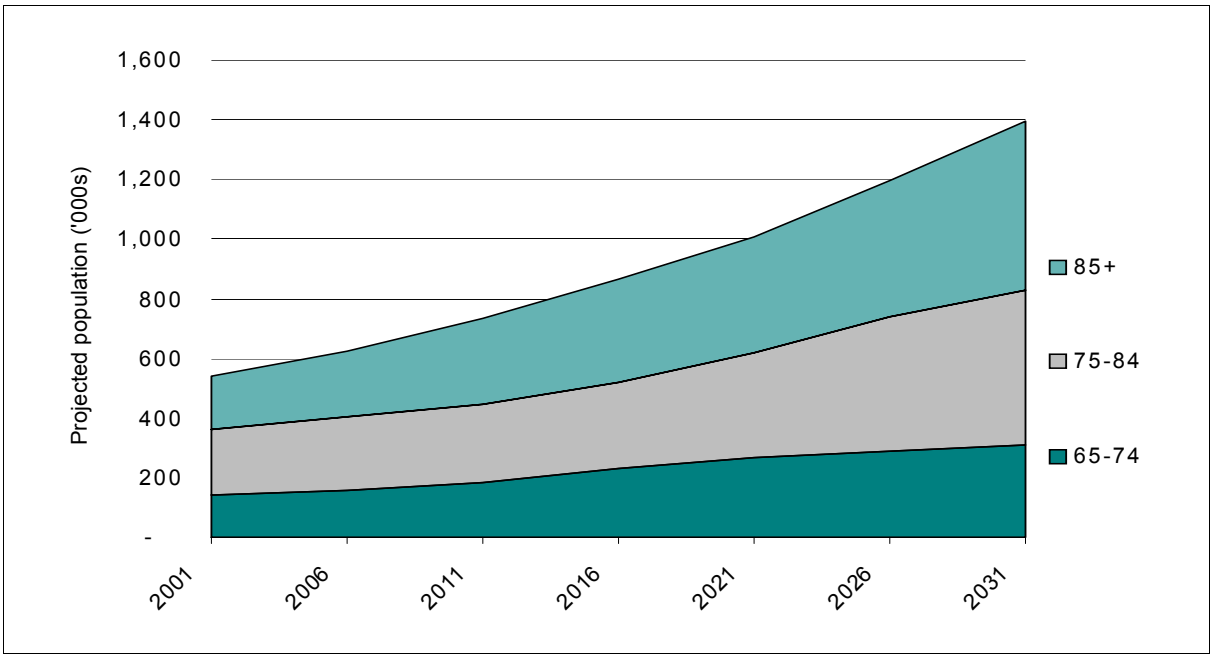
Data source: NATSEM simulated projections

4.2 Projections of the need for informal care

The numbers of older persons with a severe or profound disability in Australia are projected to grow from 539,000 in 2001 to 1,390,000 in 2031, an increase of about 160% (Figure 6). By 2031, persons over 65 years are projected to account for 62% of all profoundly or severely disabled persons, up from 44% in 2001. Over the same period, persons over 85 years are projected to account for 25% of all profoundly or severely disabled persons, up from 14%.

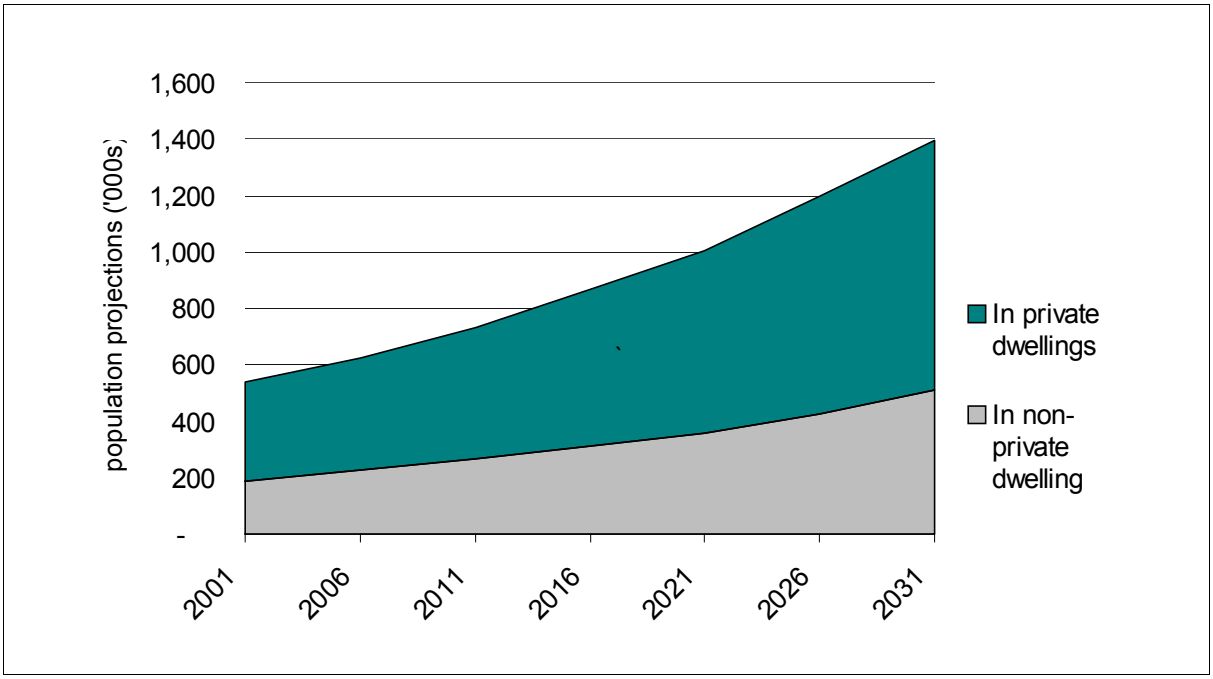
In the modelling, it was assumed that the utilisation rate of formal care by persons over 65 would remain constant across the period being simulated. This meant that the modelling began by assigning a proportion of each age/sex population group to living in a non-private dwelling, based on age/sex disability rates estimated from the 1998 Disability, Ageing and Carers Survey (ABS 1998b). The result is a projected growth in the population living in non-private dwellings of around 162% (Figure 7).

Figure 6 **Projected persons aged 65 and over with a profound or severe disability, Australia 2001-2031**



Data source: NATSEM simulated projections

Figure 7 **Projected persons aged 65 and with a profound or severe disability, by living arrangements, Australia 2001-2031**



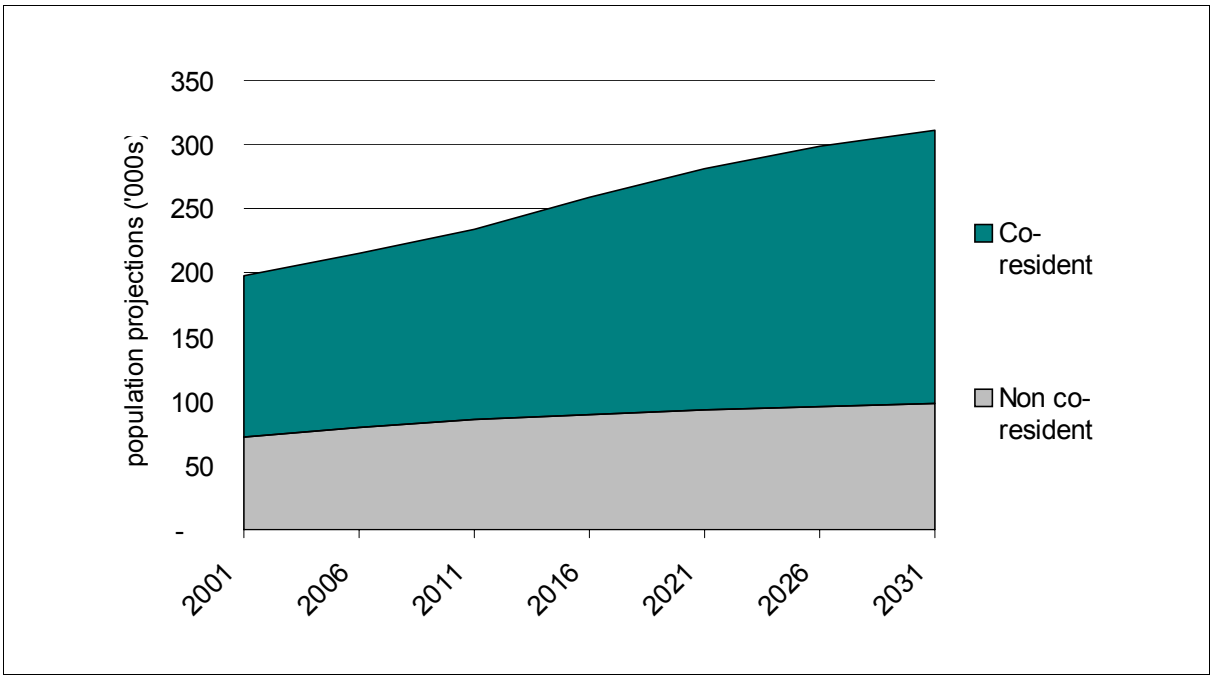
Data source: NATSEM simulated projections

4.3 Projections of carers

Between 2001 and 2031, the modelling projects the numbers of persons likely to be informal carers of older persons will increase from 198,000 to 312,000. This is an increase of about 57%.

As discussed in section 3.3, carers can be either living with the person they are caring for (co-resident carers) or living elsewhere (non co-resident carers). As Figure 8 shows, there is projected to be far greater growth in the numbers of co-resident carers. The numbers of non co-resident carers, fewer to begin with, are shown to increase only modestly between 2001 and 2031, by about 34%. Co-resident carers are projected to increase by 71%. As a consequence, non co-resident carers are projected to fall from 37% of all carers in 2001 to 31% in 2031.

Figure 8 **Projected number of carers of persons aged 65 years and over, by residency type, Australia 2001-2031**

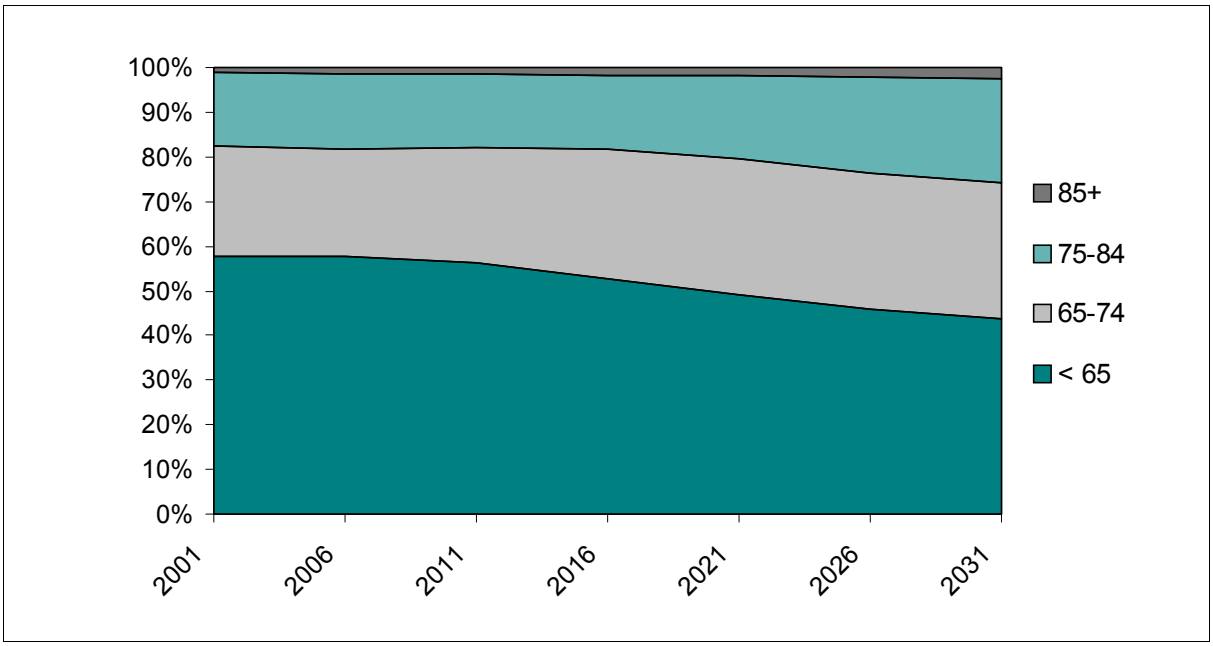


Data source: NATSEM simulated projections

Not only is there likely to be an increase in the number of carers of older persons as a result of population growth and population ageing, but the carers themselves will also be ageing (Figure 9).

The largest growth in the numbers of informal carers is projected to occur amongst older persons. Between 2001 and 2031, carers aged less than 65 years will grow by some 22,000 persons (19%) while those aged 65 and over will grow by 91,000 (110%). As a result, by 2031, older carers will constitute 56% of all carers, up from 42% in 2001.

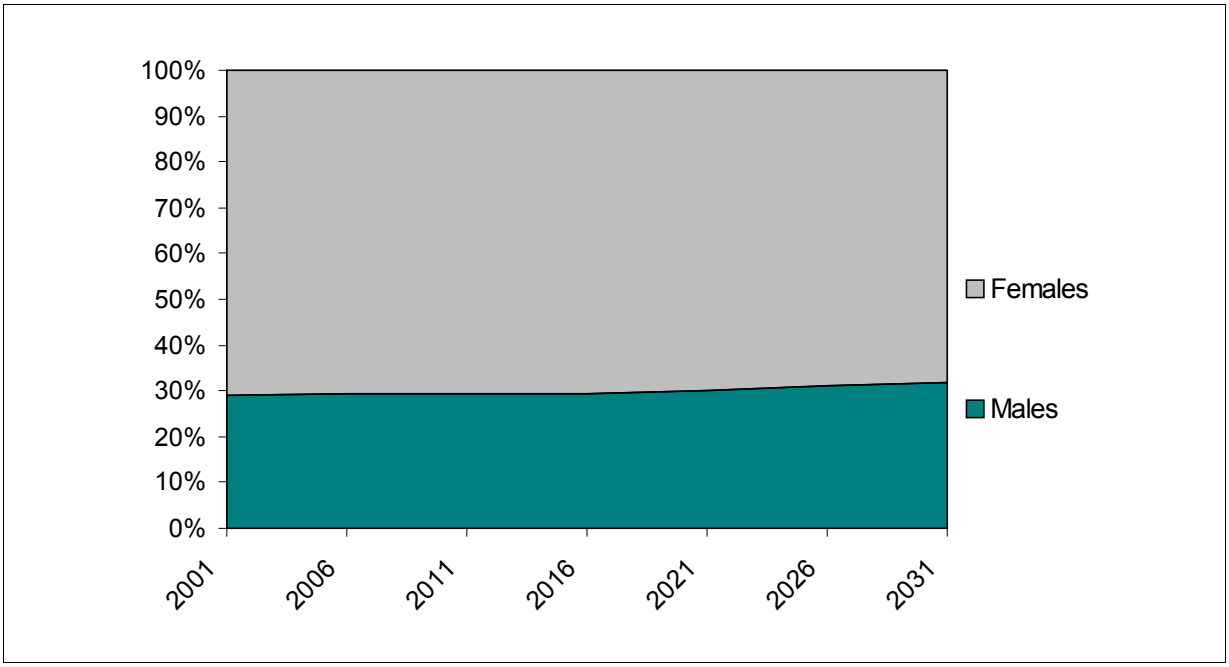
Figure 9 **Projected age distributions of carers of persons aged 65 years and over, Australia 2001-2031**



Data source: NATSEM simulated projections

While carers will, as a group, be ageing significantly, their gender composition will only change slightly (Figure 10), carers are now and are projected to remain predominately female. While the proportion of carers that are males is likely to increase, this is projected to be only from 29% in 2001 to 32% in 2031.

Figure 10 **Projected gender distributions of carers of persons aged 65 years and over, Australia 2001-2031**

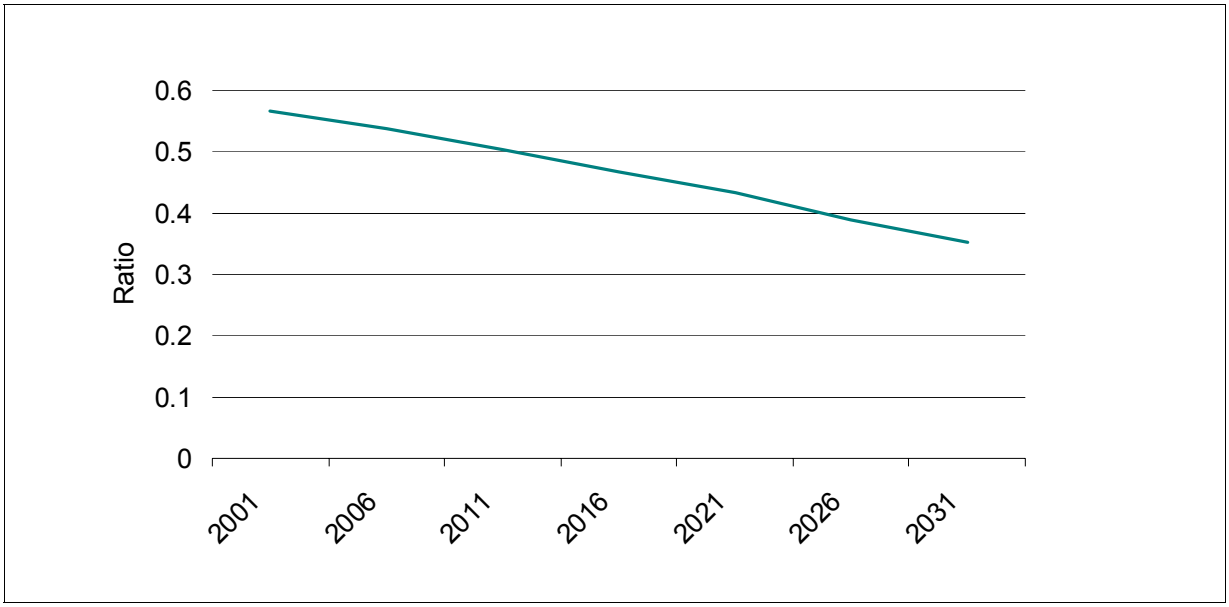


Data source: NATSEM simulated projection

When the projections for the number of persons aged 65 years and over with a severe or profound disability and those likely to provide informal care are compared (see Figure 6 and Figure 8), it is clear that the growth in disabled persons will be much greater than the growth in carers.

To better allow the extent of this change to be measured, a ratio was calculated: of older persons needing care (i.e., persons aged 65 and over, with a severe or profound disability *and* living in private dwellings) to persons likely to provide care (Figure 11). The ratio shows that in 2001 there were 57 primary carers for every 100 persons in private dwellings aged 65 years and over needing care. In 2031 it is projected that this will have fallen to 35 carers for every 100 persons.

Figure 11 **Projected ratios of carers to persons aged 65 and over with a severe or profound disability and living in private dwellings, Australia 2001-2031**



Note: only includes persons in private dwellings

Data source: NATSEM simulated projections

The outcomes of a projected fall in the number of primary carers are shown in Table 5). In 2001, about 35% of the population aged 65 years and over needing care was in a non-private dwelling. By 2031, the percentage in non-private dwellings is projected to grow to 37%.

Of the population aged 65 years and over living in private dwellings and needing care, 57% per cent were being cared for by a primary carer and the remainder, 43%, were without a primary carer. By 2031, the percentage of older persons in private dwellings needing care but without a primary carer is projected to grow to 65%.

Table 5 **Projected caring circumstances of persons aged 65 and over with a profound or severe disability, Australia 2001-2031**

	2001	2006	2011	2016	2021	2026	2031
	%	%	%	%	%	%	%
All dwellings							
In non-private dwellings	35	36	36	36	36	36	37
In private dwellings	65	64	64	64	64	64	63
Private dwellings							
In community with a primary carer	57	54	50	47	43	39	35
In community without a primary carer	43	46	50	53	57	61	65

Source: NATSEM simulated projections

This, of course, draws attention to the growing group of persons who are projected to be cared for in the community but who are likely to be without a primary carer. This group, already sizable in 2001, 152,000 persons, is projected to increase to 573,000 in 2031.

It is important to note that not having a primary carer does not mean that care is not received by someone needing it. Instead, they are likely to be receiving care from alternative sources, but possibly at a lesser intensity. Surveys such as the Disability, Ageing and Carers (ABS, 1998b) report some primary carers caring for more than one person; non-primary carers, who provide care but only for 'non-core' activities[11]; and, a range of care provided in the community by private and government organised support services. In total, the 1998 Disability, Ageing and Carers survey found that of persons (of all ages) in the community with a profound or severe disability, 95% were receiving some informal care assistance, 52% some formal care assistance and only 2.6% no assistance at all (calculated from ABS 1999a, p.28).

[11] Core activities are defined in the Disability, Ageing and Carers survey as relating to communication, mobility and self-care (ABS 1999a, p. 66)

4.4 Varying the modelling assumptions

The factors behind the fall in the number of carers relative to severely and profoundly disabled persons are population ageing and the areas of social change discussed in section 2.3 that are likely to impact on the availability of carers. These areas include, changes to family sizes and the increased dispersion of their members, increased women's labour force participation, and changes to family formation and dissolution (AIHW 1995, p. 174).

The simulations undertaken in the preceding section included some of these changes. In particular, changes to household compositions[12] were included in the modelling (see Figure 12), as were changes to male and female labour force participation[13] (shown for females in Figure 13). To estimate how important these effects were to the results of the modelling, alternative simulations were undertaken in which no changes to household composition or labour force rates were assumed to take place; that is, 1998 living arrangements and labour force participation rates were held constant across all years. This showed that, together, these anticipated changes are likely to account for a difference of less than 5%. That is, in the absence of any change to households or labour force participation, the number of carers in 2031 would be expected to be less than 5% greater than the number reported in section 4.3.

The reasons for the small impact of these changes on carer numbers is that the carer probabilities derived from the Disability, Ageing and Carers survey showed that they were significant but minor determinants of caring, once age, sex and living with someone needing care were accounted for. In addition, care recipients in this study are restricted to persons aged over 65 years. The projections of living arrangements used in the modelling were more stable for this age group than for the broader population[14].

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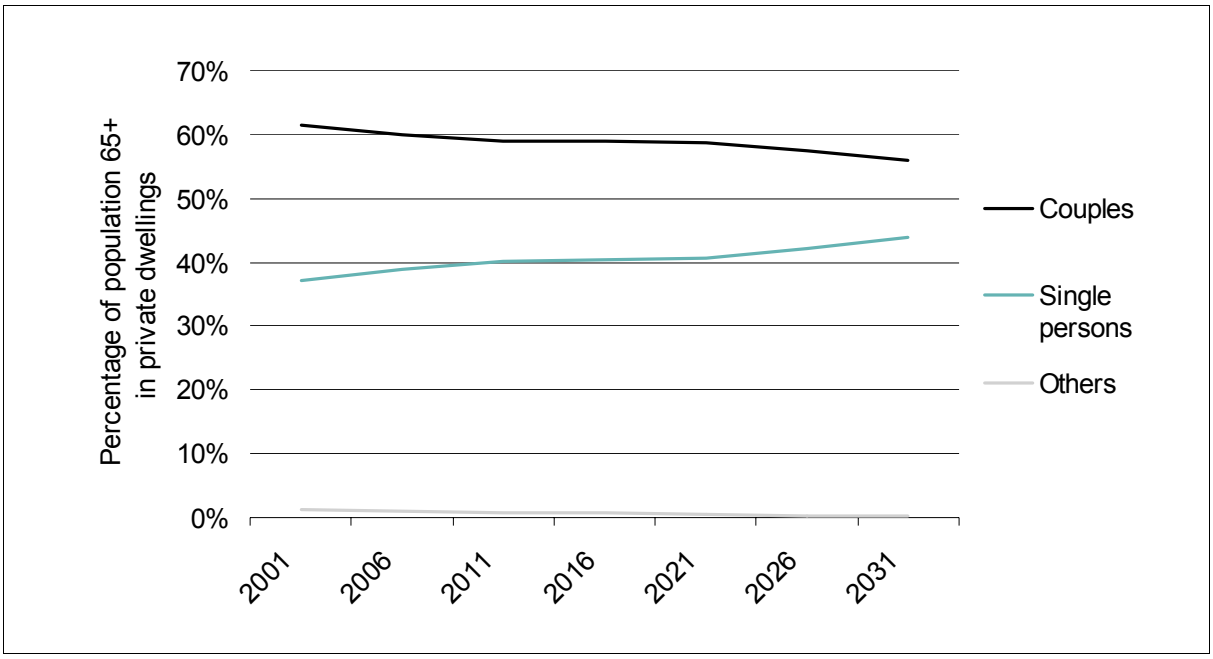
12 Changes in household composition were based on projections of families and households undertaken by the ABS (ABS 1999b) for the period 2001 to 2021 and then estimated forward by NATSEM for the period 2021 to 2031, assuming a continuation of existing trends.

13 Changes in labour force participation rates were based on estimates produced by NATSEM using NATSEM's dynamic microsimulation model of the Australian population DYNAMOD (King et al. 1999).

14 For the 65 and older population, the most marked changes among persons in private dwellings were found to occur in the 85 and over age groups, where the proportion of single households were projected to increase from 54% in 2001 to 65% in 2031.

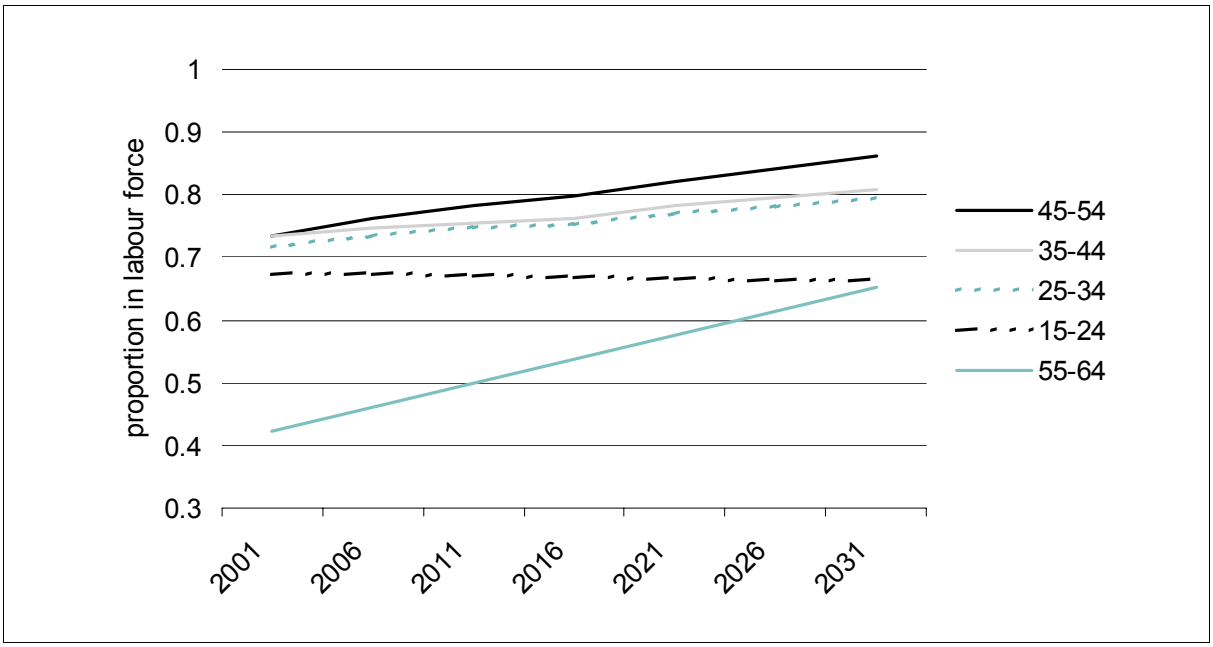
Figure 12 **Projected changes in living arrangements of persons 65 years and older, Australia 2001-2031**



Note: only includes persons in private dwellings

Data source: NATSEM simulated projections

Figure 13 **Projected changes in labour force participation of women aged 15 to 64 years, Australia 2001-2031**



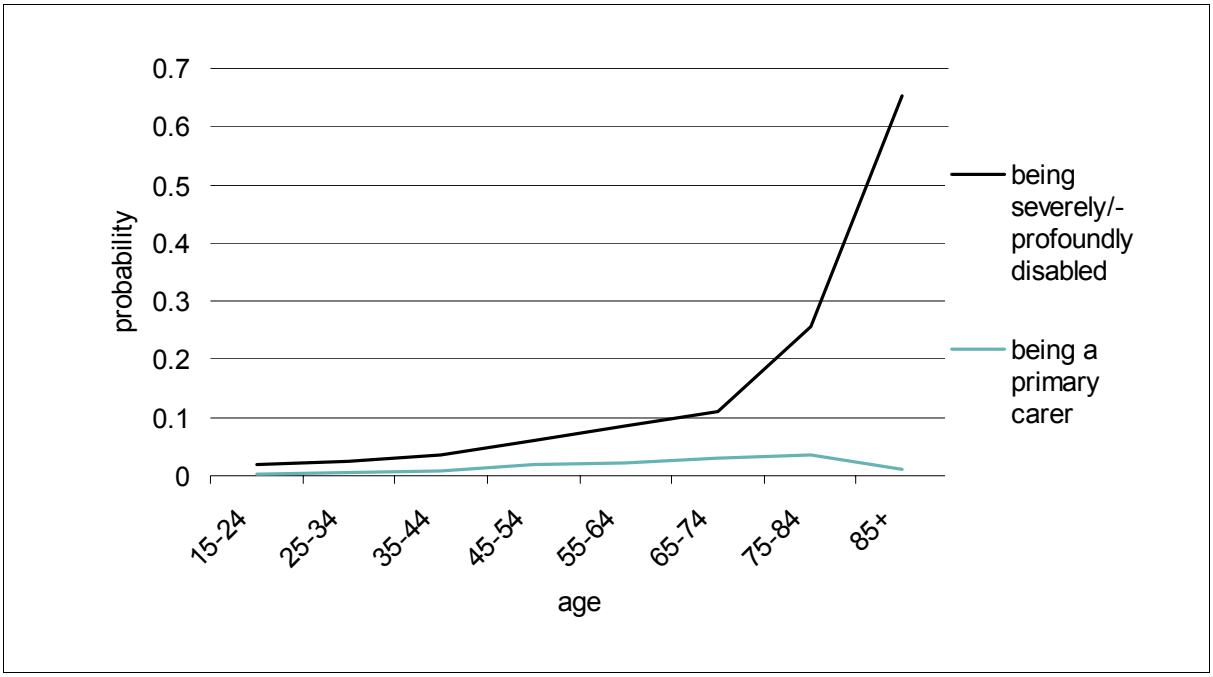
Note: only includes persons in private dwellings

Data source: NATSEM simulated projections

The most important driver of the declining ratio of primary carers to older persons needing care is population ageing: the shift from a younger to an older population. This shift will mean see a rapid increase in the older populations, whose members are much more likely to be disabled and in need of assistance and much less likely to be carers (Figure 14). Simply, the much more rapid growth in the number of older persons will cause the overall rate of disability to rise much faster than the overall carers' rate.

As discussed in section 2.2, there has been a continuing and as yet unresolved dispute over whether increasing life spans will be accompanied by longer periods of disability or by similar periods as now. The more optimistic view holding that disabilities will occur progressively later in life, in line with increasing life spans.

Figure 14 **Probability of having a severe or profound disability and the probability of being a primary carer of persons 65+, Australia 1998**



Data source: ABS 1998b

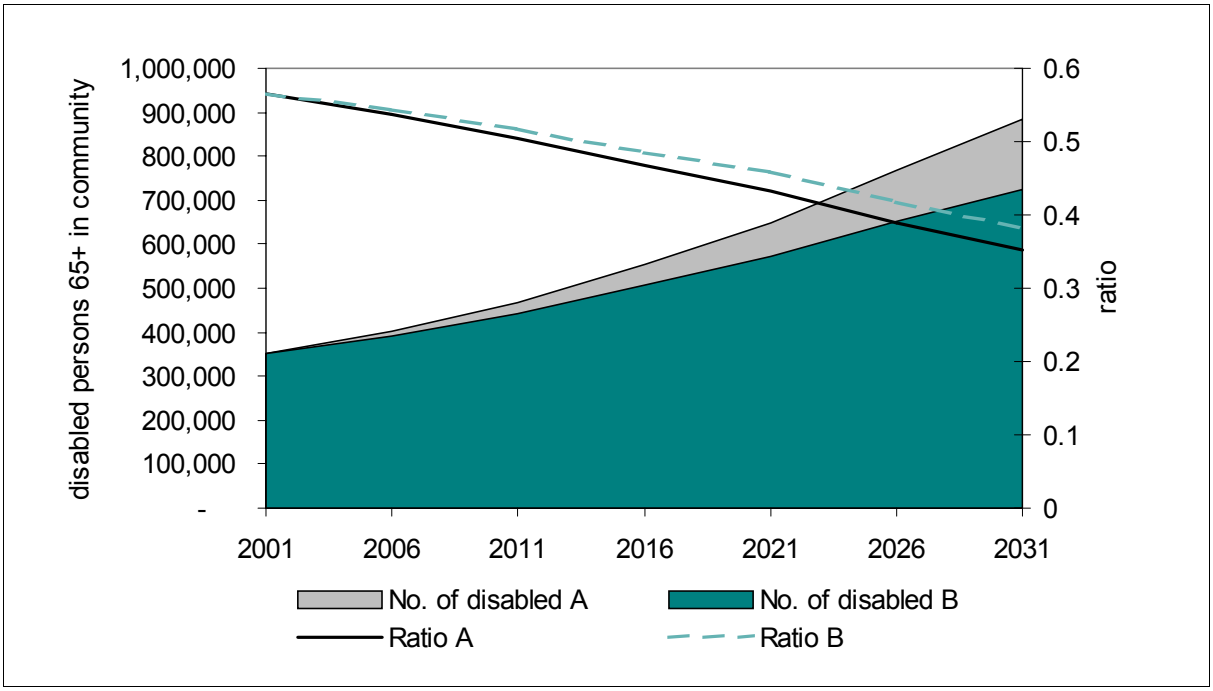
In estimating the projections in section 7 the assumption was that age specific disability levels would not vary from what they were in 2001. However, as this is an uncertain and disputed assumption, the modelling was varied to test how sensitive carer provision would be to changes in future disability levels.

Given the complexities that underlie the incidence of disabilities, a reasonably simple approach was used. This modelled the assumption that the predicted improvements in life expectancies of people aged 65 and over would see an approximately equivalent improvement in age specific disability rates. For example, that the

disability rates of 69 year olds in 2031 would resemble those of 64 to 65 year olds in 2001[15]c.

The results are shown in Figure 15. If the modelling included the assumption that handicap rates would stay at 2001 rates, the projections were for 885,000 severely or profoundly disabled persons aged over 65 and living in the community by 2031. If the assumption of a progressive improvement in handicap rates was included, the projections for 2031 fell to 726,000. At the same time the modelling predicted that carer numbers would fall from 312,000 to 278,000, a proportionally smaller fall. The impact of this change on the number of disabled persons and the ratio of carers to persons needing care can be seen in Figure 15. This suggests that for the fall in this ratio to be more significantly slowed a far higher and even less probable reduction in age specific disability rates would have to occur.

Figure 15 **Effect of improvements in age specific disability rates on projected numbers of severely or profoundly handicapped persons 65 years and over[a] and the ratio to primary carers, Australia 2001-2031**



a Only includes persons living in private dwellings

Note: series A uses 1998 profound and severe disability rates for all years while series B assumes a progressive improvement in disability rates in line with improvements in life expectancies of older persons.

Data source: NATSEM simulated projections

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15 The improvements were estimated by projecting forward historic data on the changes in expected years of life for persons aged 65 to 100 years between 1970 to 2001 (ABS 2003c). The estimated improvements by 2031 ranged between 5 years (at 65 years of age) and 1 year (at 100 years of age).

5 Summary and conclusions

This study has estimated projections of the numbers of older persons likely to need informal care over the next 30 or so years and the number of persons likely to provide that care.

What was found was that the numbers of older persons likely to need assistance because of a severe or profound disability is projected to rise approximately 160% (from 539,000 to 1,390,000) between 2001 and 2031. This rise will be accompanied by a shift in the composition of this population. By 2031, the proportion of persons with a severe or profound disability who are 85 or over will have increased from 14% to 25%.

While it was also projected that there would be an increase in the number of persons likely to provide informal care, this was at a much lower rate. Between 2001 and 2031, the modelling projects there will be an overall increase of just 57% in the numbers of informal carers (71% for co-residential carers, and 34% for non co-residential carers). There will also be an increase in the proportion of carers that are elderly and a slight increase in the proportion that are male.

The main driver behind the increase in the number of older persons needing care (i.e., persons aged 65 years and over with a severe or profound disability) and the lesser increase in the number of persons likely to be their carers is population ageing. Older age groups contribute more to the disabled population than they do to carer populations. As their share of the total population increases the net effect is a growing shortfall in carers' numbers. The modelling projected this effect as a ratio, between the number of older persons needing care and the number of primary carers. In 2001 the ratio was estimated for persons in private dwellings to be 57 principal carers for every 100 persons needing informal care. By 2031, this is projected to fall to only 35 carers for every 100 persons needing informal care.

The modelling found that anticipated changes in household composition and labour force participation rates are projected to have only a small impact on the availability of carer numbers (reducing them by around 5%).

The modelling also tested the effect of improvements in the disability rates of the elderly. When an improvement commensurate with the expected improvement in life expectancies was simulated, the number of older persons needing care was projected to decline in line with the improvement and the number of persons available to provide care to rise, but at a lesser rate. Consequently, the gap or shortfall between the two groups was projected to narrow, but only slightly. To do more than this in the face of a rapidly ageing population would, it was found, require improbably high improvements in the disability rates of the elderly.

Finally, these findings raise important issues for policy makers and the community. The demand for care by older Australians will continue to rise and only a declining share looks likely to be met by informal care. The challenge will be to ensure that the growing numbers of disabled elderly in the community are nevertheless adequately supported.

This points to the need for innovative policy options to provide the care that will be needed in the future. The preferred options for care will no doubt vary between persons. There may be a greater demand for institutional care due to an inadequate supply of primary carers. However, many older people are likely to continue to prefer options that support and allow them to stay in their own homes and this points to an increased need for services which provide supportive environments for people requiring community based support. These should include support and encouragement, not just for primary carers, but also for the secondary and other carers who may be able to assist with the care of their family members and friends.

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