



Long-Term Aged Care: Expenditure Trends and Projections

Staff
Research Paper

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The views expressed in this paper are those of the staff involved and do not necessarily reflect those of the Productivity Commission.

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Overview

Australia's population structure is ageing and this will continue for the foreseeable future. In 1997, 'the aged' — those aged 65 years or more — accounted for 12 per cent of the population, a figure expected to increase to 22 per cent by 2031.

An ageing population raises significant social policy issues, not least in relation to health and long-term care of the aged. Long-term aged care in this context refers principally to residential care (nursing homes and hostels) and community services delivered in, or to, the homes of aged persons. At present, Australia devotes over 1 per cent of its GDP — about \$6 billion in current terms — to long-term aged care.

The primary focus of this paper is on how these figures might change in the future because of demographic change and other factors. The paper also analyses past government expenditure trends in this area.

Demand for long-term aged care services

In an environment where quality and the charges for users are largely set by government, the available evidence suggests that the underlying long-term demand for aged care is driven by three major factors: the size and structure of the aged population, its health and disability status, and the incomes and assets of the aged.

Changes in population structure and mortality

Compared to most OECD countries, Australia faces a particularly rapid increase in its aged population, including amongst the 'oldest old'— those aged 80 years or more. Overall, the aged (65+ years) are projected to increase by about 140 per cent from 1997 to 2031, and the very old (80+ years) by around 200 per cent over the same period. In the absence of offsetting factors, an ageing population means increased usage of long-term aged care services. One possible offsetting factor is reduced disability rates amongst the aged.

Aged disability rates

For most OECD countries, the available evidence indicates that age-specific severe disability rates — those rates most highly correlated with relatively high cost long-term aged care — are tending to fall over time.

However, the OECD places Australia amongst those member countries that display little, or no, reductions in the incidence of age-specific severe disability amongst the aged. But the evidence for this is relatively weak, reflecting a small number of surveys and complicated by methodological factors that affect the interpretation of the surveys.

If, in fact, Australia experiences reductions in age-specific disability rates similar to other major OECD countries, then this can have large impacts on projected long-term aged care usage. Some simple modelling suggests that were there to be no reduction in age-specific disability rates, the number of residents in long-term aged care institutions in Australia would rise by about 150 per cent from 1998 to 2031. This compares with a rise of about 70 per cent if there were to be significant reductions in age-specific disability rates. Thus, falling age-specific disability rates reduce, but do not eliminate, the effects of an ageing population structure.

Wealth and income effects

It appears likely that economic growth, net capital accumulation, increasing asset prices and greater superannuation coverage will increase the purchasing power of the aged.

Such increased income and wealth are likely to have offsetting effects on the demand for aged care services. On one hand, increased income and wealth may reduce the likelihood of disability. On the other, leaving this and other effects aside, the impact of the expected increase in per capita income and wealth of the aged is likely to increase *underlying* future demand for long-term aged care services. The net effects of these opposing factors are uncertain, not least because regulatory factors that limit access to some long-term age care services imply that actual usage is less than underlying demand.

Institutional factors

Demand for long-term aged care is partly a function of government regulation. At present, governments — predominantly the Commonwealth Government — subsidise residential care and home and community care. The Commonwealth also regulates the fees that may be charged to users and quality of care in the residential

care sector. Any tendency to excess demand in the residential sector because of subsidised fees is controlled by regulating the number of places available, and by having residential care applicants meet needs-based criteria. These rationing mechanisms, combined with potential constraints on public funding, imply that the future usage of long-term aged care services may not be as great as the outlook for underlying demand might suggest.

The effects of institutional constraints on future demand depend on community expectations and government policy. Such constraints are particularly difficult to predict. Thus, for the most part, this study assumes unchanged policy settings in its projections. These projections are discussed after outlining recent trends in government long-term aged care expenditure.

Recent trends in government expenditure

Analysis of real government long-term aged care expenditure for the period 1989-90 to 1999-00 reveals the following.

- Real government expenditure on residential care (including Community Aged Care Packages or CACPs) and on all long-term aged care (residential care plus home and community services) increased.
- Much of this increase reflects increases in these programs' target population of older Australians. This population grew steadily over the entire period.
- Coverage (the proportion of the aged population receiving long-term aged care services) declined before recovering towards the end of the period.
- Average real expenditure per person in long-term aged residential care (including CACPs) also increased.
- While there are data limitations, it appears that real expenditure per aged person receiving home and community care services (HACC) has declined. However, government expenditure on HACC is a relatively small proportion of total long-term aged care expenditure. Consequently, it is likely that average real expenditure per aged person receiving *all* long-term aged care services has increased in recent years.
- Within these broad changes, the relative importance of nursing home care has declined in favour of less costly hostel, CACPs and home and community care. This change reflects Commonwealth policy. While there has been resource savings from this policy, any capacity for further gains from such a shift may be limited.

Long-term aged care expenditure in the future

The approach taken in projecting long-term age care expenditure is to have a ‘base case’, which essentially holds all factors constant at 1996-97 levels except gross domestic product (GDP) and population growth.

Projections under this scenario indicate long-term aged care expenditure will more than double in real terms from 1997 to 2031. However, even with relatively conservative GDP projections, expenditure grows by only about 25 per cent when expressed as a share of GDP. It also appears likely that the wealth and incomes of the aged ‘baby boomer’ generation will be significantly higher than those of the current aged — also increasing the capacity of society to meet the needs of this group.

Projected long-term aged care costs

Base case: 1997 to 2031

<i>Year ending 30 June:</i>	<i>Total long-term aged care costs</i>	<i>Total long-term aged care costs as a share of GDP</i>
	<i>\$m 1996-97 prices</i>	<i>%</i>
1997	5 841	1.10
2001	6 445	1.01
2006	6 968	0.99
2011	7 663	0.99
2021	10 726	1.19
2031	14 302	1.38

Source: Table 5.6.

Of course, GDP, population growth, the structure of the aged, disability and institutionalisation rates may vary from base case assumptions. So too may long-term aged care unit costs and policy settings.

One way of dealing with the inherent uncertainty associated with the base case projections is to vary these assumptions in a series of ‘experiments’. The following conclusions emerge from a number of experiments of this nature.

- Australia will have an ageing population over the period to 2031. Sensitivity analysis using different ABS demographic projections incorporating, amongst other factors, different net migration assumptions, does not essentially change this conclusion.
- It is more likely than not that the unit costs of long-term aged care services will increase more than the general level of costs for the economy as a whole. This conclusion reflects the labour intensive nature of production in this sector and expected increases in real wages, coupled with limited opportunities for capital

substitution or other means of improving labour productivity. This in turn will add to the demographically driven impetus for increased long-term aged care expenditure.

- The financial burden associated with increased long-term aged care expenditure, whether borne by taxpayers or by the aged and their families, will depend on GDP growth. If Australia's GDP growth (and its major underlying determinant, productivity growth) is similar to that of recent years, it is less likely that increased provision of long-term aged care services will be a financial strain.
- If disability and institutionalisation rates for each age category were to decline more strongly than projected, there is a potential for expenditure on long-term aged care to grow relatively modestly (and even to fall relative to GDP growth). This could occur from, for example, breakthroughs in the treatment of dementia and physical frailty. The converse would be true if age-specific disability rates were to rise with increased longevity — which would occur if the reduction in one disease were to increase the risk of contracting another disease with a significant level of disability.

Finally, a caveat is appropriate. It needs to be borne in mind that findings in relation to one component of social expenditure on the aged — long-term care — should not be taken as necessarily indicative of the larger picture. Increased long-term aged care expenditure is but one component of total social expenditure on the aged. In particular, it appears likely that the ageing of Australia's population will lead to increased medical and hospital expenditure. Even so, as in this study, there is debate about how big this will be relative to projected increases in GDP (PC 1999b, p. 96ff).

1 Introduction

There is a substantial literature on the implications of the ageing of Australia's post war 'baby boomers' for workforce participation, productivity growth, savings and economic growth.¹ A key theme in this literature has been the possible impact of a growing aged population on social expenditures — for example, on retirement pensions and health and aged care expenditures.

Some of this literature has sounded a warning about the prospects of ageing societies; and of the ability, and willingness, of younger generations to support the aged at current expenditure levels. McCallum et al refer to the 'challenge' for governments to maintain current levels of aged care funding, and service provision, as the aged population increases (1998, p. vii). Beck (1996) envisions a 'demographic time bomb'. And the National Commission of Audit stated (1996, p. xv):

Australia's population is ageing. The ratio of those not in work to those working will rise over the next half century. The ratio of females working to males working is rising. Social support arrangements are shifting from private provision (families) to dependence on government funded services such as nursing homes and childcare supported by budget programs. On the basis of present arrangements: budget expenditures on social security (especially age pensions) and health are likely to increase substantially relative to the size of the economy; budget revenues are not likely to show a corresponding increase; (and) these expenditures and revenue scenarios imply the need for action now and over the coming decades to restrain outlays growth if the budget deficit is not to grow.

Others, however, have suggested that the problems of an ageing population for social expenditures have been overstated (eg Creedy 1999 and Gibson and Goss undated). For example, Creedy concludes (1999, p. 23):

Some growth in social expenditure, relative to GDP, is expected, but it seems excessive to view this in terms of leading to a social security crisis. Nevertheless, careful planning will be required to deal with the changing composition of social expenditure.

With such differing judgements about the likely expenditure impact of an ageing population, this paper examines an important component of aged care expenditure — that on long-term aged care. While the paper provides an analysis of

¹ For a series of papers and discussion dealing with these issues in an Australian context see (PC 1999b).

past government expenditure trends, its primary focus is on what long-term aged care demand and expenditure is likely to be in the future.

1.1 What is meant by ‘the aged’ and ‘long-term aged care’

While any definition based on age is to some extent arbitrary, this paper follows the convention of defining ‘the aged’ as those aged 65 years or more. One exception is where certain government programs are defined in terms of those aged 70 years of age or more.

Aged care services — acute (hospital), home, community and residential — are shown in the balance of care ‘triangle’ in figure 1.1. The nearer the service to the apex of the pyramid, the more resource intensive and costly it is. Thus, the apex of the triangle, the provision of nursing home services and acute care, is the most resource demanding of all aged care modes.

However, lower levels of the triangle, including community and hostel care, are also important — both as service modes in their own right, and because of their interaction with lateral and higher care modes. For example, inadequate provision of home and community services may result in individuals being unnecessarily admitted to high cost hospital or nursing home care.

Figure 1.1 is also a useful reminder that the boundaries between types of aged care services are by no means precise. The Australian Institute of Health and Welfare (AIHW), for example, treats nursing homes as part of the acute care sector, whereas others place them with hostel and home and community care services. While categorisation of this kind is somewhat arbitrary, in this report, we have followed the latter (usual) approach. This is because:

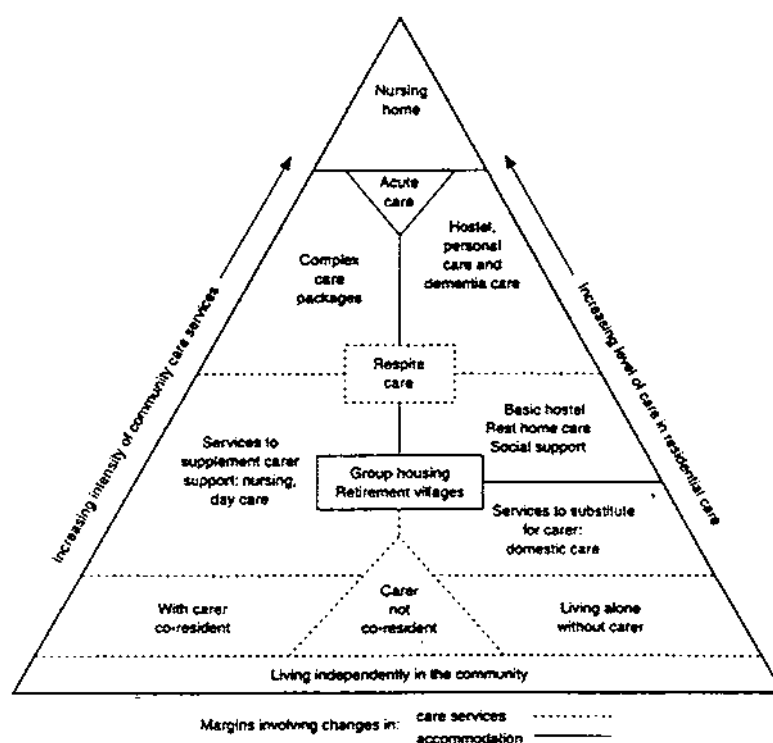
- nursing homes do not generally provide specialist medical services, and are a more intensive extension of care in other long-term aged care settings; and most importantly; and
- policy treats these service modes as part of a unified long-term aged care system.

Consequently, long-term aged care in this publication is:

- residential care for the aged (nursing homes and hostels but not, for example, group housing in retirement villages that have little or no care component);
- government financed home and community care (for example, home nursing and ‘meals-on-wheels’);

- informal care of the aged by family and friends, where this is broadly in line with that provided by formal home and community services; and
- some minor Commonwealth transfer programs, such as Carer Payments and Domestic Nursing Care Benefits, which indirectly provide support for the aged by providing payments to their carers.

Figure 1.1 Aged care service modes



Source: OECD 1996.

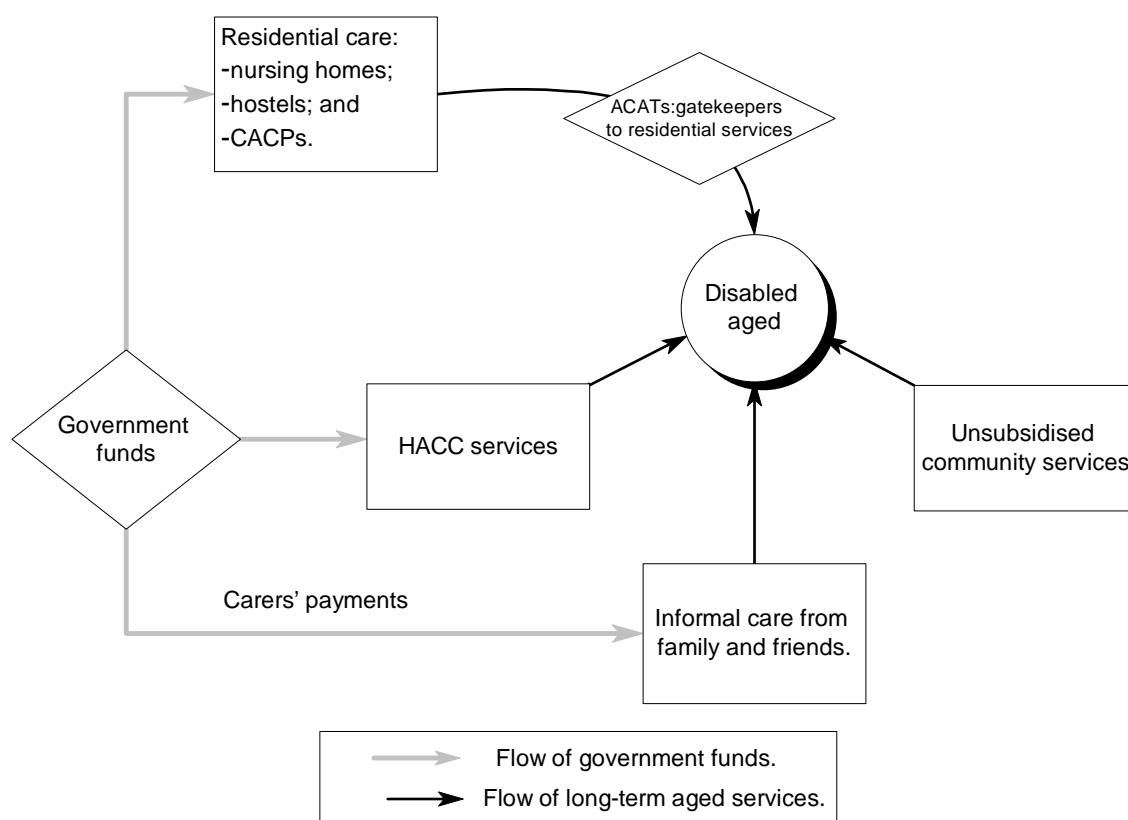
The notable omissions from this definition of long-term aged care services are acute and medical (GP and specialist) care for the aged.² It should be noted that while long-term aged care at present accounts for over 1 per cent of GDP (chapter 4, table 4.1), health expenditure on the aged (excluding long-term care) is double this — of the order of 2 per cent of GDP (appendix A). It should not be assumed that any conclusions in this report in relation to long-term aged care necessarily carry over for aged care in general.

² In defining these care modes as ‘long-term; aged care’ rather than ‘aged care’, we are following the report of the UK Royal Commission into long-term care of the aged (UK Long Term Ageing Report 1999). Other authors may use ‘long-term aged care’ in a more restrictive sense. For example, for residential care only.

1.2 Structure of the industry

The provision of long-term aged care in Australia can be thought of as comprising a formal sector, where at least some payment is required for the service supplied, and a non-fee, or informal sector, consisting of services supplied by family, friends and some community organisations (figure 1.2). Examples of services supplied through the informal sector include emotional support, shopping, cleaning, gardening, non-professional nursing, financial advice and assistance and mediation with outside organisations. Informal carers provide most in-home care needs of the aged — some 74 percent according to the ABS Ageing and Disability Survey.³

Figure 1.2 The supply of long-term aged care services



³ DHS&H (1995, p.18). See also, AIHW 1997, p. 252.

The formal long-term aged sector consists of the following:

- Commonwealth subsidised residential care (nursing homes and hostels) and CACPs (Community Aged Care Packages); and
- Commonwealth/State subsidised HACC (Home and Community Care) services organised and delivered by community groups.⁴

Residential Care

Nursing home provision is by far the most resource demanding of all formal aged care modes, accounting for over half of all expenditure on long-term aged care (see table 4.1). Nursing home services can be thought of as comprising a substantial care (especially nursing care) component and a smaller accommodation component. As at June 1997 there were approximately 74 000 nursing home residential places. Hostel services consist predominantly of accommodation with a relatively minor care component. As at June 1997 there were approximately 65 000 hostel places.

However, the distinction between nursing homes and hostels has become blurred with the Commonwealth's *Aged Care Structural Reform Package*, which links Commonwealth funding to the assessment of residents' care needs. Increasingly, residential establishments tend to offer services providing a full range of care needs, facilitating what has become known as 'ageing in place'. As at 30 June 1998, there were approximately 139 000 residential care places in Australia, of which 58 per cent, or approximately 80 650, were high level care places (roughly corresponding to nursing home) and the remainder (approximately 58 000) were low level (roughly corresponding to hostel places) (AIHW 1999a).

The Commonwealth commenced funding of CACPs in 1992-93. While services funded under this program are predominantly delivered in the home of the recipient, they are usually included as part of residential care because the intention of the packages was to provide a level of in-home care equal to that provided to hostel residents. From July 1999, some of the care packages have been extended to encompass nursing care in the recipient's home. A higher subsidy is available to CACP providers to enable them to provide this level of care for those assessed as requiring it. As at June 1998, there were approximately 10 000 CACPs (AIHW 1999b).

⁴ The target clients of HACC are not the aged per se but all persons in need of the services.

HACC services

The HACC program covers people of all ages, not just the elderly. However, approximately 80 per cent of users are aged 65 or over — a figure reflected in the average and median age of HACC users, 73 and 77 years respectively.

The types of HACC services available, and their usage, are set out in table 2.2 below.

Table 1.1 **Home and Community Care services provided per month**

<i>Type of service</i>	<i>Hours of service provision per month per 1000 persons aged 70 or more</i>
Home help	441
Personal care	143
Home nursing	127
Paramedical	23
Home respite care	196
Day centre care	506
Home maintenance	45
Home meals (number)	697
Centre meals (number)	100

Source: AIHW 1999b, p. 186.

The role of government

Governments, especially the Commonwealth Government, are key players in the provision of long-term aged care. Most of the income for nursing homes and hostels comes from Commonwealth subsidies. The Commonwealth also controls residential care fees, service quality and the supply of residential places. HACC services are also highly subsidised by Commonwealth and State governments, while quality in the sector is subject to joint Commonwealth/States guidelines.

ACATs (Aged Care Assessment Teams) are a key government institution in these arrangements. Composed of a small number of health professionals, their main role is to assess whether applicants meet needs-based criteria for nursing home, hostel or CACP care. They also have an important subsidiary role in providing advice on the types of community care that are available, and where these services may be obtained.

Carer payments

The Commonwealth also provides indirect support for the aged via assistance to their carers from a number of programs: Carer Payments, the Domiciliary Nursing Care Benefit (DNCB) and more recently, Carer Allowances.

Until July 1999, when it was subsumed in Carer Allowances, Carer Payments were directed to those who are unable to work because of a responsibility to care for others with severe disability.⁵ It is not possible to be sure exactly what proportion of Carer Payments provided indirect support for the aged. However, a lower bound for this proportion is the number of aged pensioners who have carers receiving Carer Payments. On this basis, approximately 35 per cent of Carer Payments indirectly support the aged (table 2.3).

Table 1.2 Number of Carer Payments by pension status of care recipient

	<i>As at 30 June 1997</i>	<i>As at 30 June 1998</i>
Carer payments to those caring for aged pensioners	10 954 (37.1%)	11 740 (34.6 %)
Carer payments to those caring for Disability Support Pensioners	15 735 (53.2%)	18 556 (54.6 5)
Other — payments to those caring for persons in receipt of neither pension	2 869 (9.7)	3 683 (10.8)
Total number of care recipients	29 558 (100 %)	33 979 (100 %)
% increase of total on previous year	18 %	15 %

Source: Information supplied by the then Department of Health and Aged Services.

Until July 1999, when it too was subsumed into Carer Allowances, the DNCB was a direct payment to carers. Eligibility for the DNCB was determined by the care recipient's need for continuous nursing care and whether the recipient would otherwise be eligible for nursing home care.

As at 30 June 1998, carers who received the DNCB provided care for 46 124 people, of which 36 541 (79 per cent) were aged 60 or over. Care recipients in the 80 years and over age group were over 35 per cent of all recipients.

In July 1999, the Commonwealth combined the DNCB with Carer Payments to form Carer Allowances, a support payment to carers delivered through the Commonwealth's main welfare payment agency, Centrelink.

⁵ There were Carer Payment eligibility requirements for both payment recipients and care recipients. The care recipient was required to be either in receipt of a pension or to meet a special income and assets test. The payment recipient was required to provide full time care for a person aged 16 years or over with a severe disability, or for a person aged under 16 with a profound disability. Assistance provided by the carer was to be given in the home of the care recipient.

Further background on the development of government long-term aged care policy and current arrangements is in appendix C.

1.3 Report outline

Chapter 2 discusses demand for long-term aged care including the fundamental ‘drivers’ of demand — the size of the aged population, the aged’s health and disability status and their income and wealth — and how these may alter over time. Chapter 3 details the available information on the costs of long-term aged care and also discusses how these may change in the future. Chapter 4 analyses recent government expenditure on long-term aged care. The final chapter provides quantitative projections of future long-term aged care expenditures, in both real terms and relative to (projected) GDP. The chapter also provides the report’s concluding comments.

2 Demand for long-term aged care

2.1 Introduction

This chapter looks at demand for long-term aged care services of all types, including informal care, although its focus is on demand for formal care services. People tend to mean slightly different things when they speak of ‘demand’. To an economist, the *underlying* demand for long-term aged care services, like the demand for other services, are affected by two broad sets of factors.

First, the demand for aged care services is dependent on the overall number of people who experience disability. However, this does not imply that there is always a simple relationship between raw counts of disability and the demand for aged care services. Disability is a complex multi-dimensional factor with adverse consequences for the old people concerned and those in their social network. Some disabilities have less adverse impacts than others, and different disabilities have varying impacts on different people. The demand for aged care services will depend on the severity of the disability, its actual impacts on the individuals concerned, its amenability to management and the extent to which the aged or their delegated decision-makers are aware of the services they can use. It can also be influenced by changing preferences of the aged (and people close to them) about the value of managing disability. Thus, even with given disability levels, demand for aged care services could alter, for example, if people’s expectations about tolerable disability were to change. Even so, if overall disability levels rise in a community this is very likely to lead to increased demand for aged care services.

Second, like virtually all goods and services, demand is influenced by long-term aged care prices, users’ incomes and wealth, and the prices of substitute and complementary goods. The present long-term aged care market is one in which the influences of these factors on the usage of services are, as a matter of government social policy, muted. However, this does not mean that these fundamental determinants of demand have no influence on outcomes. It can also be important to understand how these demand factors affect *underlying* demand, even if current regulatory and policy settings constrain the actual observed outcomes. Institutional features and policies may change over time, with the result that underlying demand may be more or less expressed in the usage of services.

The broad factors shaping demand and final usage are represented schematically in figure 2.1. These factors form the basis for the discussion in the following sections. Section 2.2 looks briefly at institutional (government) influences and constraints that affect likely future demand. Section 2.3 examines evidence on ageing and how the structure of Australia's population is shifting towards the old.

But ageing is only of relevance to long-term care if the aged experience a period of disability requiring care prior to death. Consequently, we review the literature and possible trends in disability among the old in Australia in section 2.4. We then consider actual evidence on the use of aged-care services, with a particular emphasis on the usage rate of subsidised services and the average length of stay (section 2.5).

However, subsidised services, while important to government budgets, are not the only choices available for long-term aged care. Shifts in the factors that determine the choices between subsidised and non-subsidised care modes have implications for the demand for the subsidised modes (section 2.6).

It also appears likely that income and wealth of the aged will rise, with subtle and offsetting influences on the demand for total aged care services and with implications for the demand for particular modes of care (section 2.7).

Section 2.8 provides some concluding comments.

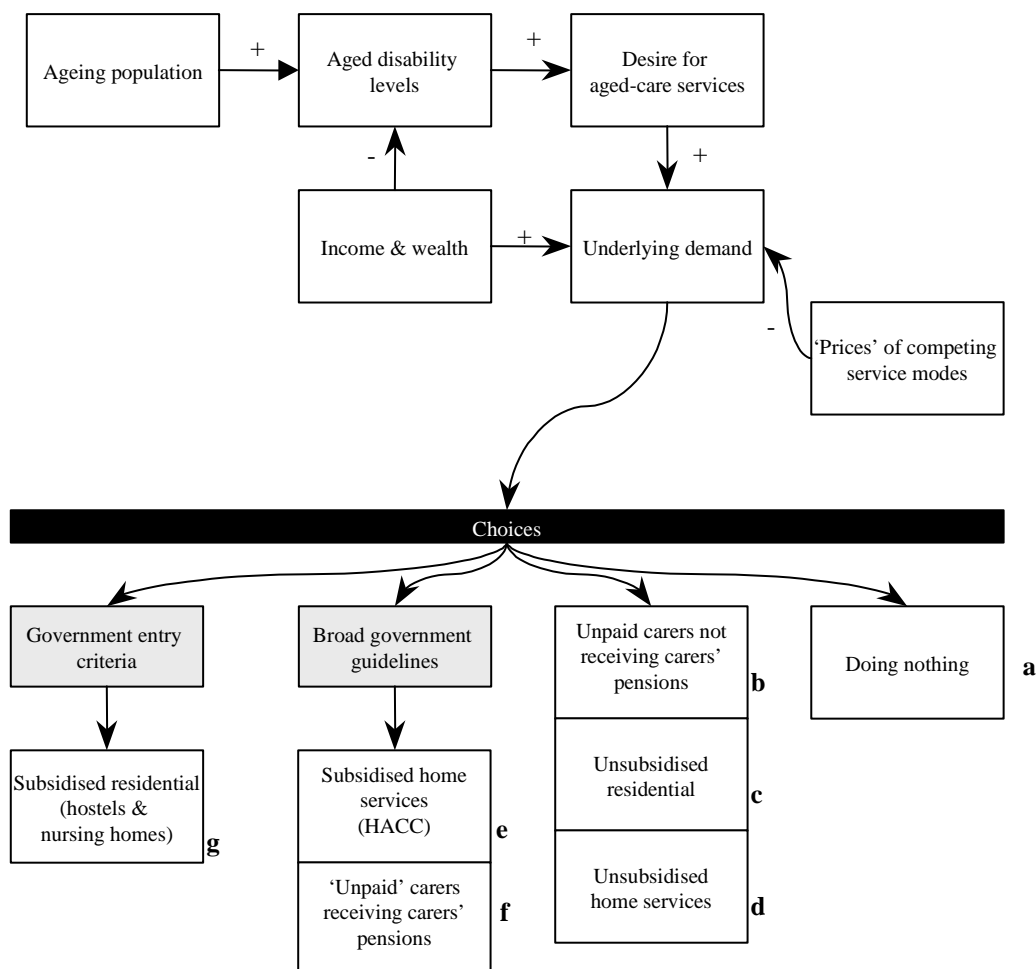
2.2 Institutional constraints on demand¹

The hallmark of long-term aged care services in Australia is government control and regulation of supply and demand of key services. This is especially so for residential care.

- The use of HACC-financed community services is subsidised by Commonwealth and State governments. Commonwealth/State endorsed guidelines influence quality of care. A small user co-payment is also usually required. This arrangement implies lower prices to users than otherwise would be the case. The impact of guidelines on quality is difficult to judge in the absence of empirical evidence. But, given the importance of government funding to the incomes of providers, the impact is likely to be considerable.

¹ This section distils the main points of Australia's long-term aged care institutional arrangements from an economic perspective. For a fuller discussion, see appendix C.

Figure 2.1 The demand for long-term aged care services^a



^a A plus sign (minus sign) indicates a positive (negative) influence of a demand factor.

- The Commonwealth Government provides a subsidy to suppliers of residential care to the frail aged, which varies primarily with the care needs and pensioner/non-pensioner status of the individual. A co-payment from the resident is also required. This is usually small compared to the Commonwealth subsidy, though it can be large relative to the income of the beneficiary. Quality of care is also controlled by regulation, as are the fees that can be charged to residents.
- Any tendency for excess demand in the residential care sector because of subsidised prices (as indicated, for example, by lengthening waiting lists) is controlled by regulating the quantity, or stock, of residential places available and by controlling entry to this stock with Aged Care Assessment Teams (ACATs). ACATs assess applicants' eligibility for residential care and its close substitute, Community Aged Care Packages (ACATs).

2.3 The ageing of Australia's population

The size of the aged population is fundamental for the quantity of long-term aged care demanded and Australia, like most Western countries, is an ageing society. In 1870, 42 per cent of the population were aged less than 15 years and only 2 per cent were aged 65 years or more. In 1998, the corresponding figures were 21 per cent aged less than 15 years and 12 per cent aged 65 years or over (McDonald and Kippen 1999, p. 47). As Myers (1997, p. 2) has noted:

From the traditional kind of pyramid with a broad base and tapering top, the world's population structure is evolving into a V-shaped kind of pyramid. The world is literally being turned upside-down demographically and this is a prime reason why gerontology has become such an important center of attention.

This trend appears set to continue. ABS population projections indicate that the aged population — those 65 years old or more — is expected to increase in absolute terms and relative to the overall population (figure 2.2 and table 2.1).²

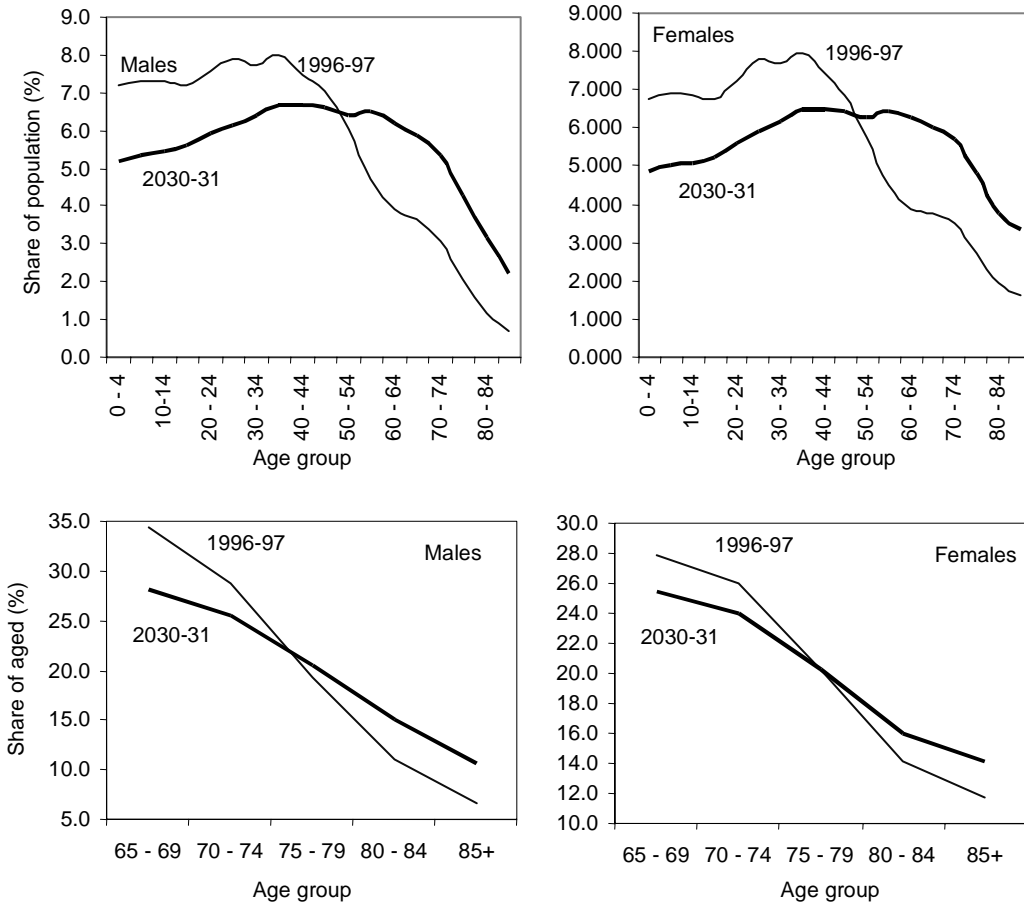
An increasing proportion of the aged will be getting older. What might be termed 'the very old' (those aged 80 years or more) will increase from its present 22 per cent of the aged population, to 28 per cent in 2031 (figure 2.2 and table 2.1). Overall, the aged are projected to increase by 140 per cent from 1997 to 2031, and the very old by 202 per cent over the same period.

Table 2.1 also shows there are more aged females than males, reflecting females' greater life expectancy. Interestingly, the ABS projections indicate that the female share of the aged population will fall by 32 percentage points between 1997 and 2031. This trend is consistent with UN and OECD short term population projections which show slightly greater life expectancy gains per decade for males than females — 0.94 years per decade for women and 1.02 years for men (Jacobzone et al. 1998).

Along with Canada and Japan, Australia is classified as one of the OECD countries that face a particularly steep and rapid increase in its older population, including amongst the very old. Amongst other OECD countries, Germany, Sweden and the UK are expected to have only moderate increases, while France, the Netherlands and the US are expected to have stronger increases (Jacobzone et al. 1998, OECD 2000).

² It is also rising relative to the working age population of (those aged 15 to 64 years). Changes in the aged dependency ratio is sometimes used as a simple measure of the social burden represented by the aged. However, in this report we used the ratio of long-term aged care expenditure to GDP as the measure of affordability, which appears to overcome some of the problems associated with the aged dependency ratio (Schulz 1997).

Figure 2.2 Shifts in the age distribution of the population
1997 to 2031^a



^a The data for the age distribution for the whole range of ages is smoothed.

Data source: Data from ABS Cat. No. 3201.0 (Estimated Resident Population) and Cat. No. 3222.0 (population projections, series II, year 2000 projections) from the Econdata database (August 2000 data release).

Table 2.1 Projections of Australia's aged population^a, 1996-97 to 2030-31

Year	Aged population to total population	Aged dependency ratio ^b	Aged 65+	Aged 80+	The 'very old' to total aged population ^c	Female share of aged population)
	%	%	'000	'000	%	%
1996-97	12.1	18.2	2244	501	22.3	56.3
1997-98	12.2	18.2	2282	514	22.5	56.2
2000-01	12.4	18.4	2403	583	24.3	55.9
2005-06	13.0	19.2	2657	713	26.8	55.1
2010-11	14.3	21.0	3036	820	27.0	54.3
2020-21	18.4	28.1	4220	997	23.6	53.3
2030-31	22.3	35.8	5405	1518	28.1	53.4

^a Australian Bureau of Statistics (ABS) population projections series 2. The ABS notes that such projections are not forecasts and are based on particular assumptions about births, deaths and net migration.

^b Population aged 65 or more to population aged 15 to 64 years as a percentage. ^c Population aged 80 and over as a percentage of the population aged 65 and over.

Source: ABS Cat. No. 3201.0 and 3222.0 from the Econdata database (August 2000).

2.4 Disability amongst the aged

Current levels of disability among the aged

Empirical studies of the demand for aged care show that measures of disability are major factors driving the demand for formal (paid) care in the recipient's home or in institutions (Jacobzone et al. 1998).

But disability is a nebulous concept and definitions vary. The ABS defines *disability* as the presence of one or more limitations, restrictions or impairments that have lasted, or are likely to last, for at least 6 months. These include the loss of sight or hearing, speech difficulties or incomplete use of limbs. Based on its 1998 survey, the ABS estimated that 53.9 per cent of the Australian population aged 60 or more had a disability (ABS 1999, p. 14).

However, many persons defined as having a disability will not be sufficiently impaired for it to affect their capacity to cope with day-to-day activities without assistance. In their most recent (1998) survey, the ABS classifies aged disability into sub-categories that differentiated the level of disability. The most important defining characteristic of disability was the extent to which the aged person faced limitations in performing certain core activities³ associated with daily living (labelled as

³ The core tasks included aspects of self-care, communication and mobility.

‘handicaps’ in their 1993 survey).⁴ Such limitations may be, for example, difficulties with showering, dressing, eating or speaking. In its 1998 survey, the ABS estimated that some 45 per cent of the Australian population aged 60 or more had a disability in a core activity, while a further 5.2 per cent had a disability without a restriction in a core activity (ABS 1999, p. 14).

Those with a restriction in a core activity are further classified, depending on its severity, into having:

- a mild core activity restriction (no personal help or supervision required and no difficulty performing any of the specified tasks, but the individual uses an aid, has a mild mobility handicap or cannot easily pick up an object from the floor);
- a moderate core activity restriction (no personal help or supervision required, but the individual has difficulty in performing one or more of the specified tasks);
- a severe core activity restriction (personal help or supervision sometimes required); and
- a profound core activity restriction (personal help or supervision always required).

A better guide to the proportion of the aged population likely to seek long-term aged services are those that are dependent on others — the latter two ABS categories of ‘severe’ and ‘profound’ core activity restrictions. These categories indicate the need for personal help or supervision, either occasionally or permanently, for self-care, mobility or communication activities (Rickwood 1994, p. 2).

The percentage of Australians with a severe or profound core activity restrictions (handicaps) increases rapidly with age. For those aged 85 or more, 69 per cent of females, and 56 per cent of males, have either a severe or profound handicap (table 2.2). It should, however, be emphasised that while severe or profound handicap is a predictor of the usage of long term aged care services, it does not mean that all people with such levels of disability require or demand such care.

⁴ The ABS also included a category of disability where people were disabled but faced no specific restriction on any core activity.

Table 2.2 Percentage of elderly with disability, core activity restriction and profound or severe core activity restriction

	60-64	65-69	70-74	75-79	80-84	85+	60+
<i>Males</i>							
With disability	42.0	43.4	51.1	60.9	63.4	84.3	50.9
With core activity restriction	35.7	34.6	43.7	54.6	57.0	83.3	44.0
With severe/profound core activity restriction	8.3	7.8	11.8	19.0	24.2	56.0	14.2
<i>Females</i>							
With disability	35.5	37.6	47.3	56.6	66.8	84.2	49.7
With core activity restriction	31.0	32.8	41.9	53.3	65.0	83.2	45.8
With severe/profound core activity restriction	9.3	9.2	15.1	24.9	35.5	68.8	21.4

Source: ABS (1999 p. 14).

What may shift disability rates over time?

Apart from age itself, factors likely to affect the risk of handicap in old age are listed below (Costa 2000; Edvartsen 1996; Manton 1999; Manton et al 2000 and OECD 1998b).

- Employment as a manual worker — manual labour increases the risk because of its harder physical nature and greater exposure to possible accidents.
- Income and wealth. Those with higher incomes and wealth are likely to have better nutrition, housing and more developed social networks⁵ (and perhaps remedial health care).⁶
- Sex — females have higher long-term risk because they live longer.
- Education — more educated people are less likely to become disabled, a difference that is accentuated with age.
- Disease reduction and technological changes in health care have played a major role in disability reductions. Costa (2000), for example, traces around 60 to 80 per cent of the reductions in functional disability that occurred over the 20th century among men aged 50 to 74 to disease rate reductions and innovations in medical care. In the future, more and better artificial joint replacements, and

⁵ Bassuk et al (1999) show that old people with more developed social ties — which is also associated with income — have less likelihood of facing cognitive decline.

⁶ The direct impact of income and wealth on demand for long-term aged care is discussed in section 2.6.

improved treatment for osteoporosis, arthritis and dementia, may lessen the prevalence of disability and handicap amongst the aged.

- Public health programs (in areas such as smoking) and health awareness (for example, exercise) may influence morbidity and associated handicaps.

It appears likely that future trends in these factors will reduce age-specific disability rates amongst the aged.

On the other hand, there may be some offsetting factors:

- Technology may increase the survival time of people with disabilities — tending to increase age-specific disability rates. For example, dialysis for renal failure increases survival time, but the aged person receiving such treatment will still typically be unable to perform many tasks unaided.
- It is also possible that substitution effects from other diseases and injuries will (partly) offset some medical gains. Substitute morbidity is defined as disease and mortality that results from the decrease in a specific disease (McCallum 1999, p. 63). For example, more successful treatments of diabetes mellitus (type 1) after World War II reduced early death from this disease, but increased the risk of cardiovascular and other diseases in later life (McCallum 1999, p. 64).
- Age-specific disability rates may also climb with the elimination of one disease category if there are co-morbidities. Thus, some people suffer from a range of conditions. If they were to die from one of these, this eliminates the later expression of disability associated with one of the other conditions. This implies that if the death-causing condition were effectively treated, the person may then subsequently develop disability because of the co-morbid condition.

It is, however, important to note that the phenomenon of substitute morbidity only offsets the effects of better treatment and prevention if the people benefiting from those interventions have a future risk of age-specific disability that is higher than would apply to those not receiving the interventions. Thus, better treatments for neoplasms may mean that as the survivors age, they now face a subsequent risk of developing dementia, with its associated high level of disability. But unless people who are successfully treated for neoplasms have a higher age-specific risk of dementia than other people, then the effect being measured is a pure survival effect. This survival effect is already captured by the usual method used for projecting disability, and requires no adjustment for substitute morbidity.⁷

⁷ This survival effect may also mean that the total number of the disabled aged will increase as more people survive to older age brackets where the risks of disability are higher than younger age brackets. But again no adjustment for *this* form of substitute morbidity is required in

In summary, once substitute morbidity and co-morbidity are taken into account, it is, from a theoretical perspective, an open question whether *age-specific* disability rates will remain fixed, decline or rise in the future. The issue must be decided on empirical evidence.

Empirical evidence on trends in disability rates

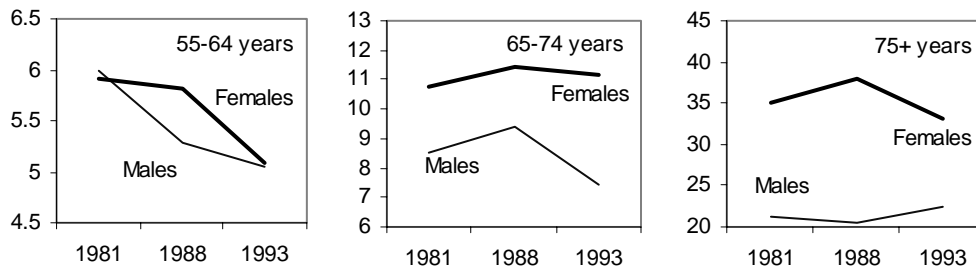
In Australia, the existing survey data is inconclusive about time trends in the incidence of severe or profound handicap or disability amongst the aged. The ABS has undertaken four disability surveys since 1981. There is evidence of increasing disability rates from 1981 to 1988, declines from 1988 to 1993, and increases from 1993 to 1998 (figure 2.3 and table 2.3). However, some of the apparent changes may reflect factors other than an objective change in age-specific disability rates.

- The survey results are based on self-assessment rather than clinical assessment using objective criteria. Social attitudes to, and conceptualisation of, disability have changed over time, which can affect what is reported as a disability (Waidmann and Manton 2000, p. 7). Other non-sampling errors due to subtle question differences or survey implementation may also affect comparability of results over time.⁸
- While the surveys have been large-scale national surveys, they cannot provide accurate assessment of disability for each age, particularly the very old, but rather only aggregate results for age ranges. Given that there has been a shift in the age structure of the old towards older ages, this implies that the disability rate for the oldest age category should increase over time, though underlying yearly disability rates may not have changed for members of this age group.
- Like all surveys, there is a degree of sampling error.
- With just a few observations over time, the surveys provide a relatively weak statistical basis for determining long-term trends.

projections, because the projections automatically take account of survival from one age category to the next.

⁸ The surveys have tended to increase in sophistication and scope over time, with the ABS adding additional questions to identify disability. The ABS, however, have produced data that *largely* corrects for the changes in the screening questions, so that this factor, at least, is mainly controlled in making comparisons over time.

Figure 2.3 Percentage of persons with a severe or profound handicap amongst the aged



Source: ABS data reported in Walsh and De Ravin 1995.

Table 2.3 Rates of severe/profound core activity restrictions of the aged (65+ years)

Age standardised prevalence rates^a

	1988	1993	1998
	%	%	%
Males	12.7	12.4	14.8
Females	21.9	20.8	23.3
Total	17.9	17.1	19.6

^a Rates are age standardised to the estimated resident population for March 1998. This means that the figures provide a perspective of what has happened to the weighted average of age-specific disability rates, using a *fixed* set of population weights. The data has also been corrected for major methodological differences between the surveys.

Source: ABS data reported by the AIHW (1999b, p. 168).

In contrast to the ambiguous picture suggested by the Australian data, much of the international evidence suggests generally declining age-specific disability rates among the aged (Manton and Yashin 1999; Waidmann and Manton 2000; Jacobzone et al 1998). Of those OECD countries for which (apparently) reliable data are available, only Australia⁹, the Netherlands and the UK fit into the OECD's category of very moderate, or no, gains in the incidence of severe disability amongst the aged (Jacobzone et al 1998).¹⁰

Calculations by the OECD (1998b) suggest that the projected increases in the number of disabled older people in most Western nations are muted if the declining disability trends of the 1980s and 1990s are assumed to continue (table 2.4).

⁹ The OECD's conclusions are based on the ABS surveys shown in figure 2.3.

¹⁰ Canada and Sweden were classified as having mixed or moderate results, while Germany, France, Japan and the US were classified as having significant gains (Jacobzone et al 1998).

Table 2.4 The impact of dynamic versus static disability rates on the number of disabled aged: OECD projections

	<i>Static disability rates</i>	<i>Dynamic disability rates</i>
	Change in disabled old (%)	Change in disabled old (%)
France (1994-2020)	58.1	26.2
UK (1992-2020)	24.3	10.8
Australia (1996-2020)	70.8	59.8
Japan (1996-2020)	99.3	58.2
Canada (1995-2020)	85.1	61.0
Germany (1995-2020)	39.1	11.9
Sweden (1995-2020)	29.0	1.8
United States (1994-2020)	50.1	18.4

Source: OECD 1998b (p. 49-50).

Reflecting the weak reductions in trend age-specific disability rates shown by Australian survey data, the OECD's dynamic projections for Australia (shown in more detail in table 2.5) reveal few differences between projections based on static and dynamic disability rates. Depending on the projection method used, the increase in the number of disabled older persons between 2000 to 2020 is 200 000 or 230 000 (table 2.5). The increase in the number of aged Australians is much more pronounced after 2021 (see table 2.1), suggesting that there would be even greater increases in the number of disabled older persons after that date if disability rates did not fall significantly.

The AIHW (1999b, p. 172) have also produced forecasts of disability over the long run (table 2.6) — using somewhat different definitions of disability. Their projections show a small increase in the overall disability rate for people aged 65 and over, reflecting structural change in the aged population (and a small decrease in the disability rates for the two age subcategories).

Table 2.5 OECD projections for Australia of disabled older persons, 2000 to 2020

Number of disabled older persons and percentage of disabled older persons to population aged over 65 years

	<i>Dynamic projections^a</i>	<i>Constant disability rates^b</i>
2000		
Number of disabled older persons (000)	385	395
Prevalence of disability (%)	17.24	17.69
2010		
Number of disabled older persons (000)	455	485
Prevalence of disability (%)	17.02	18.14
2020		
Number of disabled older persons (000)	585	625
Prevalence of disability (%)	16.03	17.11

^a Involves projecting past trends into the future. Thus, changes reflect an expected falling disability rate and an expected ageing population. ^b Assumes no change in disability rates in future years. Thus, changes reflect expected ageing population structure only.

Source: OECD 1998b.

Table 2.6 AIHW projections of the aged and the disabled age

Australia 1981 to 2031^a

	<i>Population</i>			<i>Severe/profound disability numbers</i>			<i>Disability rate</i>		
	65-79	80+	65+	65-79	80+	65+	65-79	80+	65+
	'000	'000	'000	'000	'000	'000	%	%	%
1981	1 198	257	1,455	159	120	279	13.3	46.6	19.1
1991	1 567	384	1,951	213	178	390	13.6	46.2	20.0
2001	1 812	575	2,387	256	264	520	14.1	46.0	21.8
2011	2 183	783	2,966	294	357	651	13.5	45.6	21.9
2021	3 126	927	4,053	424	421	844	13.6	45.4	20.8
2031	3 729	1,389	5,118	522	628	1,150	14.0	45.2	22.5
Change 2001 to 2031 (%)	105.7	141.8	114.4	104.0	137.8	121.2	-0.8	-1.6	3.1

^a The data are based on ABS 1999 population projections (series K) and projections from the ABS disability surveys.

Source: AIHW (1999b, p. 172)

However, arguably the same technological and social factors underlying the apparent reduction in age-specific disability rates evident in most other OECD countries will not by-pass Australia. Rather than look at disability per se (for which there is rather dated information), we examined how the probability of institutionalisation (being in residential care) might change if the older became

healthier. This is relevant because residential care is the most costly part of the long-term aged care system.

Projections that take into account the impact of possible reductions in age-specific disability on institutionalisation suggest the following.

- If there are no age-specific disability gains, institutionalisation rates will rise for the aged as a whole (table 2.7). Overall, institutionalisation rates rise by about 14 per cent (from 5.6 per cent to 6.4 per cent). This reflects the increase in the share of the oldest old, which have a higher institutionalisation rate. Higher growth in the institutionalisation is more apparent for males than females, testimony to their higher relative average life expectancy increases.
- If there are moderate disability gains for each age category, overall institutionalisation rates fall only slightly (table 2.8). This reflects the fact that the shift in the age structure of the old towards the very old offsets the impact of declining disability. This scenario illustrates the point that despite significant reductions in disability rates (and its counterpart, institutionalisation rates) for each separate age group, the average reduction in disability and institutionalisation rates for the aged as a whole can be close to zero. Under moderate disability gains, the number of long term aged in institutional settings is still projected to increase by about 107 per cent by 2030 (compared to 150 per cent in the absence of any reductions in disability rates for any old age category).
- If, on the other hand, disability rates fall strongly over the full period from 1998 to 2031, there are appreciable reductions in institutionalisation rates among the old (table 2.9). For example, the female aged institutionalisation rate falls by 2 percentage points. Even under this optimistic scenario, the *number* of long-term aged in institutional settings is still projected to increase by about 70 per cent by 2031.¹¹

¹¹ However, given GDP is projected to rise by more than this, it would imply, at fixed per-patient costs, a fall in the ratio of institutional costs to GDP over the period. See chapter 5 for a more extensive discussion of GDP projections.

Table 2.7 Changes in the numbers in long-term aged care institutions assuming zero age-specific disability gains, Australia^a

Aged categories	Institutionalisation rate (1997-98)		Institutionalisation rate (2030-31)		Change in number of institutionalised in long term aged care		
	Females	Males	Females	Males	Females	Males	Total
	%	%	%	%	%	%	%
65-69	0.7	0.7	0.7	0.7	111.4	111.4	111.4
70-74	1.8	1.6	1.8	1.6	110.4	125.6	117.0
75-79	4.7	3.1	4.7	3.1	118.9	158.0	131.9
80-84	12.3	7.3	12.3	7.3	156.4	245.4	180.0
85+	32.7	18.4	32.7	18.4	161.7	292.9	187.6
All aged	7.3	3.4	8.1	4.3	134.9	196.3	151.1

^a The data on institutionalisation rates in 1998 are from the AIHW (1999a), while the population data are from ABS population data in the Econdata database (August 2000). Series II was used for projections.

Source: AIHW (1999a), the ABS(1998a) and estimates.

Table 2.8 Changes in the numbers in long-term aged care institutions assuming moderate age-specific disability gains, Australia^a

Aged categories	Institutionalisation rate (1998)		Institutionalisation rate (2031)		Change in number of institutionalised in long term aged care)		
	Females	Males	Females	Males	Females	Males	Total
	%	%	%	%	%	%	%
65-69	0.7	0.7	0.3	0.3	-6.0	-6.0	-6.0
70-74	1.8	1.6	0.9	0.8	10.2	18.2	13.7
75-79	4.7	3.1	2.9	1.9	35.0	59.0	43.0
80-84	12.3	7.3	8.9	5.3	85.9	150.4	103.0
85+	32.7	18.4	28.8	16.1	130.2	245.6	152.9
All aged	7.3	3.4	6.4	3.2	96.0	140.0	107.6

^a These projections are based on the assumption that the annual trend growth rate in the institutionalisation rate is -2.5 per cent per annum for 65-69 year olds, -2.0 per cent per annum for 70-74 year olds, -1.5 per cent per annum for 75-79 year olds, -1.0 per cent per annum for 80-84 year olds, -0.4 per cent per annum for 85+ year olds. The pattern of lesser gains in disability with age appears to be a consistent feature of the international data (OECD 1998b). It was assumed that males and females made similar gains. The data represent moderate levels of reductions in disability over the long run. As there is evidence that reductions in disability rates have slowed over time (for example table 8b in OECD 1998b), the use of moderate trend growth factors over a long period is probably appropriate. The data on institutionalisation rates in 1998 are from the AIHW (1999a), while the population data are from ABS population statistics from Econdata (August 2000). Series II population numbers were used for projections. It should also be noted that the link between disability rates and institutional care rates is unstable, which adds an additional level of uncertainty about projections such as these (section 2.5).

Sources: AIHW (1999a), the ABS(1998a) and estimates.

Table 2.9 Changes in the numbers in long-term aged care institutions assuming large age-specific disability gains, Australia^a

Aged categories	Institutionalisation rate (1998)		Institutionalisation rate (2031)		Change in number of institutionalised in long term aged care(%)		
	Females	Males	Females	Males	Females	Males	Total
	%	%	%	%	%	%	%
65-69	0.7	0.7	0.3	0.3	-24.9	-21.9	-23.4
70-74	1.8	1.6	0.5	0.5	-42.4	-23.1	-33.9
75-79	4.7	3.1	1.6	1.3	-24.4	8.1	-13.6
80-84	12.3	7.3	6.1	4.3	26.1	103.5	46.6
85+	32.7	18.4	27.3	12.2	118.7	160.6	127.0
All aged	7.3	3.4	5.3	2.4	64.0	81.1	68.5

^a These projections are based on the assumption that the annual trend growth rate in the institutionalisation rate follows the reduction in severe disability rates apparent for West Germany (one of the OECD countries showing strong reductions in disability rates over time). The assumed annual trend growth rates are for females (males) -3.2 (-3.1) per cent per annum for 65-69 year olds, -4.0 (-3.3) per cent per annum for 70-74 year olds, -3.3 (-2.7) per cent per annum for 75-79 year olds, -2.2 (-1.6) per cent per annum for 80-84 year olds, and -0.6 (-1.3) per cent per annum for 85+ year olds.

Source: As above and OECD (1998b, p. 40).

The impacts of longevity

There may be links between disability rates and average life expectancy. Demographic evidence for Western countries indicates that the aged are living longer. This is highlighted by the fact that from 1970-71 to 1998-99, the Australian population as a whole increased by 1.45 times, while those aged 100 years or more increased by a factor of 12.8 times.¹²

The life expectancy of 65 year old Australian males was 13.9 years in 1981, but 15.7 years in 1993. For females, the corresponding figures are 18.1 years in 1981 and 19.5 years in 1993 (OECD 1998a, p. 91). The ABS projects that life spans of 65 year old males (females) will increase from 15.8 (19.6) years in 1994-96 to 18.8 (22.2) years by 2041, while those of 85 year old males (females) will increase from 5.2 (6.4) to 5.9 (7.6) years (ABS 1998a).

The impact of increased life expectancy on age-specific disability rates depends on whether those gaining extra years of life have higher, lower or the same age-specific disability rates as those who would have lived longer anyway. Fries (1980) has hypothesised 'compression of morbidity' associated with increased longevity. In this case, as people live longer it is supposed that the number of disability-affected years

¹² Data from ABS population statistics in the Econdata database (August 2000).

remains constant — and is shifted to more advanced years of age. *Assuming such compression*, Manton (1998) argues that it is inconsistent to project increased life expectancy, while simultaneously supposing that *age-specific* disability rates do not fall over time. On the other hand, if there are significant increases in substitute morbidity with high associated disability, then those experiencing prolonged life may also experienced prolonged disability.

The weight of international evidence is that the disability-free years of the aged increase along with life expectancy. In particular, severe disability (the type most likely to require intensive long-term aged care services) tends to be concentrated in the last 2 to 4 years of life, regardless of how long a person lives (OECD 1998a, p. 95 and Waidmann and Manton 2000). This suggests that the relevant age-specific disability rates will fall — at least up to some threshold age.

It also implies that deaths and death rates may provide a better indicator of long-term aged care usage than raw projections in population numbers (Vanston 1998, p. 4).

Population and death projections provided by the ABS suggest that longevity is likely to have substantial impacts on death rates, and therefore preceding disability, for all age groups in Australia (table 2.10). For example, while the population aged 65 to 69 is projected to increase by around 100 per cent from 1997 to 2031, the number of deaths among this age group is projected to increase by only 10 per cent. However, the gains for the very old are much less pronounced. Given the relatively high weighting given to the oldest old in total aged deaths¹³, the overall impact of longevity on aged deaths is much reduced. Aged deaths are projected to increase by nearly 100 per cent over the period from 1997 to 2031, which would still represent a significant increase in demand for long-term aged care (and other health care) services. Thus, while greater longevity is likely to reduce demand for long-term aged care services below what it would otherwise be, it will not be sufficient to counter the shift in the number of aged.

2.5 The use of subsidised services

While disability is associated with demand for aged care services, people may live with disability with little or no assistance — whether informally from family or from government. More severe states of disability, however, increase the likelihood of long-term institutional care and other formal interventions. The following two sub-sections examine data on the use of subsidised services.

¹³ Around 60 per cent of aged deaths are projected to occur in people aged 80 years or more in 2031.

Table 2.10 The impact of longevity^a
1997 to 2031

<i>Age categories</i>	<i>Population growth</i>	<i>Increase in deaths</i>	<i>Change in death rate</i>	<i>Share of deaths in 1997</i>	<i>Share of deaths in 2031</i>
	%	%	%	%	%
65-69	106.7	10.9	-46.4	8.4	5.5
70-74	117.5	20.6	-44.5	12.2	8.7
75-79	145.8	58.4	-35.6	14.6	13.6
80-84	191.0	111.0	-27.5	16.7	20.7
85+	215.8	165.9	-15.8	26.4	41.4
Total aged (65+)	138.6	94.9	-18.3	78.3	89.9
The 'young'	15.4	-20.5	-31.1	21.7	10.1
All ages	30.3	69.9	30.4	100.0	100.0

^a The projected deaths are those for projection series H as outlined in *Population Projections Australia, 1999-2101* (Cat No 3222.0) and are based on assumptions of High Fertility (TFR 1.75), Low Overseas Migration (Net 70 000) and Medium Interstate Migration. The population projections are slightly different to the series 2 projections noted in table 2.1 and used more generally throughout this report. It should be cautioned that the projected deaths are derived residually from algorithms whose prime intent is to project the population of the States and Territories and not the component parts of that projected population. Therefore, care should be taken in how these projected deaths are used. They are intended to be good approximations of future deaths and not as official ABS death projections.

Sources: ABS (2000), *Population Projections Australia, 1999-2101* (Cat No 3222.0) and unpublished ABS statistics.

The overall use of institutional services not only depends on the probability of admission, but also on the duration of service use. Accordingly, this section also examines average length of stay for residential care — the most costly part of the system.

The likelihood of using residential care

Static usage rates

At any particular time, the proportion of the aged population in residential care is relatively small — of the order of 3 per cent for nursing homes and 2.5 per cent for hostels.¹⁴ The institutionalisation rate climbs steeply with age (figure 2.4).

In contrast to the rather modest overall institutionalisation rate, around 18 per cent of those aged 65 or more are classed as having a profound or severe disability. This suggests that the link between disability rates among the aged and institutional care is not straightforward. It is true that those age groups with the highest incidence of disability are also those with the highest institutionalisation rate. But in all age

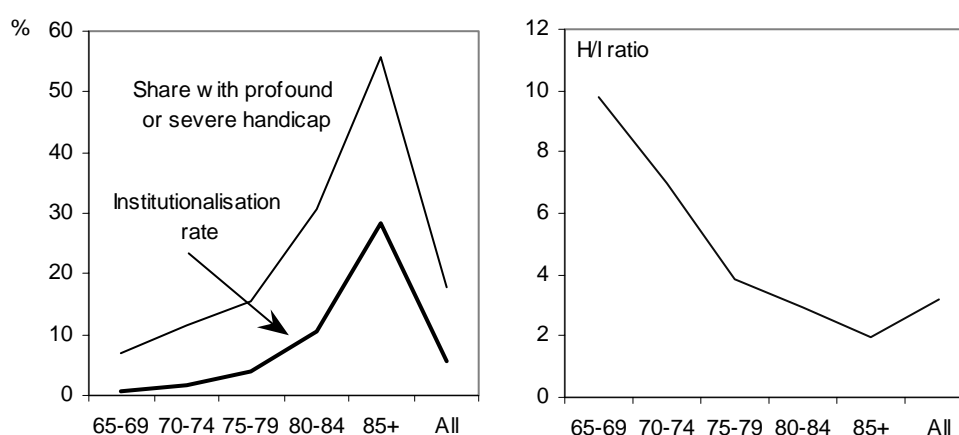
¹⁴ Calculation based on AIHW data (AIHW 1998a and 1998b). The aged population is taken to be those 65 or over.

groups, ratios of those with profound and severe handicaps in the aged population substantially exceed those cared for in institutions (figure 2.4).

The complexity of the link between disability and institutionalisation is also suggested by data on the level of dependency of residents in aged care institutions. Aged care residents have a relatively high level of disability, as measured by their dependency (figure 2.5). On a scale of 1 (high dependency) to 8 (low dependency), around 50 per cent have a level of dependency of 1 to 3. Nevertheless, the distribution of dependency levels is bimodal, with 35 per cent having a relatively low level of dependency (6 to 8).¹⁵

These data suggest that projections — such as those in table 2.9 — which presume a stable link between declining disability rates and institutional care rates, should be treated with caution.

Figure 2.4 Relationship between institutionalisation rates by age and rates of severe disability among the aged, 1998



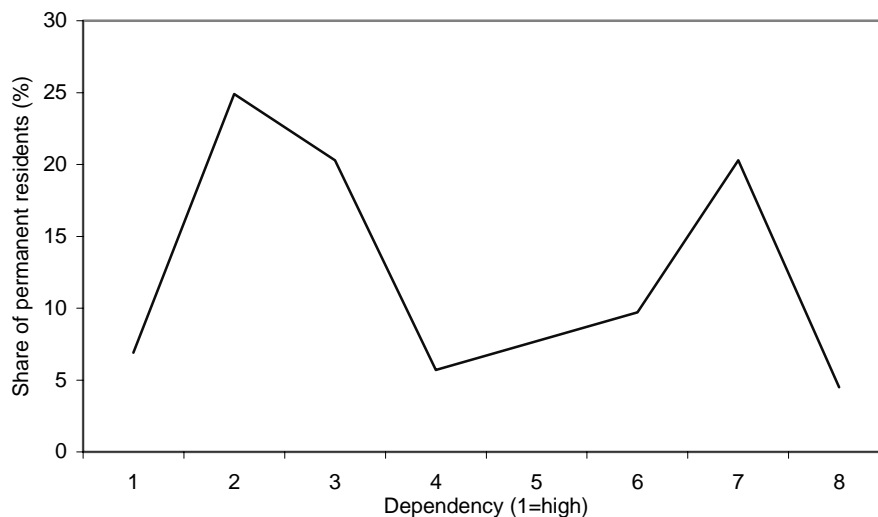
^a The institutionalisation rate is defined as the number of the aged in long-term aged care residential settings over the population of the aged in each particular age group. The share of the aged with profound or severe handicaps is from Rickwood (1994) with the total calculated by weighting individual age group responses. The H/I ratio is the ratio of the number of aged who are profoundly or severely handicapped to the number of aged in long term age care residential settings.

Data sources: Rickwood (1994) and AIHW (1999a).

¹⁵ The bimodal distribution of dependency reflects the amalgamation of data from nursing homes and hostels — which cater to different groups of the aged. This is evidenced by other separate data for the two types of residences — based on different dependency measures — available in AIHW (1998ab).

Figure 2.5 **Dependency levels of permanent residents of residential aged care facilities**

30 June 1998



Data source: AIHW 1999a (p. 77).

Lifetime aged care institution usage rates

The probability of using residential care services at some point in an individual's lifetime is much higher than current year estimates and increases with age (table 2.11). For example, at birth a male has a 20 per cent chance of being admitted to permanent care in a nursing home. This probability increases to 60 per cent at age 95 years.

At birth, women are more likely than men to require nursing home care (table 2.11). This reflects several factors.

- There is a tendency for men to die younger with a relatively limited period of physical or cognitive impairment. There is a substantial international literature documenting the shorter periods of severe disability for aged males prior to death. For example, in Australia the average number of years of severe handicap is 2.3 years for males and 4.5 years for females (Waidmann and Manton 2000, p. 29).
- Among couples, it is more likely that informal in-the-home care can be provided for a male by their female partner, than vice versa. This reflects their relative life spans (though this appears to be shifting with the longer projected relative life spans for males — see Jacobzone 1998b and the final column of table 2.1).

- A corollary of their greater likelihood of reaching older age is that women are more likely to be socially isolated. ‘Social’ disability can affect the usage of long-term aged care services as well as physical disability.

Table 2.11 Probability of using nursing home or hostel services in the future

Selected ages, probabilities expressed as a percentages

	<i>At birth</i>	<i>65 yrs</i>	<i>70 yrs</i>	<i>75 yrs</i>	<i>80 yrs</i>	<i>85 yrs</i>	<i>90 yrs</i>	<i>95 yrs</i>
Hostels								
Permanent care								
Males	9	12	14	17	22	31	39	38
Females	22	26	29	34	45	57	60	43
Persons	16	20	22	27	35	48	54	42
Permanent and respite care								
Males	13	17	19	22	27	36	44	41
Females	28	33	35	41	51	63	65	45
Persons	21	25	28	33	42	53	58	44
Nursing homes								
Permanent care								
Males	20	25	28	32	39	48	56	60
Females	34	39	42	48	59	76	95	94
Persons	27	33	36	41	51	66	83	85
Permanent and respite care								
Males	21	27	30	34	40	49	57	61
Females	35	41	44	50	61	78	97	95
Persons	28	34	37	43	53	67	85	86

^a Based on 1994-95 data.

Source: AIHW (1997, p. 251).

The difference between the probabilities of nursing home care for males and females tends to increase with age (AIHW 1997, p. 252). For example, the difference in probabilities for those in permanent nursing home care at 65 years of age is 14 percentage points (41 per cent probability for females compared to 27 per cent for males) while, at 95 years, it is 34 percentage points (95 per cent probability for females compared to 61 per cent for males).

Length of stay

Length of stay is an important factor shaping overall usage of long-term residential aged care services. Length of stay tends to be less for nursing home residents than for hostel residents (table 2.12). This reflects the fact that nursing home care is

designated for the frail aged, who tend to die after a relatively short stay.¹⁶ For example, 17 per cent of permanent nursing home residents stay one month or less, compared to under 4 per cent for hostels. Similarly, over 50 per cent of permanent nursing home residents stay up to one year, while the corresponding figure for hostels is 30 per cent. The median length of stay is just over 2 years (746 days) for hostels and almost 1 year (356 days) for nursing homes (AIHW 1997 p. 266).

Table 2.12 Cumulative expected length of stay for permanent hostel and nursing home admissions, 1995-96

(Per cent of admissions)

<i>Length of stay</i>	<i>Hostels</i>	<i>Nursing homes</i>
0	0.0	0.0
1 month	3.4	17.0
2 months	7.4	25.2
3 months	11.0	30.3
4 months	13.7	34.3
6 months	18.4	40.0
1 year	30.2	50.2
2 years	48.9	64.4
3 years	62.4	74.4
5 years	78.6	87.4
Total	100.0	100.0

Source: AIHW 1997, p. 266.

Home and community care usage amongst the aged¹⁷

Home And Community Care (HACC) is a joint Commonwealth/States financed program with service delivery in the hands of voluntary community organisations or private entrepreneurs. Some 80 per cent of its clients are aged.

Usage among the aged is widespread, though limitations in the data do not enable the calculation of an annual usage rate. In terms of persons served per month, home help is the most frequently used in-home HACC service, followed by home nursing

¹⁶ Around 80 per cent of 'separations' by permanent residents of homes are accounted for by death, and only 5.2 per cent are accounted for by a return to the community (AIHW 1999, p. 56).

¹⁷ Information on the provision of home and community care is effectively limited to that financed under the joint Commonwealth/States and Territories HACC program. The main data for HACC service provision — the HACC Service Provision Data Collection — are collected twice a year, for the months of May and November only (State and Territory governments collect the data for Commonwealth collation and publication). The main purpose of the data is to assist planning of HACC services. These factors limit the usefulness of the data as a means of analysing the use of HACC services among the aged.

(table 2.13). The aged population also frequently consumes home delivered meals, but because data for this service are collected on a number of meals basis, their usage is not directly comparable with other HACC services.

Table 2.13 also provides an indication of the likelihood of using HACC services amongst the aged. In any given month, the probability of an aged person using home help is approximately 5 per cent and, if that person uses the home help service, he or she will, on average, use that service for 4.3 hours.¹⁸ Similarly, in any given month, the probability of an aged person using any HACC service (excluding home or centre meals and transport) is approximately 13 per cent.

One way of using the monthly data on a yearly basis is to express HACC service output on an hours delivered basis — that is, to multiply total hours provided by the relevant HACC service by twelve. The final column of table 2.13 expresses this number as a proportion of the total aged population, though it should be emphasised that this does not imply that all aged persons used such services.

Current government policy settings place great emphasis on the provision of home and community services. If anything, this emphasis would seem likely to increase, given their generally lower costs and smaller claim on government revenue, compared to residential care.

2.6 Choices in care modes

As shown in figure 2.1, the disabled aged have a number of choices among competing (and sometimes complementary) options for care. Governments are primarily interested in demand (and provision) for the subsidised segment of aged care services. The level of demand for these services will not only depend on levels of disability in the aged, but also on how the needs of the disabled aged can be met in other ways than through subsidised services.

In the next section, we explore how income and wealth can affect the choices among these varying options. But non-economic factors are also likely to play an important role. In particular, there are two opposing socio-demographic forces at work.

¹⁸ The data are available only on a monthly basis and simply multiplying the monthly figure by twelve would result in over-counting the number of HACC clients.

Table 2.13 Indicators of HACC usage amongst the aged (population aged 65 years or more), 1996-97^a

Average monthly data, May 1996 to May 1998

<i>HACC service</i>	<i>Number of persons served per month</i>	<i>Hours of HACC service per client per month</i>	<i>Number of HACC users (per month) as a percentage of total aged population</i>	<i>Estimated yearly HACC service per member of the aged population (hours delivered)</i>
Home help	115 459	4.31	5.14	2.66
Personal care	16 395	9.51	0.73	0.83
Home nursing	49 902	3.63	2.22	0.97
Paramedical	23 284	1.15	1.04	0.14
Home respite care	14 534	14.55	0.65	1.13
Centre day care	31 814	18.39 ^b	1.42	3.13 ^b
Home maintenance or modification	19 764	2.54	0.88	0.27
Other food services	2 201	5.71	0.10	0.07
Other HACC services	26 008	2.84	1.16	0.39
Total of above services	301 562	5.99	13.43	9.59

<i>HACC service</i>	<i>Number of persons served per month</i>	<i>Number of meals/trips per person per month</i>	<i>Number of HACC users per month as a percentage of total aged population</i>	<i>Estimated yearly provision of HACC service per member of the aged population</i>
Home meals	47 745	17.22 ^a	2.13	4.40
Centre meals	28 351	4.48 ^a	1.26	0.68
Transport	81 665	na	3.64	na

^a The monthly periods to which the statistics relate vary from State to State, but all fall within the period November 1996 to May 1998. Most of the data relate to 1996-97. ^b Person hours of provision rather than hours.

Note: na is not applicable. Totals may not add because each person may use more than one service.

Source: Calculations based on Community Care Statistics 1997-98 (DH&AC 1998).

On the one hand, it appears that there will be a 're-balancing' of males and females among the old. This is because of the greater predicted gains in longevity for males over the next 30 years. As noted by Lakdawalla and Philipson (1999):

By providing healthy spouses, ageing may increase the supply of family care-givers. Unexpectedly, this implies that relative growth in healthy elderly males may contract the long-term care market, while relative growth in healthy elderly females may expand that market.

On the other hand, there are social and demographic influences that may tend to shift demand away from informal care by relatives and friends, towards HACC financed services and perhaps even towards more residential care. First, with

increasing divorce and separation rates, more of the aged in the future may be without partners.

Secondly, there is a likely fall in the availability of younger informal carers. This can be seen from table 2.14 where, following Saunders (1990), the ‘at risk’ elderly population is defined as those aged 75 or over, and the population of potential carers defined as females aged between 35 and 59. The shortage of female carers that is indicated in table 2.14 would be exacerbated if the trend to increasing labour force participation by women continues.

Table 2.14 Ratio of ‘at risk’ elderly population to potential female carers

	1997	2001	2006	2011	2021	2031
Population aged 75 or over ('000)	949	1 085	1 228	1 313	1 673	2 402
‘At risk’ aged population to number of potential carers ^a	0.31	0.33	0.35	0.36	0.45	0.64

^a Total population aged 75 years or more to number of females aged between 35 and 59.

Source: Calculated from ABS 1998a (3222.0).

2.7 Income and wealth of the aged

Levels and trends in the income and wealth of the aged

Prior to considering their effects on demand for long-term aged care services, it is useful to examine the likely trends in income and wealth for the aged.

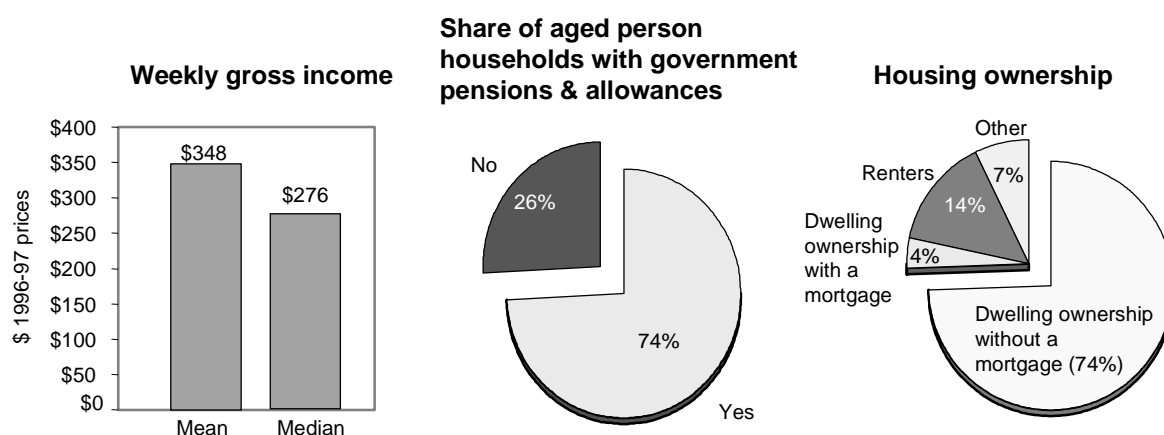
Current income and wealth of the aged

In 1996-97, the latest year for which data are available, most aged households received less than \$300 per week (approximately \$15 600 per year) — a figure that is not sufficient for financing long-term care out of current income (figures 2.6 and 2.7). However, almost three-quarters fully owned their own home and another 4 per cent were home owners with a mortgage.

Apart from the above data on home ownership, up-to-date statistics on the wealth of the current aged population are not available. Nevertheless, despite recent trends to increased superannuation coverage and share ownership, it appears unlikely that the asset portfolio of aged persons has changed substantially from 1989-90, when home equity overwhelmingly dominated the wealth of older Australians (table 2.15).

From the perspective of demand for age care however, it appears that while the aged may be willing to sell financial assets to finance current consumption (including health and long-term aged care), they are much less willing to do so in the case of housing equity (Bacon 1999). This is likely to be especially so in the case of married couples with one spouse only in need of residential care.

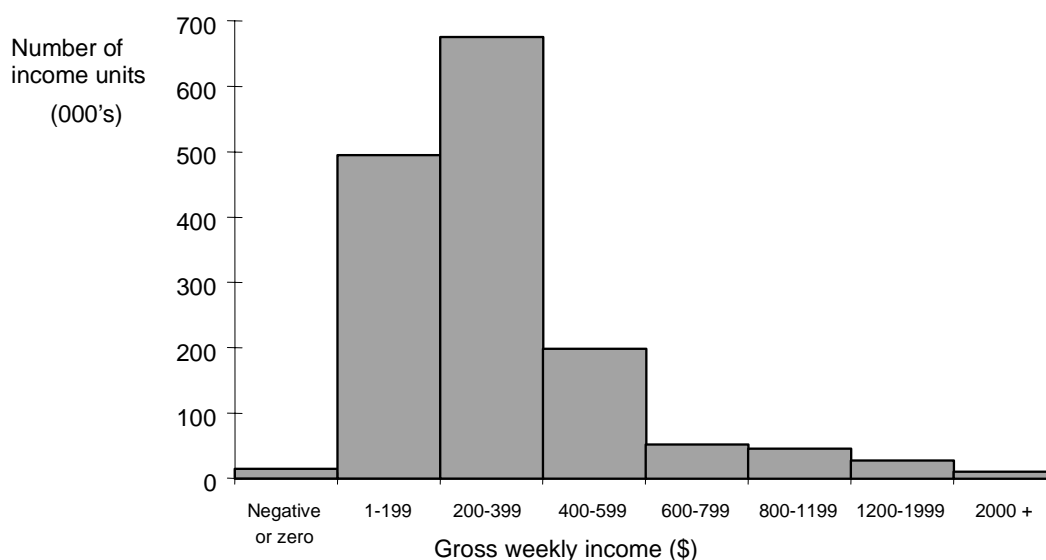
Figure 2.6 Income and wealth indicators for aged person households, 1996-97^a



^a That is, households where the reference person is aged 65 years or more. Includes married couple households, with or without dependants, single parents and other single persons aged 65 or over.

Data source: ABS 1998b.

Figure 2.7 Distribution of gross weekly income 'all income units' aged 65 or over, 1996-97



^a All income units include married couples, with or without dependants, single parents and other single persons.

Source: ABS 1998b.

Table 2.15 **Average income and estimated wealth of the aged, 1989-90**

	<i>Full pensioners</i>	<i>Part pensioners</i>	<i>Non pensioners</i>	<i>Women 60+ and all men 65+^a</i>	<i>All persons^b</i>
Income per year	\$	\$	\$	\$	\$
Rental income	95	1 638	18 834	4 944	3 216
Annual income	7 273	10 429	20 031	10 948	19 255
Wealth	\$	\$	\$	\$	\$
Interest bearing deposits	7 201	25 685	60 557	23 502	10 173
Equities	118	2 629	31 110	8 129	9 170
Equity in own home	63 673	72 175	128 092	80 898	52 743
Wealth less home	7 408	29 993	110 445	36 560	22 557
Total wealth	71 081	102 110	238 538	117 456	75 297

^a All females aged over 60 years and all males aged over 65 years. ^b Included for comparison purposes.

Source: Table F, Bacon 1998.

What of future aged persons' wealth and incomes?

Projecting the income and wealth of the aged is not straightforward. The ageing of Australia's population can affect the economy — and therefore the savings of the aged — in complex and unpredictable ways. Labour productivity, demand patterns, aggregate saving and labour force participation may all be affected by population ageing (Johnson and Falkingham 1992, Bacon 1999). Government policy changes, such as recent measures designed to increase superannuation coverage, as well as possible future policy changes, provide an additional overlay of complexity and uncertainty.

Nevertheless, some broad trends in capital accumulation can be identified. Principal amongst these is a trend for significantly greater capital accumulation over individuals' lifetimes. Current generations tend to be wealthier than their forbears, and succeeding generations are likely to be wealthier still.

This trend is reflected in statistics.

- Net wealth per household increased on average by almost 10 per cent per year from 1971 to 1997 (Bacon 1999, p. 20).¹⁹
- Dwellings were easily the most significant component of this wealth, accounting for 50 to 56 per cent of total assets.

¹⁹ Although this figure takes no account of inflation, the real increase would still be considerable.

-
- The significance of financial assets (mainly shares and superannuation) is increasing. Their value grew from 22 per cent of net household wealth in 1981, to 35 per cent in 1996 (Bacon 1999, p. 20).
 - The growth of superannuation is particularly notable — at present, some 91 per cent of the workforce has some superannuation coverage compared to approximately 46 per cent in 1986-87. Total superannuation assets are currently valued at \$317 billion (OECD 1999) and projections indicate their continued strong growth — to almost \$600 billion by June 2005 and \$ 1 580 billion by 2020 (Rothman, 1998 p.12).

Some caveats

There seems little doubt that future aged populations will be wealthier and have higher incomes than the aged at present. But there are reasons to suppose that the *net* increase in wealth and incomes may not be as great as it may appear.

Increased compulsory superannuation will, to some extent, be offset by reduced voluntary savings and reduced access to the aged pension.²⁰ Some quantitative indications of these effects for the population aged 50 to 64 years are set out in table 2.16. Average superannuation payments (and the income derived from such payments) increase the longer the time to retirement. But, while the estimated average superannuation payment increases fourfold from projected retirement year 1997-1998 to 2015-2016, the increase in projected annual average income after tax and pension adjustments increases less than threefold. Moreover, the absolute amount of the extra superannuation income for this cohort is still relatively modest.

Another reason why the future wealth and income of the aged may be less than expected relates to the impact of anticipated inheritance on consumption and savings decisions. One implication of increasing per capita wealth is that the amount of assets individuals are bequeathed is likely to increase. But expecting to receive a bequest may reduce saving by the next generation out of current income.²¹

²⁰ The available empirical evidence indicates that, on average, voluntary savings falls by between 30 and 50 per cent with the introduction of compulsory superannuation. However, the lower the income, the smaller the fall, reflecting the impact of forced saving on those with lower incomes where voluntary saving is usually minimal (Gallagher 1996).

²¹ There is also some evidence that the aged tend to consume rather than save non-dwelling assets. Moreover, it is sometimes argued that an ageing population may have lower productivity growth, which, in turn, implies a lower rate of capital accumulation (Bacon 1999, p. 22).

Table 2.16 Impact of superannuation on retirement of those aged 50 to 64 years in, 1997-98

Constant 1997-98 dollars

<i>Projected retirement year</i>	<i>Average superannuation payment</i>	<i>Ratio of payment to average financial assets of retired</i>	<i>Estimated additional annual income</i>	<i>Extra income after reduction of pension</i>	<i>Extra income after pension and tax reductions</i>
1997-98	52 241	0.9	2 012	2 012	2 012
2000-01	69 484	1.2	2 874	2 737	2 737
2005-06	93 083	1.3	4 054	3 327	3 191
2010-11	115 051	1.3	5 153	3 876	3 662
2015-16	216 281	1.9	10 214	6 407	5 504
Increase (%)	314	111	408	218	174

Source: Table 6, Rothman 1998, p.13.

The likely effects of income and wealth

The income and wealth of the aged is likely to play an ambiguous and complex role in shaping the overall usage of long-term aged care services (figure 2.1). This reflects five factors.

- Higher income and wealth tends to decrease the probability of death (Deaton and Paxson 1999) and, at least in cross-sectional data, disability (Edvartsen 1996). Thus, leaving aside their other effects, higher income and wealth reduce the major determinant of demand for long-term aged care services.
- On the other hand, after abstracting from their influence on disability rates, it is likely that increases in income or assets would, like most other goods, stimulate the demand for long-term aged care services.
- However, the existence of government subsidies, rationed entry and regulation of residential quality tend to mask the expression of such income and wealth effects.
- A further complicating factor is that unlike most normal purchases of goods and services, decisions about aged care are not always made by the aged, but are often delegated to others. Where such delegated decision making occurs, it is likely to involve different tradeoffs between acquiring aged care services and alternative choices.²²

²² For example, some people making decisions on behalf of aged family members may be less inclined to buy aged care services because this reduces future bequests. On the other hand, others may spend more than the aged would themselves.

-
- While of lesser importance, the distribution of wealth between assets of varying liquidity is likely to be influential. Financial assets are relatively liquid and are likely to influence demand more than non-financial assets (such as housing). Not only is housing wealth illiquid by its nature, but its ownership and use is often shared by more than one person, again reducing any impact on demand for long-term aged care services.

It is also uncertain how any additional demand would be shared among the different long-term aged care service modes (for example, own home settings compared to residential care). In the presence of widespread regulation of fees, quality and entry criteria, it is likely that the effects of income on actual usage are principally felt in the non-regulated segments of long-term aged care services.

- It is possible that increased income and wealth makes informal home-based care by family carers more tenable (mode b in figure 2.1). For example, additional income can finance building modifications and equipment that can maintain a disabled person in a home setting for longer. It can also fund respite care. The possibility of bequests may also affect the incentives of adult children to provide care or other resources to their aged parents outside of institutional settings (White-Means and Hong 1996).
- Increased income may also fund purchased home services and in (currently) rare cases, non-subsidised residential care settings (modes c and d).
- For government subsidised residential services, the main influence of increased income will not be on usage, because usage is determined by clinical assessment. However, if income/asset tests and rationed entry continue to apply to government-subsidised care at current levels, higher income will increase the *share* of finance from private co-payments compared to subsidies.
- On the other hand, an increasingly wealthy aged population may demand that regulated services offer higher quality, at higher costs, than present services (for example, increased room sizes). In this case, increased income may not necessarily significantly affect the likelihood of usage of care services, but affect their quality instead.

Finally, while income and wealth is likely to increase on average for the aged, it is very uncertain how the distribution of income and wealth among the aged may shift over time. The income and wealth distribution of the aged may have significant effects on the types and depth of services that evolve, and change the possible roles of subsidised versus non-subsidised services.

Accordingly, income and wealth increases among the aged may have some surprising impacts. It is not clear that they will increase overall usage of long-term aged care and, if they do, may actually reduce the share of the formal sector.

Moreover, growth in wealth and income among the aged may shift funding sources from government to individuals, as fewer people qualify for the maximum residential care subsidies. Rising income and wealth may also have bigger effects on quality than on usage rates of services per se.

It should also be noted that the segments of long-term aged care services that are likely to be the most responsive to income — the informal care sector — tend not to be represented in statistics on the costs of long-term aged care. Thus, we may get a distorted perspective of the total costs of long-term aged care if the informal sector is ignored.

2.8 Concluding comments

Three key factors *underlying* demand for long-term aged care are the size of the aged population, the health and disability status of the aged, and their income and assets. Establishing precisely how much these factors may change in the years ahead, and the impact of such changes on the demand for long-term aged care, is difficult. This is especially so given the institutional factors that constrain, and channel, underlying demand into observed usage patterns.

Even so, it is clear that the aged population of Australia will increase over the years to 2031 — most especially after 2011 — in both absolute terms, and as a percentage of the total population. There is some international evidence that each aged cohort will, on average, be healthier and less physically disabled than its corresponding present cohort. This implies a shifting forward of demand for long-term aged care compared to a situation where disability rates remain constant for each cohort. However, while such a trend appears to exist for most OECD nations, the evidence of such a trend in Australia — based on the four ABS surveys to date — is less apparent.

Increased income and wealth of the aged have complex and ambiguous effects on the demand for aged care services. This is because there are a number of offsetting effects from income and wealth. On the one hand, increased income and wealth are likely to reduce the likelihood of disability. On the other hand, controlling for this and other effects, the impact of the expected increase in the per capita income and wealth of the aged is likely to increase *underlying* future demand for long-term aged care services. The net effects of these opposing factors are uncertain, not least because institutional factors may prevent the realisation of underlying demand for regulated services.

How the main institutional factors affecting individuals' demand for long-term care may change in the future hinges on how government policy and community

expectations may evolve²³ — perhaps the most difficult of all predictions. Some possibilities include:

- a regulated increase in the quality of care — for example, better facilities or higher staff-to-patient ratios in residential care. This would tend to increase underlying demand but may require a concomitant increase in funding to increase *effective* demand;
- a shift to different funding mechanisms — such as public or private insurance schemes for long-term care — that incorporate reduced co-payments would tend to increase demand; and
- increased co-payments would, other things being equal, tend to decrease demand.

However, the outcome for the provision of long-term aged care services has to take account of the supply side and other factors:

- people cannot simply self-select for (regulated) long-term aged care services — the approval of various authorities is generally necessary. And changes in service admission criteria can increase or reduce effective demand; and
- changes in co-payments by residents can have unexpected impacts, depending on the severity of rationing in service provision. For example, an increase in co-payments that introduces additional finance to the sector may actually increase provision of long-term aged care.

The outcome of any shift in government policies in the long-term aged care sector would depend on the interaction of these and other factors.

²³ The ABS demographic projections indicate that the aged will comprise a far more significant share of the population. This will presumably affect how policy evolves in this area.

3 Costs of long-term aged care

The provision of long-term aged care is as much an outcome of supply as demand. Thus the cost information provided in this chapter therefore complements the demand analysis of chapter 2. The chapter identifies the main drivers of long-term aged care unit costs, and provides estimates of unit and total costs of production for a particular year — 1996-97.¹ These costs, along with the aggregate expenditure estimates in chapter 4, form the base for the long-term aged care projections of chapter 5. Like the previous chapter, this one is forward looking in that it provides a discussion of how long-term aged care costs may move in the future.

3.1 Drivers of residential long-term aged care costs

The Productivity Commission has identified the following factors as nursing home cost drivers (PC 1999a):

- *the number of residents* — information provided to the Commission indicated that 60 to 100 places minimised average unit production costs;
- *resident mix* — in particular the proportion of patients in higher care categories of the resident classification system;
- *quality of care* — higher quality care requires more labour and capital inputs per resident;
- *degree of service integration* — co-location of nursing home, hostel and possibly independent living facilities can provide opportunities to spread fixed costs and reduce variable costs (economies of scope);
- *ownership* — government and charitable homes are exempt from some taxes levied on inputs. On the other hand, for-profit homes may have greater incentives to keep unit costs down; and
- *location* — some input costs — such as labour and especially land — differ on a geographical basis.

¹ Accordingly, the cost estimates do not reflect the impact of policy changes since that date — whether these be positive or negative.

Information provided to the Commission in relation to that inquiry established the significance of labour costs in the provision of nursing home services. While estimates varied, most indicated that labour costs (including on-costs) were in excess of 80 per cent of total expenditure.²

Earlier studies support this cost picture. A 1985 study of nursing home and hostel costs found the production of nursing home services is highly labour intensive. Patient costs (nurses and therapists' wages but not on-costs, services such as catering, cleaning, laundry, medical supplies, and replacement of minor capital items like linen and crockery) accounted for 78 per cent of total cost. Nurses' wage costs alone, accounted for 55 per cent of total cost. The study also found that there was evidence of economies of scale in nursing homes, but these were exhausted in homes with more than 30 beds (Coopers and Lybrand WD Scott 1985). However, this estimate of minimum efficient scale seems out of date. More recent estimates suggest that around 60 to 100 places minimises unit production costs (PC 1999a).

The 1985 study found a very different cost profile for *hostel* care. Hostel caring costs (wages and salaries of nursing staff and medical supplies) accounted for only about 20 per cent of total costs; accommodation and meals (including salaries of domestic staff and food and laundry and cleaning costs) accounted for over 53 per cent. Property and finance costs (energy, rates, maintenance, lease expenses and depreciation) accounted for over 16 per cent.

On a cost per bed day basis, hostel costs averaged approximately 30 per cent of nursing home costs.

3.2 Estimates of residential care unit costs

The costs reported in this section have been compiled from a number of sources with the overall objective of estimating long run economic costs — those costs, including a return to capital and management, necessary to keep service providers in operation on a permanent basis. Unfortunately, data in this area are often based on small sample sizes and different definitions. As a consequence, the data presented in the section should be regarded as being reasonable approximations rather than precise estimates.

Data on average nursing home and hostel unit costs for 1997-97 are available from an annual survey of some 360 nursing homes and hostels by Bentleys (Bentleys

² One submission, however, suggested the inclusion of proper allowance for depreciation, interest on borrowed funds and a reasonable return on assets employed would reduce the share of labour costs to something more like 70 per cent (PC 1999a, p.60).

1998a and 1998b) — albeit the survey excludes nursing care or CAM (Care Aggregated Module) costs for nursing home care. Bentleys' national average data for nursing homes and hostels are set out in tables 3.1 and 3.2 below.

Table 3.1 Estimated nursing home cost per person per day, 1996-97
Dollars per resident per day

<i>Cost category</i>	<i>Private</i>	<i>Government</i>	<i>All homes</i>
Non-care wage costs	13.06	18.02	17.53
Building depreciation, rent and interest	25.83	3.92	10.27
Other operating costs	20.04	21.89	21.19
<i>Sub total</i>	58.93	43.83	48.99
Estimated nursing care costs ^a	60.00	60.00	60.00
<i>Total</i>	118.93	103.83	108.99

^a Based on information supplied to the Commission in relation to the nursing home inquiry, as care costs were not covered in the survey.

Source: Bentleys 1998a.

The figure for building depreciation, rent and interest for government homes in table 3.1 is low compared to that for privately owned nursing homes, possibly reflecting public sector accounting conventions. On the basis that the private sector is a better indicator of economic building depreciation, rent and interest costs, Bentleys' survey implies a total cost per person per day of approximately \$125 dollars per person day.³ This implies a total cost per bed year for nursing home care in 1996-97 of \$45 400. The corresponding figure for hostel care is \$19 900.

Table 3.2 Estimated cost per person per day for hostel care, 1996-97
Dollars per resident per day

<i>Cost category</i>	<i>National average</i>
Wage costs (including personal care staff)	31.79
Building depreciation, rent and interest	4.62
Other operating costs	18.13
<i>Total</i>	54.54

Source: Bentleys 1998b.

In 1995-96, the ABS surveyed nursing homes and hostels as part of a survey of community services industries. Although now a little dated, the ABS data (tables 3.3 and 3.4) provide by far the most comprehensive and reliable snapshot of residential costs and returns for the residential aged care sector.

³ All homes total cost plus the private homes figure of building depreciation, rent and interest less all homes building depreciation, rent and interest.

Table 3.3 Income and costs of nursing homes, 1995-96

	<i>For-profit homes</i>	<i>Not-for-profit homes</i>	<i>All homes</i>
Income	\$m	\$m	\$m
Government funding	854.2	907.4	1 761.6
Fees and charges	497.0	433.0	929.9
Other income	51.5	190.1	241.7
<i>Total income^a</i>	1 402.7	1 530.5	2 933.2
Costs	\$m	\$m	\$m
Labour costs	1 004.1	1 052.4	2 056.5
Depreciation	21.9	73.3	95.2
Other costs	337.6	303.4	641.1
<i>Total costs^a</i>	1 363.6	1 429.1	2 792.8
Profit before tax	35.3	102.6	137.9

^a Totals may not sum due to rounding.

Source: ABS *Community Services Australia 1995-96*, Cat No. 8696.0.

The ABS data imply an average cost per resident year (including a return to capital invested and management) in 1995-96 of approximately \$40 000, and \$18 500 for hostel residents. These figures are consistent with Bentleys' data for 1996-97.⁴

Table 3.4 Income and costs of hostels, 1995-96

	<i>For profit hostels</i>	<i>Not for profit hostels</i>	<i>All hostels</i>
Income^b	\$m	\$m	\$m
Government funding	6.5	458.0	464.5
Fees and charges	54.3	324.1	378.3
Other income	11.2	215.5	226.8
Total income	72.0	997.6	1 069.6
Costs^a	\$m	\$m	\$m
Labour costs	22.6	595.5	618.2
Depreciation	3.3	61.7	65.0
Other costs	42.1	266.7	308.7
Total costs	68.0	923.9	991.9
Profit before tax	4.10	74.3	78.3

^a Totals may not sum due to rounding.

Source: ABS *Community Services Australia 1995-96*, Cat No. 8696.0.

Based on a small sample of nursing homes and hostels, Howe and Sarjeant (1999) estimated total costs per person per week at \$665, of which approximately 10 per cent is depreciation, almost 23 per cent sustenance and accommodation, with the

⁴ All homes profit before tax was assumed to approximate normal profits and added to the total cost for all homes, then divided by the relevant number of residents for 1995-96.

remainder (approximately 68 per cent) care-related costs. These data indicate a cost in 1999 dollars of approximately \$34 600 per person per year. As Howe and Sarjeant's estimates are for all residential care, rather than for nursing home and hostel care separately, they also are broadly consistent with the Bentleys' and ABS data (Howe and Sarjeant 1999).⁵

Based on all of the above, it seem reasonable to conclude that average nursing home costs (high-level care residents) per resident per year in 1996-97 prices are of the order of \$40 000, with the corresponding figure for hostel residents being approximately half this, \$20 000.

3.3 Estimates of home and community care unit costs: the HACC program and CACPs

Estimating the unit costs of HACC services and CACPs is made difficult by a lack of data for both programs. No cost studies appear to have been made of CACP services, and only one cost study has been published of HACC services (DHHCS 1993). The DHHCS study's cost findings are summarised in table 3.5.

Table 3.5 Unit costs of HACC services, 1991-92

<i>Service</i>	<i>Original estimates at 1991-92 prices</i>	<i>Estimates at 1996-97 prices^a</i>
	<i>\$ per hour</i>	<i>\$ per hour</i>
Home help	21 to 28	36 to 49
Home nursing	44 to 51	76 to 88
Delivered meals (\$ per meal) ^b	4.20 to 8.95	7 to 16
Blended services ^c	37 to 48	64 to 83

^a Original estimated adjusted by an index weighted 50:50 by the IPD for non-farm GDP and 50 per cent by cost index based on female full ordinary time wages. ^b Cost variation reflects, amongst other factors, economies of scale in preparation and supply. ^c Different combinations of the three services above.

Source: DHHCS 1993.

In principle, the above unit cost data can be applied to the quantity of HACC services output data to estimate the total cost of supplying HACC services in 1996-97. However, such an exercise is rendered less than precise by a number of factors — differences in collection years, lack of correspondence between the service categories and a lack of information on fees paid by HACC users.

⁵ There is approximately the same number of nursing home as hostel places, hence an unweighted average of nursing home and hostel costs per person year is reasonable. The unweighted average for ABS and Bentley's estimates is approximately \$30 000 (1995-96 and 1996-97 prices respectively).

Nevertheless, such an exercise can give ‘order of magnitude’ figures for the cost of HACC services to the aged — in this case \$874 million (1996-97 prices). This is somewhat higher than the total Commonwealth and States/Territories expenditure of aged HACC clients of \$762 million, but this is only to be expected, as the cost survey presumably incorporates some costs financed from non-government sources such as client fees and donations from other sources.⁶

Cost data for CACP services are not available. Based on the incomplete picture we have of total expenditure on CACPs, it is estimated that their total cost was \$57 million in 1996-97 in 1996-97 prices (see chapter 4, table 4.1).

3.4 How are long-term aged care unit costs likely to change in the future?

How the unit cost of providing long-term aged care services changes in the future will obviously have an impact on the quantity and nature of resources society devotes to long-term aged care. For the economy as a whole, there is a presumption that the real costs of production will tend to decline over time due to productivity improvements. But these gains may not apply — or may apply to a lesser extent — to long-term aged care services where the scope for such improvements appears limited.

Long-term aged care services are also generally highly labour intensive. And, while the impact of technological change on input demand is difficult to foresee, there appears to be relatively little scope for capital substitution or other means of improving labour productivity in the foreseeable future. Moreover, demographic projections imply that demand for nursing staff, and other long-term aged care labour, will generally be increasing, at a time when the population base for the labour force is falling. This is likely to put upward pressure on wage rates.

⁶ McCallum et al estimate HACC costs at \$621.3 million for 1996-97 in 1994-95 prices. This figure is based on Commonwealth and States expenditure. The authors note that non-government contributions to HACC services are unavailable but are (in their view) negligible.

All of these factors imply that, for a constant quantity and quality of long-term aged care services, total costs are likely to increase rather than decrease in the years ahead.⁷ In addition, unit costs may increase because government regulations require increased capital or services per program recipient. For example, accreditation requirements for suppliers of residential care are likely to result in both increased capital and labour inputs per resident after their introduction in January 2001.

To sum up, it appears more likely than not that there will be upward pressure on long-term aged care unit costs for the foreseeable future. This scenario forms the basis for one of the long-term aged care projection variations of chapter 5.

⁷ In normal circumstances, such an increase would imply an increase in prices or charges and hence a reduction in the consumption of long-term aged care services, the extent of which depends on the relevant own price and cross price elasticities. It is implicitly assumed here that the extra cost is met by transfer payments from Government. It is also assumed that providers are unwilling or unable (because of social pressures and regulation) to meet the cost pressures by reducing quality of aged services.

4 Trends in long-term aged care expenditure

The focus in this chapter shifts from the micro-world of drivers of demand and supply, to actual expenditure on long-term aged care. The chapter examines long-term aged care expenditure trends — more especially public expenditure trends, by far the greater portion of the total.

The factors influencing long-term aged care expenditure can be classified into two broad groups:

- those largely beyond the direct influence of government policy — most notably the growth of the aged population and, to a lesser extent, the prices of long-term aged care inputs and GDP growth; and
- factors more under the influence of government, such as the number of aged persons eligible for various publicly financed long-term aged care programs (which reflects eligibility criteria), and government expenditure per program recipient (which reflects government budgetary decisions).

This approach is of particular interest, given that in recent years Australia has seen both increasing numbers of older people who are potentially eligible for long-term care, and a number of policy changes which affect usage levels or funding of various types of care.

4.1 Methodology¹

Expenditure on any government program (PROGEXP) can be expressed as:

$$\text{PROGEXP} = (\text{TARGETPOP}) \cdot (\text{NOBEN} / \text{TARGETPOP}) \cdot (\text{PROGEXP} / \text{NOBEN});$$

where TARGETPOP is the size of the population targeted by the program, NOBEN is the number of direct beneficiaries from the program and PROGEXP/NOBEN is the average benefits received by the program's direct recipients.

By examining changes in the components of this identity over time, it is possible to gain a better understanding of the factors driving changes in government expenditure on a particular program.

¹ The methodology described in this section closely follows Saunders (1989).

Firstly, changes in TARGETPOP over time capture the effect of population change on government expenditure; secondly, changes in NOBEN/TARGETPOP capture changes in the program's coverage of its target population; and finally, changes in PROGEXP/NOBEN capture changes in average expenditure per program recipient.

Note that the contribution of each of the three factors to the total change in program expenditure can more easily be seen if the above identity is linearised using logarithms and the resultant contributions calculated:

$$\Delta \ln(\text{PROGEXP}) = \Delta \ln(\text{TARGETPOP}) + \Delta \ln(\text{NOBEN}/\text{TARGETPOP}) + \Delta \ln(\text{PROGEXP}/\text{NOBEN}).$$

When examining changes in expenditure levels over time, it is desirable that such expenditures be in real terms. For most purposes a deflator such as the Implicit Price Deflator (IPD) of non-farm GDP is appropriate. However, if PROGEXP/NOBEN, the average benefits ratio, is to accurately capture program benefits over time, the price index used to deflate program expenditure should mirror real program cost changes as closely as possible. Because there are no price indexes specific to long-term aged care, proxy price indexes were constructed for residential (nursing home and hostel) and home and community care. Given the female intensive nature of long-term aged care, the price indexes were calculated as a weighted average:

$$P^* = a \text{ FEM} + (1-a) \text{ IPD}.$$

FEM is a price index based on female ordinary time earnings and IPD is as described above. The relative weight given to FEM varied with the type of long-term care — a 70 per cent weighting for nursing home care and 50 per cent for hostel and home and community care.

Thus, changes in real program expenditure (PROGEXP/IPD) can be examined by calculating for each year the following general identity:

$$(\text{PROGEXP}/\text{IPD}) = (P^*/\text{IPD}) \cdot (\text{TARGETPOP}) \cdot (\text{NOBEN})/\text{TARGETPOP} \\ \{(\text{PROGEXP}/P^*)/(\text{NOBEN})\}.$$

In principle, an increase (decrease) in P^*/IPD over time indicates input costs for delivering the program are increasing (decreasing), relative to price increases for the (non-farm) economy as a whole. Changes in $\{(\text{PROGEXP}/P^*)/(\text{NOBEN})\}$ capture changes in average real expenditure per program recipient. As discussed above, the identity can be linearised using logs to examine more clearly the relative influence of the various components making up real program expenditure.

Examining program expenditure relative to GDP can yield additional insights. The relevant identity is:

$$\text{PROGEXP/GDP} = (\text{TARGETPOP/POP}).(\text{NOBEN/TARGETPOP}).$$
$$\{(\text{PROGEXP/NOBEN})/(\text{GDP/POP})\}.$$

TARGETPOP/POP captures the demographic influence — in this case relative to the population as a whole (POP); (NOBEN/TARGETPOP) is the coverage ratio of the program; and $\{(\text{PROGEXP/NOBEN})/(\text{GDP/POP})\}$ is the ratio of program expenditure per recipient to per capita GDP. Change in this ratio — sometimes called the ‘transfer ratio’ — indicate whether expenditure per program recipient is keeping pace with per capita GDP.

4.2 A snapshot of long-term aged care expenditure

Before examining long-term aged care expenditure trends, it is useful to look at an overall ‘snapshot’ of long-term aged care services expenditure in a particular year. The latest year for which robust data (ie involving minimal approximation or assumptions) are reasonably available is 1996-97 (table 4.1). Even then, estimation — and therefore a degree of error — is involved in giving a reasonably complete picture. This is especially so in relation to hostel and community services data.²

Expenditure on residential care (nursing homes and hostels) accounts for by far the largest portion of government and total expenditure on long-term aged services — approximately 75 per cent of total expenditure. Nursing home care alone, accounts for over half of all long-term aged care expenditure, while hostel expenditure accounts for another 21 per cent of the total. Expenditure on home and community services — mostly financed through the HACC program — was the next largest area of expenditure.

² See footnotes to table 4.1.

Table 4.1 Expenditure^a on long-term aged care in Australia, 1996-97

	<i>Government</i>	<i>Non- government</i>	<i>Total</i>	<i>Care mode expenditure to total expenditure</i>	<i>Total as % of GDP</i>
	\$m 1996-97	\$m 1996-97	\$m 1996-97	%	%
Nursing Homes	2 454	695	3 149	53.92	0.59
Hostels ^b	532	693	1 225	20.97	0.23
Home and Community Care ^c	610	317	927	15.87	0.17
Community Aged Care Packages	52	5	57	0.97	0.01
Carers Pensions & Domiciliary Home Nursing Benefit	130		130	2.23	0.02
Informal		353	353	6.04	0.07
Total^a	3 777	2 063	5 840	100.00	1.10

^a Total expenditure, except for nursing homes and home and community care which are recurrent expenditure. To the extent possible, estimates are for all of government: Commonwealth, States/Territories and Local. na is not applicable and totals may not sum due to rounding. ^b Hostel expenditure is estimated by deriving conversion factors from a 1995-96 survey conducted by the ABS (*Community Services* 1995-96, ABS Cat. No. 8696.0 p. 31) and applying these factors to Commonwealth Government expenditure in 1996-97. ^c Estimated aged care share of HACC and non-government community services only. Includes fees and charges component estimated to be 10 per cent of government expenditure.

Sources: AIHW (Health Expenditure Bulletins and additional information provided by AIHW). Data provided by the Department of Health and Aged Care. Australian National Accounts 1998-99, ABS Cat. No. 5204.0, accessed from DX (econdata) database.

Comparison with other OECD countries

Comparing long-term aged care across OECD member countries is hampered by a lack of comparable data. Based on the data available, Australia's expenditure on long-term aged care as a percentage of GDP is less than most OECD members. Of the OECD countries in table 4.2, only Ireland spends a GDP proportion similar to Australia. All the rest spend higher proportions of their GDP — the Scandinavian countries, the Netherlands and the UK, markedly so.

In part, the divergence in spending shares reflects different age distributions. All countries, except Ireland, have higher proportions of their population aged 65 years or more and aged 80 years or more (table 4.2). However, six of the eleven countries are spending a significantly higher proportion of their GDP on long-term aged care, *relative to their aged populations* (Austria, Canada, Netherlands, Norway, Sweden and the US (see the two indexes in table 4.2).

It would be interesting, but beyond the scope of this study, to explore the underlying factors shaping these sometimes marked international differences.

Table 4.2 **OECD long-term aged care indicators**

	<i>Long-term aged care as a percentage of GDP^a</i>	<i>Share of the population aged 65 or more (aged population share)^b</i>	<i>Share of the population aged 80 or more</i>	<i>Index of each country's GDP share, to aged population share, relative to Australia^c</i>	<i>Index of each country's GDP share, to 'oldest old' population share, relative to Australia^d</i>
	%	%	%	Australia=100	Australia=100
Australia	0.9	11.7	2.6	100	100
Austria	1.4	14.7	3.4	124	119
Belgium	1.2	15.8	3.6	100	97
Canada	1.1	12.3	2.7	114	118
Finland	1.1	14.2	3.1	103	104
Netherlands	2.7	13.2	3.2	266	248
Norway	2.8	15.6	4.0	233	202
Sweden	2.7	17.0	4.5	206	173
UK	1.3	15.7	3.8	108	99
US	1.3	12.5	3.0	137	127
Ireland	0.9	11.3	2.4	99	104

^a Average for 1992-95. ^b Average for 1994-96. ^c Calculated by taking each country's ratio of long-term aged care expenditure to GDP to share of total population accounted for by those aged 65 or more, then dividing by Australia's corresponding ratio and multiplying by 100. For example, the index number for Austria equals $\{(1.4/14.7)/0.9/11.7\} \times 100$. ^d Calculated by taking each country's ratio of long-term aged care expenditure to GDP to share of total population accounted for by those aged 80 or more, then dividing by Australia's corresponding ratio and multiplying by 100.

Source: OECD 2000.

4.3 Trends in government funding of nursing homes

Real government expenditure on nursing homes increased by around 22 per cent over the period 1989-90 to 1996-97 (table 4.3). This was largely due to the increase in the program's target population (those aged 70 or more) over this period.

Coverage of the nursing home target population actually fell by more than 1 percentage point over the period, reflecting the Commonwealth's policy of shifting the balance of long-term aged care away from nursing homes towards hostel and in-home care. Average government expenditure per resident declined in the middle years of the period, before increasing in 1995-96 and 1996-97 (table 4.3).

As discussed above, the total change in real government expenditure can be decomposed into a number of factors. These effects can be more readily observed

by using logarithms to rebase the total change into a 100 point scale, and calculating the contribution of these factors to the total.³ Using this method:

- the change in average real expenditure per resident accounted for 15 percent of the total change;
- the increase in the population aged 70 or more contributed 117 points;
- the ratio of the nursing home cost index to the IPD for GDP contributed 71 percentage points; and
- the fall in coverage contributed (minus) 102 points.

Table 4.3 Decomposition of government expenditure on nursing homes, 1989-90 to 1996-97

All jurisdictions (Commonwealth, State and local)

	<i>Nursing home residents</i>	<i>Public nursing home expenditure^a</i>	<i>Target population (Persons aged 70 or more)</i>	<i>Index of relative price effect^b</i>	<i>Program coverage^c</i>	<i>Average real expenditure per nursing home resident^d</i>
	Number	\$m 1996-97	Number	1989-90=100	%	\$ 1996-97
1989-90	70 437	2 008	1 231 030	100	5.72	32 843
1990-91	71 023	2 150	1 279 325	102	5.55	34 032
1991-92	71 932	2 164	1 325 718	106	5.43	32 650
1992-93	72 259	2 199	1 371 142	110	5.27	32 009
1993-94	72 009	2 138	1 418 688	110	5.08	31 000
1994-95	72 461	2 185	1 462 338	112	4.96	31 014
1995-96	72 683	2 307	1 510 898	113	4.81	32 342
1996-97	72 489	2 454	1 555 556	115	4.66	33 853

^a Commonwealth States/Territories and local government expenditure deflated by the IPD (implicit price deflator) for GDP. ^b Index of the ratio of the nursing home cost (see note d) index to IPD for GDP. ^c Number of nursing home residents to population aged 70 and over. ^d Deflated using price index based of 30 per cent on IPD for GDP and 70 per cent of female ordinary time earnings. In the absence of a price index related to nursing homes, the use of a weighted average of female ordinary time earnings reflects the relative (female) labour intensity of nursing home services. This is considered more appropriate than the use of the IPD for GDP as the underlying objective of the measure is to capture the quantum of services delivered to nursing home residents (see Saunders 1989).

Sources: AIHW data (Health Expenditure Bulletins and additional information provided by AIHW), data provided by the Department of Health and Aged Care and ABS population data (ABS cat. no. 3102.0), accessed from the DX database (Econdata). Australian National Accounts 1998-99, ABS Cat. No. 5204.0, accessed from DX database.

³ The contributions of each of these factors was expressed as $100 \cdot \Delta \ln X / \Delta \ln(\text{PROGEXP}/\text{IPD})$ so that the sum of the contributions to the change in overall expenditure summed to 100 (where X is the relevant component). Note that the contribution of a factor may be positive or negative, and exceed 100. However, their sum will always equal 100. This methodology is also used in relation to hostel expenditure.

Public expenditure on nursing homes as a proportion of GDP (table 4.4) was the same in 1996-97 as in 1989-90, although it varied throughout this period — more because of variations in GDP than variations in public funding. The demographic factor (here the number of people aged 70 or more as a percentage of the total population) increased steadily, while coverage (the number of nursing home residents as a percentage of the population aged 70 and over) declined at a similar rate. These two trends approximately offset each other. Thus, changes in public expenditure as a percentage of GDP quite closely correspond to those for the transfer ratio, average expenditure per nursing home resident to per capita GDP.

The transfer ratio itself was higher at the end of the period than at the start. However, because it shows considerable variability from year to year, and because any trend increase is obviously sensitive to its commencement year, this should not be interpreted as necessarily indicating a trend increase. Movements in this measure tend to be sensitive to variations in GDP growth and this varied considerably over the period.

Table 4.4 Decomposition of government expenditure on nursing homes relative to GDP, 1989-90 to 1996-97

All jurisdictions

	<i>Government nursing home expenditure relative to GDP^a</i>	<i>Demographic factor: target population to total population^b</i>	<i>Program coverage^c</i>	<i>Index of transfer ratio^d</i>
	%	%	%	1989-90=100
1989-90	0.46	7.21	5.72	100
1990-91	0.49	7.40	5.55	108
1991-92	0.50	7.58	5.43	108
1992-93	0.49	7.76	5.27	107
1993-94	0.45	7.95	5.08	101
1994-95	0.44	8.09	4.96	99
1995-96	0.45	8.25	4.81	101
1996-97	0.46	8.40	4.66	106

^a Commonwealth, States/Territories and local government. ^b Population aged 70 or more to total population. ^c Nursing home residents as a percentage of population aged 70 or more. ^d Expenditure per nursing home resident, to per capita GDP, as an index.

Sources: Calculated from AIHW data (Health Expenditure Bulletin No 14, October 1998 and additional information provided by AIHW), data provided by the Department of Health and Family Services and ABS population data (ABS cat. no. 3102.0), accessed from the DX (Econdata) database. Australian National Accounts 1998-99, ABS Cat. No. 5204.0, accessed from DX database.

4.4 Trends in government funding of hostels⁴

Real Commonwealth Government expenditure on hostel accommodation has increased strongly since 1989-90 (table 4.5). Unlike government nursing home expenditure, this increase does not predominantly reflect an increase in the population aged 70 or more, although this factor was still important — it accounted for only 6 percent of the total increase in Commonwealth expenditure. Of greater importance were:

- the increase in the coverage rate, which accounts for approximately 17 per cent of the total change in Commonwealth expenditure); and
- a marked increase (67 per cent) in real average expenditure by the Commonwealth on hostel residents over the period. This change was responsible for 75 percent of the total change in Commonwealth expenditure over the period.⁵

Most of the change in Commonwealth expenditure on hostels reflected changes in those variables under Commonwealth policy influence: the coverage ratio and average Commonwealth expenditure per resident.

Underlying the increase in average real Commonwealth expenditure was an increase in the dependency levels of hostel residents (Gibson 1998, p. 36). It appears that the expansion of home and community services led to more of the low dependency aged remaining in their own homes. At the same time, the more restrictive approach to nursing home availability resulted in some of the more moderate, to high level dependent aged, being diverted from nursing home to hostel care.

⁴ Because time series data are not available for State and Territory (or non-government) expenditure on hostels, this section is limited to analysis of Commonwealth expenditure only.

⁵ The change in relative price indices (the hostel cost index to the IPD for GDP) accounted for 2 percentage points of the total change in real Commonwealth hostel expenditure.

Table 4.5 Decomposition of Commonwealth expenditure on hostels, 1989-90 to 1996-97
(1996-97 prices)

	<i>Hostel residents</i>	<i>Real C'with hostel expenditure^a</i>	<i>Target population</i> (Persons aged 70 or more)	<i>Program coverage^b</i>	<i>Average real expenditure per resident^c</i>
	Number	\$m 1996-97	Number	%	\$ 1996-97
1989-90	41 357	177	1 231 030	3.36	4 750
1990-91	42 619	208	1 279 325	3.33	5 318
1991-92	45 750	252	1 325 718	3.45	5 846
1992-93	49 058	291	1 371 142	3.58	6 158
1993-94	52 886	327	1 418 688	3.73	6 381
1994-95	55 663	377	1 462 338	3.81	6 923
1995-96	58 208	423	1 510 898	3.85	7 366
1996-97	60 082	478	1 555 556	3.86	7 956

^a Commonwealth expenditure deflated by the implicit price deflator for GDP. ^b Percentage of persons in hostels to population aged 70 or more. ^c Expenditure per hostel resident deflated by cost index weighted 50 per cent by non-farm GDP and 50 per cent by female full ordinary time wages.

Sources: Calculated from AIHW data (Health Expenditure and additional information provided by AIHW), data provided by the Department of Health and Aged Care and ABS population data (ABS cat. no. 3102.0), accessed from the DX (Econdata) database. Australian National Accounts 1998-99, ABS Cat. No. 5204.0, accessed from DX database.

Analysis of Commonwealth Government expenditure on hostels relative to GDP broadly confirms the above picture. The value of hostel expenditure to GDP more than doubled, but demographic influences — in this case the percentage of those aged 70 or more to the total population — played only a relatively small role in the increase (table 4.6). Of more significance was the increase in coverage of the aged population and the transfer ratio. Unlike nursing home expenditure, the trend increases in the latter is sufficient to clearly indicate that Commonwealth expenditure per hostel resident increased at a faster rate than per capita GDP over the period.

Table 4.6 Decomposition of Commonwealth expenditure on hostels relative to GDP^a, 1989-90 to 1996-97

	<i>Index of C'wealth hostel expenditure to GDP</i>	<i>Program coverage</i>	<i>Target population to total population^b</i>	<i>Index of transfer ratio^c</i>
	1989-90=100	%	%	1989-90=100
1989-90	100	3.36	7.21	100
1990-91	118	3.33	7.40	116
1991-92	142	3.45	7.58	132
1992-93	158	3.58	7.76	138
1993-94	171	3.73	7.95	140
1994-95	189	3.81	8.09	148
1995-96	202	3.85	8.25	154
1996-97	221	3.86	8.40	165

^a Reliable State/Territory and local government data are not available. ^b Population aged 70 or more to total population. ^c Index of hostel expenditure per resident to per capita GDP.

Sources: Calculated from AIHW data (Health Expenditure Bulletins and additional information provided by AIHW), data provided by the Department of Health and Aged Care and ABS population data (ABS cat. no. 3102.0), accessed from the DX database. Australian National Accounts 1998-99, ABS Cat. No. 5204.0, accessed from DX (econdata) database.

4.5 Trends in government funding of the Home and Community Care (HACC) program⁶

Because of data limitations, it is not possible to undertake a full decomposition of HACC expenditure similar to the nursing home and hostel decompositions.⁷ However, available data on real HACC expenditure by the Commonwealth and the States/Territories show that both have increased in real terms since 1989-90. Total HACC expenditure has also increased relative to GDP (table 4.7). There has also been a small increase in the Commonwealth's share of total expenditure, from 59 per cent in 1989-90 to almost 63 per cent in 1999-00.

⁶ This section analyses all HACC expenditure in relation to its target population of people with a severe or profound handicap. Data used are therefore not comparable with the community care data used in table 4.1. It is estimated that some 80 per cent of HACC services are delivered to the aged.

⁷ While data on Commonwealth and States/Territories expenditure under the HACC program are available from the program's inception, information on the use of home and community services by the program's target population is only available for more recent years. Consequently, it is not possible to decompose expenditure trends before 1993-94. Even then, data availability prevents the calculation of measures like expenditure per client or a proper coverage ratio.

Table 4.7 Public expenditure on HACC financed home and community care programs, 1989-90 to 1999-00^a

	<i>State and Territories expenditure</i>	<i>Commonwealth expenditure</i>	<i>Total public expenditure^b</i>	<i>Total HACC expenditure to GDP</i>
	\$m 1996-97	\$m 1996-97	\$m 1996-97	%
1989-90	188	274	462	0.106
1990-91	206	305	511	0.118
1991-92	221	339	560	0.128
1992-93	236	369	605	0.134
1993-94	252	396	649	0.138
1994-95	269	428	697	0.142
1995-96	278	443	722	0.140
1996-97	292	470	762	0.143
1997-98	305	494	798	0.143
1998-99	319	525	844	0.144
1999-00	329	552	881	0.144

^a Original data deflated by the IPD for GDP. All HACC public expenditure including expenditure on the non-aged. ^b Note that the column is total HACC expenditure and therefore the 1996-97 figure is not identical to the HACC expenditure on the aged reported in table 4.1.

Sources: Department of Health and Aged Care and the AIHW. Australian National Accounts 1998-99, ABS Cat. No. 5204.0, accessed from DX (econdata) database.

Table 4.8 Government HACC expenditure indicators^a, 1993-94 to 1999-00

	<i>Target population Index^b</i>	<i>Target population to total population^c</i>	<i>Index of Program coverage^d</i>	<i>Average real HACC expenditure per recipient per month^e</i>	<i>Transfer ratio index^f</i>
	1993-94=100	%	1993-94=100	\$m 1996-97	1993-94=100
1993-94	100	5.94	100	254	100
1994-95	102	5.97	105	252	97
1995-96	103	5.99	110	244	92
1996-97	105	6.02	112	244	91
1997-98	107	6.04	115	243	89
1998-99	108	6.06	122	233	84
1999-00	110	6.08	129	224	79

^a Commonwealth and State/Territory expenditures on all HACC clients (aged and non-aged), 1996-97 prices. Expenditure deflated by the IPD for gross GDP. ^b Index of estimated number of people with a profound, severe or moderate handicap. ^c Target population (estimated number of people with a profound, severe or moderate handicap) to total population. ^d Estimated number of HACC clients per month (annual estimates of the number of HACC clients are not available) as a proportion of the target population of people with a profound, severe or moderate handicap. ^e Annual HACC expenditure deflated by a cost index weighted 50 per cent by IPD for GDP and 50 per cent by a cost index based on female full ordinary time wages, divided by 12 (for number of months), per number of estimated HACC clients per month. ^f Index of monthly expenditure per HACC client to per capita GDP.

Sources: Data provided by the Department of Health and Aged Care and the AIHW. Australian National Accounts 1998-99, ABS Cat. No. 5204.0, accessed from DX (econdata) database.

This increase appears to have been driven in part by increased coverage of the HACC program and in part by the underlying increase in the program's target population (table 4.8). As far as can be seen within the limitations of the data, real expenditure per program recipient has fallen over time, as has the transfer ratio (table 4.8). In short, resources financed through the HACC program have reached a growing proportion of its target population over time, but this has been coupled with a decline in expenditure per client from this program.

4.6 Aggregate government long-term aged care expenditure

So far, the discussion of government expenditure trends has focused on the components of long-term aged care, nursing home, hostel and home and community services. In this section, measures of total long-term aged care expenditure and total residential aged care expenditures are discussed.

Table 4.9 shows changes in real government (all jurisdictions) expenditure on the aged (those aged 70 or more) over the period 1989-90 to 1999-00. In summary, the table shows:

- increases in real government expenditure on residential care (including CACPs) of around 60 per cent between 1989-90 and 1999-00. Over the same period, all long-term aged care expenditure increased by almost 70 per cent;
- much of this increase reflects increases in the program's target population of older Australians, which grew steadily (by 37 per cent) over the period;
- coverage of the target population declined before recovering again towards the end of the period;
- average real expenditure per person in aged residential care (including CACPs) increased some 18 per cent over the period despite some decline in the period 1993-94 to 1993-94; and
- while there are data limitations, it appears that real expenditure per aged person receiving HACC services has declined. However, government expenditure on HACC is a relatively small proportion of total long-term aged care expenditure. Consequently, it is likely that average real expenditure per aged person receiving all long-term aged care services has increased in recent years.⁸

⁸ This seems likely because of the increase of 49 percentage points in total aged care expenditure since 1993-94 and the increase in average real expenditure per person in residential care over the same period.

While not shown in table 4.9, nursing homes' share of total government expenditure has fallen, from 76 per cent in 1989-90 to 66 per cent in 1996-97. The shares of hostel care and HACC in the same period, increased from 7 and 17 per cent, to 13 and 20 per cent respectively. In absolute terms, expenditure on CACPs increased from zero in 1989-90 to \$146 million in 1999-00. However, the shares of CACPs in long-term aged care services remains small — just over 3 per cent in 1999-00. The share of total residential care in all government aged care expenditure has also fallen slightly in the period 1989-90 to 1999-00 — from 83 per cent to 80 per cent.

As already discussed, underlying these changes is the Commonwealth's policy of increasing the relative availability of care modes such as hostels, CACPs and home and community services.

Table 4.9 Government long-term aged care expenditure, 1989-90 to 1999-00

Various indicators, all jurisdictions^a

	<i>All residential (including CACPs but excluding HACC)</i>	<i>Total long-term aged care (including CACPs and HACC)</i>	<i>Average real expenditure per person in residential care (includes CACPs)</i>	<i>Residential care coverage (including CACPs)^b</i>	<i>Index of target population (persons aged 70 or more)</i>
	1989-90=100	1989-90=100	1989-90=100	%	1989-90=100
1989-90	100	100	100	9.08	100
1990-91	108	108	106	8.88	104
1991-92	111	112	105	8.89	108
1992-93	114	117	105	8.88	111
1993-94	113	118	100	8.89	115
1994-95	118	124	101	8.92	119
1995-96	126	132	105	8.93	123
1996-97	137	141	110	8.92	126
1997-98 ^c	146	151	114	9.00	130
1998-99 ^c	154	159	116	9.03	134
1999-00 ^c	162	167	118	9.07	137

^a Expenditure deflated by the Implicit Price Deflator for GDP. ^b Percentage of those in residential care plus those receiving CACPs to population aged 70 or more. ^c Estimate based on an assumption that the increase in all government expenditure on residential care is equal to the increase in Commonwealth expenditure.

Sources: Calculations based on information provided by the Department of Health Aged Services, the AIHW and ABS population statistics (ABS cat. no. 3102.0), accessed from the DX database. Australian National Accounts 1998-99, ABS Cat. No. 5204.0, accessed from DX (econdata) database.

Total aged care residential services and total long-term aged care services have both increased as a percentage of GDP, but to a lesser extent than their real measure counterparts (table 4.10).

Table 4.10 Government long-term aged care expenditure relative to GDP, 1989-90 to 1999-00

Various indicators, all jurisdictions

	<i>Demographic factor (population aged 70 or more to total population)</i>	<i>Residential care expenditure (Including CACPs) to GDP</i>	<i>Total long-term aged care expenditure to GDP</i>	<i>Transfer ratio (total long-term aged care, including HACC expenditure) per person aged 70 or more to per capita GDP</i>
	%	1989-90=100	1989-90=100	1989-90=100
1989-90	7.21	100	100	100
1990-91	7.40	108	109	106
1991-92	7.58	110	112	107
1992-93	7.76	110	113	105
1993-94	7.95	105	109	99
1994-95	8.09	105	110	98
1995-96	8.25	107	112	98
1996-97	8.40	112	116	100
1997-98 ^a	8.54	114	118	100
1998-99 ^a	8.67	114	118	98
1999-00 ^a	8.77	115	119	97

^a Estimate based on an assumption that the increase in all government expenditure on residential care is equal to the increase in Commonwealth expenditure.

Sources: Department of Health and Aged Care, the AIHW and ABS population statistics (ABS cat. no. 3102.0) accessed from the DX database. Australian National Accounts 1998-99, ABS Cat. No. 5204.0, accessed from DX (econdata) database.

Another issue in relation to long-term aged care expenditure trends is the balance between government and non-government financing. Unfortunately, lack of time series data on hostel, HACC and CACP fees prevents any robust analysis of how this balance may have changed. Data on nursing home expenditure over the period since 1989-90 show some indication of a decline in government's share, but only by 1 to 2 percentage points — hardly sufficient for a definitive conclusion. However, there has recently been renewed emphasis on requiring HACC and CACP fees to recover a greater portion of costs of community care. This development, when combined with a more user-pays orientation in nursing home funding arrangements, implies that the share of government in long-term aged care financing may fall to a limited extent.

5 Long-term aged care projections

Australians currently spent about \$6 billion on long-term aged care, more than 1 per cent of GDP. As discussed in chapter 1, the prospective ageing of the population raises issues of how much this may increase in the future, and of our capacity to finance such increases. This chapter provides estimates of future long-term aged care expenditure.

5.1 Projection methodology

There are two basic methods of projecting long-term aged care aggregate costs or total expenditure. The first, a ‘tops down approach’, involves taking aggregate expenditures in a given year, establishing an average real expenditure per aged person (perhaps disaggregated by sex and age cohort), and multiplying this by the relevant projected aged population for future years. The disadvantage of this approach is that in practice, we lack fully comprehensive data on total expenditures. In particular, we have an incomplete picture of residential care expenditure (especially hostel expenditure) and no reliable data on non-government home and community care expenditure.

The second approach, a ‘bottoms-up’ one, involves using unit cost data, and usually more readily available and reliable output data (for example, the number of persons in residential care in the base year, and the quantity of home and community services) to establish aggregate costs. In the main, the approach taken here is to combine both. That is, to use the unit cost estimates provided in chapter 3, with adjustments where necessary to ensure the aggregate outcomes are consistent with the known expenditure outcomes described in chapter 4.

The approach used involves base line projections, based on a scenario that assumes the Commonwealth Government achieves its policy targets, and that these do not change over the projected period. For example, it is assumed that the Government achieves its residential care target coverage (number of residential places and CACPs per 1000 population aged 70 or more) for the aged population by the dates it has announced (see below). Similarly, it is assumed that the real cost per person for long-term aged care does not change over the projection period, and that the quality of long-term aged care remains constant. Thus, change in the base line scenario is driven by expected demographic developments based on ABS projections. A partial

exception is those projections that are expressed relative to GDP.¹ The methodology for the projections is based on the expenditure decomposition methodology discussed in chapter 4 and summarised box 5.1.

Box 5.1 Projecting long-term aged care expenditure

The two basic identities developed in chapter 4 are used to project total residential care.

1. Program cost in 1996-97 dollars at time t is equal to target population (the demographic factor, ie the population aged 70 or more) times the coverage factor (ratio of number of beneficiaries to target population) times average cost per program recipient (held constant in 1996-97 dollars).
2. The ratio of program cost to GDP at time t is equal to the demographic factor (ratio of target population (those aged 70 or more) to total population) times the coverage factor (number of program recipients) to the target population (usually those aged 70 or more) times the transfer ratio (average program cost per program beneficiary held constant at 1996-97 levels to per capita GDP at 1996-97 prices).

There are a number of advantages in using this approach. It makes clear what is being held constant and it is tractable when altering assumptions for policy experiments or sensitivity analysis. Also, expressing projected magnitudes relative to GDP places them in an appropriate context — for example, there is likely to be increased real incomes and therefore capacity to finance increased long-term aged care demands.

The other components that constitute total age care were projected on the basis of constant (1996-97 level) unit costs per person aged 65 or more in the case of HACC. And, at constant 1996-97 levels, expenditure per person aged 65 or more for informal care, Carers' Pensions and DNCB. Like residential care, these components are also projected in both real terms and relative to GDP.

There are disadvantages as well as advantages from this approach. The method does not take account of interactions between care modes in a way a complete model would. Moreover, because it treats those aged 65 or more, or those aged 70 or more, as one unit, it does not explicitly model demographic structural change within these population groups — for example, the increase in the relative number of the 'oldest old'. However, the assumptions about the availability of places are broadly consistent with such structural change. The coverage factors used in the base scenario imply that the number of care places per person aged 65 or more (residential plus CACPs) increase by 15 per cent from 1996-97 to 2030-31 (6 per cent for nursing and hostel residential places). Such a rise is consistent with roughly stable age-specific disability rates (chapter 2) and increasing overall disability rates for the aged as a whole (but does require a continuation of the current trend of changing the mix of care between nursing homes and hostels).

This may be a conservative assumption. In particular, there is international evidence that the relevant disability rates may fall for each age category (although not Australian evidence for this), which would tend to weaken the demand for care places.

Finally, a number of 'experiments' are undertaken to assess the impact of higher than expected GDP growth, different demographic outcomes, real increases in long-term aged care unit costs and some changes in Government policy settings.

¹ GDP projections are based on Rothman (1998).

5.2 Demographic and GDP projections

A number of demographically-related projections are common to all base line projections. These are set out in table 5.1. The main point to note is that GDP per capita is projected to increase more or less in line with the projected aged population until 2011. Thereafter however, the projected increase is considerably less than the projected increases in the aged population indicators.

Table 5.1 **Selected demographic indexes**

1996-97=100

<i>Year ending 30 June</i>	<i>Index of population aged 65 or more</i>	<i>Index of population aged 70 or more</i>	<i>Index of ratio of population aged 70 or more to total population</i>	<i>Index of per capita GDP</i>
1997	100.0	100.0	100.0	100.0
2001	107.1	111.1	105.9	114.1
2006	118.4	121.0	109.9	120.6
2011	135.3	134.4	116.9	126.3
2021	188.1	188.5	152.3	136.7
2031	240.9	254.7	194.5	148.3

Sources: Calculations based on ABS population projections (series II) and population estimates (Cat. Nos. 3222.0 and 3201.0 from the Econdata database — August 2000 dataset) and Rothman's (1998) GDP projections.

5.3 Nursing home (high-level residential care) projections

In the cost projections set out in table 5.2, it is assumed the Commonwealth's policy target of 40 nursing home (high-level care) places per 1000 population aged 70 or more is achieved by the target date of 2011 and remain unchanged thereafter.² There is a more than offsetting increase in hostel and CACP places.

At first sight, the assumption that this nursing home care rate will match clinical needs may seem unrealistic, since the structure of the aged population is projected to shift more towards the very old, and the very old have a higher likelihood of entering nursing home care. However, given expected trends in disability (box 5.1 and chapter 2), the projections for alternatives to nursing home care places (such as CACPs and hostel places) are sufficient to take up any excess demand for nursing home places. On the other hand, hostels and CACPs are oriented towards the care of

² While government policy and the projections relate to those aged 70 years or more, nursing home residents may be younger than this — even under 60 years of age.

the less dependent aged, which may affect the extent to which the mix of care can be changed.

It should also be noted that there is international evidence that age-specific severe disability rates, the major determinant of institutional usage, tend to decline over time. As shown in chapter 2, were age-specific disability rates to decline, this could moderate the demand for high level residential care.

It is also assumed that adjustment to that target from 1996-97 takes place at a constant rate. Costs per person year are held constant at estimated 1996-97 levels.

Table 5.2 Projected nursing home (high-level care) costs, 1997 to 2031

Base case scenario

<i>Year ending 30 June</i>	<i>Total nursing home cost</i>	<i>Number of nursing home beds</i>	<i>Total nursing home expenditure to GDP</i>
	\$b 1996-97 prices	Number	%
1997	3.15	74 233	0.592
2001	3.34	78 645	0.524
2006	3.42	80 509	0.483
2011	3.55	83 612	0.459
2021	4.98	117 307	0.553
2031	6.72	158 450	0.650

Sources: Calculations based on ABS population projections (ABS 2000) and Rothman (1998) GDP projections.

In the base case scenario, real nursing home costs are projected to increase over the entire period to 2031. This increase is despite the policy-induced declining coverage of the target population. Essentially, government policy of reducing the number of nursing home places per population aged 70 or over is more than offset by the expected increase in the population aged 70 or more. However, in relation to GDP, nursing home costs are projected to fall, or remain constant, until after 2011, when the policy target of 40 high-level care places per 1000 population aged 70 or more is expected to be achieved.

5.4 Hostel (low-level residential care) and Community Aged Care Package (CACP) projections

Hostel or low-level residential care costs in the base line scenario are projected to increase strongly in real terms over the years shown in table 5.3. The increase is greater than for high-level care places, reflecting the Commonwealth's policy of increasing the proportion of residential places accounted for by hostels. This policy shift is reflected in the increase in hostel places from approximately 65 000 in

June 1997 to almost 200 000 in June 2031 (a 206 per cent increase), compared to an increase of 113 per cent in nursing home places. Over the same period, low-level care costs relative to GDP are projected to increase by 0.13 percentage points compared to 0.06 percentage points for nursing homes.

Table 5.3 Projected hostel (low-level care) costs, 1997 to 2031
Base case scenario

<i>Year ending 30 June</i>	<i>Total costs</i>	<i>Number of hostel places</i>	<i>Total hostel costs to GDP</i>
	\$b 1996-97 prices	Number	%
1997	1.23	64 825	0.230
2001	1.44	76 117	0.226
2006	1.67	88 547	0.237
2011	1.98	104 515	0.256
2021	2.77	146 634	0.308
2031	3.74	198 062	0.362

Sources: Calculations based on ABS population projections (ABS 2000) and Rothman (1998) GDP projections.

The increase in CACPs in the base line scenario follows a similar pattern to that for hostels and reflects similar influences — expected demographic changes and the Commonwealth’s target CACP coverage. In real terms, CACP costs in the projections increased by over \$385 million in the period shown, equivalent to an increase of approximately 0.03 percentage points of GDP (table 5.4).

Table 5.4 Projected Community Aged Care Packages (CACPs) costs, 1997 to 2031
Base case scenario

<i>Year ending 30 June</i>	<i>Total costs</i>	<i>Projected number of Community Care Packages</i>	<i>Total cost of Packages to GDP</i>
	\$m 1996-97 prices	Number	%
1997	57.0	6 124	0.011
2001	160.8	17 279	0.025
2006	210.3	22 595	0.030
2011	233.5	25 084	0.030
2021	327.6	35 192	0.036
2031	442.4	47 535	0.043

Sources: Calculations based on ABS population projections (ABS 2000) and Rothman (1998) GDP projections.

5.5 Other long-term aged care projections: the HACC program, carers' pensions and informal care

HACC services and Carers Pension costs have been projected on the assumption that 1996-97 expenditure per aged person remains constant for the years indicated in table 5.5. In other words, the only change driving the projections is the population growth of those aged 65 or more. On this basis, HACC expenditure and Carers' Pensions will increase in real terms by 140 per cent from 1996-97 to 2030-31.

Table 5.5 **Projected HACC aged services and Carers' pensions costs, 1997 to 2031**

Base case scenario

<i>Year ending 30 June</i>	<i>Projected HACC costs</i>	<i>HACC costs to GDP</i>	<i>Projected carers' pension costs</i>	<i>Carers' pensions to GDP</i>
	\$m 1996-97 prices	%	\$m 1996-97 prices	%
1997	926.6	0.174	130.0	0.024
2000	992.4	0.156	139.2	0.022
2006	1 097.2	0.155	153.9	0.022
2011	1 253.8	0.162	175.9	0.023
2021	1 742.9	0.194	244.5	0.027
2031	2 232.1	0.216	313.2	0.030

Sources: Calculations based on ABS demographic projections (ABS 2000) and Rothman (1998) GDP projections.

Many community organisations provide services to the aged, dependent in part on the labour provided by volunteers. Placing a monetary value on such informal care is difficult, but based on information supplied by AIHW, the value of informal support for the aged was placed at \$353 million, or 0.07 per cent of GDP, in 1996-97 (see table 4.1).³

It was assumed that value of this informal care remained constant per aged person over the projection period. This resulted in informal aged care remaining relatively constant as a percentage of projected GDP until 2031, when it increased from 0.07 per cent to 0.08 per cent. In constant 1996-97 prices, it is projected to increase by almost 88 per cent from 1996-97 to 2020-21 — making it \$664 million by the latter date. Informal long-term aged care is projected to increase by a further 28 per cent

³ See also AIHW 1997 p. 42 for an estimate for 1994-95. The AIHW estimates are based on data on voluntary work collected by the ABS. As such, they relate to unpaid help provided through an organisation, or group, and therefore are unlikely to include informal assistance to the aged from family and friends.

in the period 2021 to 2031, making its projected value \$850 million by the latter date.

5.6 Total long-term aged care projections

Table 5.6 aggregates the long-term aged care cost projections discussed above. Total long-term aged care is projected to increase in real terms by over 145 per cent from 1997 to 2031. However, in relation to GDP, total long-term aged care costs actually fall until 2006.

From 2006 to 2031, total long-term aged care expenditure is projected to increase by 0.39 percentage points of GDP. If realised, such an increase would require a considerable diversion of resources to long-term aged care. It is also important to realise that such an increase could take place in the context of other increased aged care expenditure — most notably on acute (hospital) care. (See appendix A for further comment and information on this point.)

Appendix B provides further information on the assumptions underlying the base case projections and on the variations to these assumptions that form part of the following section.

Table 5.6 The bottom line: total long-term aged care cost projections, 1997 to 2031

Base case

<i>Year ending 30 June</i>	<i>Total long-term aged care costs</i>	<i>Total long-term aged care costs to GDP</i>
	<i>\$m 1996-97 prices</i>	<i>%</i>
1997	5 841	1.10
2001	6 445	1.01
2006	6 968	0.99
2011	7 663	0.99
2021	10 726	1.19
2031	14 302	1.38

Sources: Calculations based on ABS population projections (ABS 2000) and Rothman (1998) GDP projections.

5.7 The impact of different scenarios on long-term aged care projections

Projecting economic variables over more than 30 years brings with it considerable uncertainty. One way of dealing with this uncertainty is to undertake ‘sensitivity’

analysis’ — changing key parameters or assumptions and examining the impact of these changes on real long-term aged care costs and long-term aged care costs to GDP. This approach can also be thought of as a number of ‘what if’ experiments. In this section, four such experiments are reported:

- changes to projected GDP growth;
- the impact of different ABS demographic series projections;
- changes in the unit cost of providing long-term aged care services relative to the base case; and
- reducing the target number of nursing home places with a corresponding increase in home and community services for the aged.

GDP growth

Projecting GDP growth is subject to an even more than usual amount of uncertainty. The approach of Rothman (1998) is to estimate productivity growth per member of the workforce over a relatively long period and apply this to projected workforce numbers. While this approach has much to recommend it, there is evidence that productivity growth may have permanently shifted upward (Parham 1999). If this is the case, projecting GDP growth based on historical productivity performance may lead to substantial underestimation. Moreover, to the extent that Australia’s GDP growth record is any guide, it has exceeded historical trends in recent years. In the period since 1994-95, it averaged over 4 per cent per year, well above the average projected growth rate of approximately 2 per cent used in the base case projections.⁴

Consequently, the first ‘experiment’ involves projecting the long-term aged care costs with GDP growth of 0.1 percentage point per year, and 1 percentage point per year, above the estimated base case GDP growth (table 5.7). Both assumptions result in average GDP projected growth over the projected period still being well within recent experience. The overall implication of the results set out in table 5.7 is that GDP growth does not have to be very much better than projected in the base case for long-term aged care costs to actually *fall* relative to GDP (holding all other assumptions constant).⁵

⁴ The base case projections varied from year to year but averaged approximately 2 per cent over period to 2031.

⁵ This simple approach ignores any other links there may be between ageing, the provision of aged care and GDP growth. In particular, a higher rate of GDP growth implies higher per capita incomes and wealth for the aged. In turn, these may mean (other things being equal) greater demand for aged care per aged person (chapter 2).

Table 5.7 Different GDP growth scenarios, 1997 to 2031

Projected long-term aged care costs as a percentage GDP

	1997	2001	2006	2011	2021	2031
Base case ^a	1.10	1.01	0.99	0.99	1.19	1.38
Plus 0.1 percentage point ^b	1.10	1.01	0.98	0.98	1.17	1.34
Plus 1 percentage point ^c	1.10	1.00	0.93	0.89	0.97	1.02

^a Base case projections. ^b This scenario assumes GDP growth on the previous year is 0.1 percentage points higher than the base estimate. ^c Assumes growth is 1 percentage point higher than the base case.

Source: Calculations based on Rothman's (1998) GDP projections.

Demographic changes

Demographic projections are essentially the outcome of three variables: the fertility rate (the number of children born to the female population), the mortality rate and the net migration rate. In addition to the 'series 2' demographic projections which form the basis for the baseline projections in this chapter, the ABS has produced two other main demographic projections for Australia (series 1 and 3). The different assumptions of the three series are set out in table 5.8.

However, GDP and population estimates are likely to be associated. For example, were net migration to be higher, then the labour force would also be expected to be higher. For a given amount of labour force participation, this would imply a greater level of GDP. For the projections in table 5.9, we assumed that any variation in the working population (aged 15 to 64 years) from the series II baseline estimates would be reflected in an equiproportional change in GDP. For example, if the working age population was 10 per cent higher than under series II, then GDP was assumed to rise by 10 per cent.

Table 5.8 Assumptions underlying ABS demographic projections

ABS demographic projections: series 1, 2 and 3

ABS Demographic series	Net overseas migration assumption	Fertility assumption (births per woman)
Series 1	Gain of 110 000 per year	1.75
Series 2	Gain of 90 000 per year	Fall to 1.60 by 2008-9 and stay there
Series 3	Gain of 70 000 per year	Fall to 1.60 by 2008-9 and stay there

^a Mortality assumptions remain constant throughout all projection series. Internal migration assumptions also differ between series, but are not relevant in this context.

Source: ABS 2000.

Different demographic projections make relatively modest differences to long-term aged care cost projections over the period shown (table 5.9). So, for example, substantial variations in the immigration intake do not make an appreciable difference to the base-case estimate of the ratio of long term aged care costs to GDP.

Table 5.9 Different demographic scenarios, 1997 to 2031
Projected long-term aged care costs as a percentage of GDP ^a

	1997	2001	2006	2011	2021	2031
Base case (ABS series 2)	1.10	1.01	0.99	0.99	1.19	1.38
ABS series 1	1.10	1.01	0.98	0.98	1.16	1.32
ABS series 3	1.10	1.01	0.99	1.00	1.21	1.42

^a It should be emphasised that the projections above are based on *both* changes in demography and the corresponding likely changes in GDP (based on the change in the labour force). If the likely impacts of changes in the population on GDP are ignored, then the estimated cost to GDP ratios are 1.01, 0.99, 0.99, 1.20 and 1.40 for series 1 and 1.01, 0.98, 0.99, 1.19 and 1.37 for series 3 for the years from 2001 to 2031. Notably, such estimates suggest that increased net immigration actually increases the ratio of aged care costs to GDP. This reflects the fact that inevitably there are more aged under such a scenario (eg 0.8 per cent more 70+ people than the base case by 2031 for series 1), but by construction, no projected increase in total GDP. This is why we show in the body of the table results that combine changes in demography and their associated GDP effects. However, by giving both sets of figures we provide scope for others to calculate cost to GDP ratios based on other assumptions.

Source: Calculations based on ABS demographic projections (ABS 2000).

Long-term aged care unit costs

As discussed in chapter 3, it appears likely that the costs of producing a unit of long-term aged care will increase faster than costs for the economy as a whole. This is because of the limited scope to improve labour productivity in long-term aged care, coupled with expected increases in (mainly female) wage rates because of demand pressures. In the absence of a labour cost series related to long-term aged care, the approach taken here is to estimate the possible cost ‘overhang’ by using the trend rate of female ordinary time earnings over the 11 year period to 1996-97 as a starting point.

However, while labour is an important cost component for aged services, it is not the only input. It is likely that productivity improvements in the rest of the economy will at least ameliorate the impact of labour cost increases.⁶ There may also be some modest capital substitution and perhaps some substitution of lower cost for higher cost labour.

⁶ Although productivity improvements originating within the aged care sector are expected to be minimal, productivity improvements originating outside the sector can be expected to lower production costs compared to what they might otherwise be.

On balance, an experiment assuming an annual average increase in long-term aged care costs of 1 per cent per annum, over and above any cost increases for the economy as a whole, seems a possible scenario. The impact of these changes is set out in table 5.10. A 1 per cent reduction in long-term aged care costs is also presented in the table for comparison purposes. A one-off 5 per cent increase in unit residential care costs in 2001 is also modelled to illustrate the impact of a possible government-mandated increase in care quality.

As the table demonstrates, under the 1 per cent cost increase experiment, projected long-term aged care costs increase by 0.56 percentage points of GDP by 2031 compared to the base case. Similarly, the one-off increase of 5 per cent in residential care costs in 2001 increases projected long-term aged care costs by about 0.05 percentage points of GDP from that year. While these results may appear to be relatively modest in relation to GDP, in monetary terms they are significant. For example, assuming the base case GDP projections hold, an average unit cost increase of one per cent a year means that an extra \$5.7 billion (1996-97 prices) has to be found for long-term aged care in 2031. This is more than government expenditure on all residential care — hostels and nursing homes — in 1996-97.

These results underscore the value of seeking productivity improvements, innovation and efficiency gains in the provision of long-term aged care services. The results are also a reminder of the need to ensure that government funding arrangements, and regulations more generally, do not mute incentives for providers to search for lower cost operating alternatives.⁷

Table 5.10 Different unit cost scenarios, 1997 to 2031
Projected long-term aged care costs as a percentage of GDP

	1997	2001	2006	2011	2021	2031
Base case ^a	1.10	1.01	0.99	0.99	1.19	1.38
Unit cost increase of 1 per cent per year	1.10	1.05	1.08	1.14	1.51	1.94
Unit costs decrease of 1 per cent per year	1.10	0.97	0.90	0.86	0.94	0.98
One-off 5 per cent increase in unit residential care costs in 2001	1.10	1.04	1.02	1.02	1.23	1.43

^a Base care is constant 1996-97 unit costs.

Sources: Calculations based on ABS demographic projections (ABS 1998a) and Rothman (1998) GDP projections.

⁷ Of course there are other aspects to best practice regulatory design in this area. In particular, there is a need to ensure that incentives to cost minimise does not result in unacceptable service quality or in a general deterioration in buildings and equipment.

Possible impacts of policy changes

Current government long-term aged care policy is to reduce reliance on high cost care modes, such as nursing homes, in favour of lower cost modes. One policy scenario would be for this to continue. Thus, for illustrative purposes, a reduction in the target rate of 40 high-level care places per 1000 persons aged 70 or more, to 30 such places has been modelled. It is also assumed that the target ratio of lower level residential care and CACPs remains unchanged.

Two distinct cases should be distinguished:

- a decline in care places that reflects a reduction in underlying disability rates among the old; and
- no such decline.

An accommodating reduction in disability

In chapter 2, we provided international evidence about the likelihood of reduced disability (and institutionalisation) rates among the old. If this is the basis for the reduction in care places, then the savings in the residential part of the system have no cost implications for other parts of the system. We have not modelled this outcome because it is easy from table 5.2 to calculate its impact.

No accommodating reduction in overall disability

Alternatively, there may be no overall reduction in disability rates. This implies that (with a binding quota on places) there would be insufficient residential places to cope with demand, with displacement of care to home and community care — most of which is financed through the HACC program.

In reality, the impact of such a change would fall partly on the provision of home and community services by the informal sector. However, because we know so little about the impact of such an increase on informal care, the change has been modelled by assuming that HACC and non-government financed home and community care expands to take up the displaced high-level care numbers.⁸

⁸ The displaced high-level care population would most likely flow into lower levels of residential care in the first instance, but this, in turn, implies a displacement of low-level care residents to CACP recipients, and CACPs to HACC-financed services. It should also be noted that we are assuming that the costs of displaced residents is equal to the average for HACC services, when we would expect them to require above-average service levels. This implies that the projected cost savings are somewhat overstated.

Table 5.11 Policy experiment: a reduction from 2006 of nursing home places with increased HACC care

Projected long-term aged care costs as a percentage of GDP

	1997	2001	2006	2011	2021	2031
Base case	1.10	1.01	0.99	0.99	1.19	1.38
Policy experiment	As above	As above	0.84	0.88	1.05	1.22

Sources: Calculations based on ABS demographic projections (ABS 1998a) and Rothman (1998) GDP projections.

Not surprisingly, given the different unit costs associated with providing high-level residential care compared to home and community care, the policy change results in a considerable fall in long-term aged care costs compared to the base case (table 5.11). Implicitly however, the quality or quantity of long-term aged care services per aged person may have also fallen — some that would have been in higher levels of residential care are now receiving lower levels, and those who were in lower levels are receiving home and community care. It is also possible that such a change could induce, or force, some into inappropriate acute (hospital) care.

This raises the issue that measured, and actual, economic costs of long-term care for the aged can be different. In particular, a shift from long-term aged care in the paid (formal) sector, to unpaid informal care, may bring budgetary savings for governments, but may not result in a reduction in the real resources devoted to long-term aged care.

5.8 Comparison with other long-term aged care expenditure projections

Two recent publications of aged care expenditure are those of McCallum et al (1998) and Howe and Sarjeant (1999). McCallum et al's projections are based on New South Wales's data for recurrent expenditure. They include an allowance for non-government expenditure for residential care, but not for CACPs, HACC and informal care. As the tables set out below indicate, after adjustment for different base years and definitions, their results and the base case projections are broadly comparable.

Howe and Sarjeant project residential care expenditure only, but their projections have the advantage of including capital expenditure as well as recurrent expenditure. In addition, their data relate to 1997-98 and are therefore after the policy changes introduced in the Commonwealth's Residential Aged Care Structural Reform Package. While the size of the sample is not explicitly stated, it appears to be small, and is limited to Melbourne providers of residential care.

Howe and Sarjeant's have different projection years from the base case and from McCallum et al. This makes comparisons difficult, but their residential care projections are well above those of both the base case and of McCallum et al.

Table 5.12 Residential care (nursing homes and hostels) expenditure projections

Base case estimates, Howe and Sarjeant and McCallum et al (\$m 1996-97 prices)

<i>Year ending 30 June</i>	<i>Base case total residential care expenditure</i>	<i>Howe and Sarjeant projections</i>	<i>McCallum et al projections</i>
1997	4 374	na	4 036
1998	na	5 118	na
2001	4 775	na	4 625
2006	5 089	na	5 366
2008	na	6 762	na
2011	5 522	na	5 961
2018	na	8 299	na
2021	7 747	na	6 924
2028	na	11 249	na
2031	10 464	na	8 912

^a McCallum et al's data and Howe and Sarjeant's data have been rebased to 1996-97 prices using the implicit price deflator for non-farm GDP.

Sources: Publication base case estimates as for previous tables and McCallum et al (1998).

Table 5.13 Home and community care expenditure projections

Base case estimates with McCallum et al (\$m 1996-97 prices)

<i>Year ending 30 June</i>	<i>Base case projections</i>		<i>McCallum et al projections^a</i>	
	<i>Home and Community services</i>	<i>Community Aged Care Packages</i>	<i>Home and community services</i>	<i>Community Aged Care Packages</i>
1997	927	57	655	47
2001	992	161	722	119
2006	1 097	210	806	127
2011	1 254	233	867	135
2021	1 743	328	1 001	178
2031	2 232	442	1 275	231

^a McCallum et al data have been rebased to 1996-97 prices using the implicit price deflator for non-farm GDP.

Sources: Publication base line estimates as for previous tables. McCallum et al 1998.

Table 5.14 Total long-term aged care expenditure projections

Base case estimates compared with McCallum et al (\$m 1996-97 prices)

<i>Year ending 30 June</i>	<i>Base line total expenditure projections^a</i>	<i>McCallum et al projections^b</i>
1997	5 358	4 739
2001	5 928	5 467
2006	6 396	6 299
2011	7 009	6 963
2021	9 818	8 103
2031	13 139	10 419

^a Excludes Carers Pensions, DNCB and informal care to make the comparison with McCallum et al as valid as possible. ^b McCallum et al's data have been rebased to 1996-97 prices using the implicit price deflator for non-farm GDP. In addition, for some years McCallum's reported total was significantly different from the sum of the sub-totals. The latter have been used here.

Sources: Base case estimates as for previous tables, McCallum et al 1998.

5.9 Concluding comments

There are a number of caveats that need to be borne in mind with economic projections. First, they are, at best, only as good as their base year data. While the 1996-97 data used in the long-term aged care projections are as comprehensive and accurate as possible, there are gaps — most especially in relation to home and community services. Second, the further projections are from the base year, the more unreliable they are. As the UK Royal Commission into ageing and long-term care points out in relation to its own projections (UK Long-term Ageing Report 1999, section 2.1):

The best we can do is project forward a realistic 'base case' and accept that the future may lie within it, subject to wide margins of uncertainty. Little reliance can be placed on our projections beyond the first 10-15 years...

While the UK Royal Commission's reference to 'little reliance' 10 to 15 years out from the base year may be overly conservative, it would seem prudent to regard the projections presented in this chapter (and elsewhere) as being no more than broadly indicative of likely long-term aged care cost trends beyond 2011.⁹

If long term projections have so little certainty, why bother? In broad terms, there appear to be two inter-related benefits in relation to long-term aged care:

- an improved understanding of the factors that shape the supply and demand for long-term aged care services now, and in the future; and

⁹ The UK Royal Commission's comments were made in the context of urging periodic updates of long-term aged care projections to avoid the '10-15 year problem' referred to.

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- assistance in assessing the amount of resources that will be required to meet the clinical demand for such services — with possible impacts on the policy stances that are adopted if these funding requirements are seen as either readily manageable or not.

What has been learned from the exercise?

Based on the demand analysis in chapter 2, and the ‘experiments’ undertaken in this chapter, the following conclusions seem in order.

- Australia will have an ageing population over the period to 2031, especially in the period after 2011.
 - Sensitivity analysis using different ABS demographic projections incorporating, amongst other things, different net migration assumptions, does not change this conclusion.
- It is more likely than not that unit costs of long-term aged care services will increase more than costs for the economy as a whole. This will add to the demographically driven upward pressure on long-term aged care expenditure.
- On the demand side, the outlook is less clear. There is some international evidence that age-specific disability rates are declining, although the Australian data are ambiguous (chapter 2). Were such gains in age-specific disability to be realised, then this partly offsets the impact of the shift towards both more old people and more of the oldest old.
 - new treatments, for example for osteoporosis and cognitive impairment, are possible and have the capacity to reduce demand, especially for the most resource-intensive forms of long-term aged care;
 - against this, there is a possibility that reductions in some diseases increase the subsequent risk of disability from other diseases (substitute morbidity), countervailing some of the possible gains in disability.
- There is a positive relationship between incomes and wealth — which are likely to increase in the future — and improved health (and therefore *indirectly* on long-term aged care demand). This would also tend to reduce demand for long-term aged care.
- On the other hand, the *direct* effect of increased incomes and wealth of the aged will almost certainly be to increase underlying demand for long-term aged care services (other things, including health status, held constant).
- The *net* effects of income and wealth on demand for long-term aged care services are thus uncertain.

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- Even so, the powerful impact of an ageing population structure implies that demand for long-term aged care will increase. This, coupled with growing real unit costs, points to increased expenditure on long-term aged care in total.
 - In terms of Australia's ability to finance such an increase, much will depend on GDP growth. If Australia's trend rate of GDP growth over the period to 2031 is of a similar magnitude to that of recent years, it is less likely that increased provision of long-term aged care services will be a financial strain.
 - It needs to be borne in mind that findings in relation to one component of social expenditure on the aged — long-term care — should not be taken as necessarily indicative of the larger picture. Increased long-term aged care expenditure is but one component of total social expenditure on the aged. In particular, it appears likely that the ageing of Australia's population will lead to increased medical and hospital expenditure (appendix A). Even so, as in this study, there is debate about how big this will be relative to projected increases in GDP (PC 1999b, p. 96ff).

A Other aged care expenditure

In the base case of chapter 5, the projected increase in long-term aged care cost is relatively modest — from 1.10 per cent of GDP in the base year of 1996-97 to 1.38 per cent in 2031. However, the projected increase would take place in a context of generally increasing social expenditure on the aged. The purpose of this appendix is to explore this context more fully.

Up-to-date data on social expenditure costs for the aged are not available. However, Table A1, based on analysis of 1988 data, provides some indication of the social expenditure patterns for aged Australians. Clearly, the major social expenditure items are aged pensions and health expenditure.

Table A1 Social expenditure costs for older Australians, 1988

Expenditure per person per year in 1988 prices

Age	Age pension	Other assistance	Other social security	Health	Education	Total
65-69	2 430	31	2 041	2 185	16	6 703
70-74	3 368	60	1 626	3 255	16	8 325
75 or more	4 168	263	1 135	6 111	12	11 689

Source: Creedy and Taylor 1993.

Rothman (1998) has projected aged and veterans pensions relative to GDP. His base scenario — continuation of voluntary superannuation and the Superannuation Guarantee with pensions indexed to Average Weekly Ordinary Times Earnings — is essentially a continuation of current policy settings.

Rothman's projections indicate that aged pensions as a percentage of GDP will increase from approximately 3 per cent in 1999 to just over 4 per cent in 2031 (table A2).

Table A2 Projected cost of aged and veterans pensions as a percentage of GDP, 1999 to 2031

Years ending 30 June

1999	2001	2011	2021	2031
2.99	2.94	3.06	3.55	4.07

Source: Rothman 1998.

Mathers et al (1998) have calculated per person health costs for various age groups based on 1993-94 data. In order to avoid double counting, nursing home expenditures has been removed from the data and it has been updated to 1996-97 by the author (table A3).

Major health expenditure items by the aged are hospital care (57 per cent of total expenditure), medical (16 per cent) and pharmaceuticals (14.5 per cent). Expenditure on nursing homes was a little over half of total hospital expenditure. Overall, health care costs for the aged as a percentage of GDP was about double that for long-term aged care.

Table A3 Estimated health costs of the aged, 1996-97^a

	<i>Total costs</i>	<i>Per aged person costs</i>	<i>Total cost to GDP</i>
	<i>\$m</i>	<i>\$</i>	<i>%</i>
All aged persons			
65+	12 307	5 485	2.3

^a The basic data from Mathers et al (1998) were modified by excluding nursing home expenditure and by including total expenditure pro rata on a per capita basis, for public health services, ambulance services and medical appliances and aids. Data for the latter were derived from AIHW 1998 (Health Expenditure Bulletin Number 14). The increase in expenditure from 1993-94 to 1996-97 was estimated by using the increase in total recurrent expenditure over the relevant period (21.8 per cent, derived from data in AIHW 1998 and information supplied by the AIHW).

Source: Estimates based on Mathers et al (1998).

An obvious issue is how health costs of the aged are likely to change in the future. However, such forecasts do not appear to be readily available and projecting health care costs in any rigorous way is not within the ambit this report.

That said, some rough indication of the possible future impact of aged health care can be given by using ABS demographic projections, assuming constant health costs per aged person, and using Rothman (1998) GDP projections as previously. On this basis, while aged health costs increase in real terms for each of the projected years to 2031, they nevertheless decline relative to GDP until 2021, when they rise to 2.6 per cent of GDP. The corresponding projection for 2031 is 2.9 per cent of GDP.

B Data for base case projections and variations

B1 Base case demographic and GDP data

Table B.1 Base case demographic and GDP data

<i>Year ending June</i>	<i>Total population</i>	<i>Population 70+</i>	<i>Population 65+</i>	<i>Projected GDP</i>
	Number	Number	Number	\$m 1996-97 prices
1997	18 524 155	1 555 556	2 243 807	532.2
2001	19 421 345	1 727 883	2 403 087	636.5
2006	20 394 485	1 882 921	2 656 802	706.6
2011	21 288 783	2 090 294	3 035 971	772.5
2021	22 926 424	2 932 687	4 220 425	900.2
2031	24 254 439	3 961 249	5 405 091	1 033.7

Sources: ABS 1998, ABS National Accounts data from Econdata, Budget forecast for 2000-01 and Rothman's (1998) GDP projections.

B2 Base case program coverage rates

Table B.2 Base case residential long-term aged care programs coverage rates^a

<i>Year</i>	<i>Nursing homes</i>	<i>Hostels</i>	<i>Community Aged Care Packages</i>
	Population aged 70+	Population aged 70+	Population aged 70+
1996-7	0.0477	0.0417	0.0039
2000-01	0.0455	0.0441	0.0100
2005-06	0.0428	0.0470	0.0120
2010-11	0.0400	0.0500	0.0120
2020-21	0.0400	0.0500	0.0120
2030-31	0.0400	0.0500	0.0120

^a These rates were used to project the number of aged persons in each program.

Source: Calculations based on AIHW (1997).

B3 Base case unit cost data

Table B.3 **Base case unit cost data**
Held constant for all projected years

<i>Nursing homes^a</i>	<i>Hostels^a</i>	<i>CACPs^a</i>	<i>Carers pension^b</i>	<i>DNCB^b</i>	<i>HACC^b</i>	<i>Informal^b</i>
\$42 420 per residential place	\$18 897 per residential place	\$9 308 per place	\$36 per person aged 65 or more	\$21.50 per person aged 65 or more	\$413 per person aged 65 or more	\$157.3 per person age 65 or more

^a Cost per program recipient. ^b Cost per person aged 65 years or more.

Source: Estimates based on sources described in chapters 3 and 5.

B4 Data for GDP 'experiment'

Table B.4 **GDP Data (\$ billion 1996-97 prices)**

<i>Year</i>	<i>Base case projections</i>	<i>Base case plus 0.1 percentage point^a</i>	<i>Base case plus 1 percentage point^b</i>
1996-7	\$532.17	\$532.17	\$532.17
2000-01	\$636.45	\$637.07	\$642.59
2005-06	\$706.64	\$710.79	\$749.08
2010-11	\$772.54	\$780.91	\$859.96
2020-21	\$900.23	\$918.97	\$1,105.27
2030-31	\$1,033.66	\$1,065.64	\$1,399.97

^a For example, if the base case was 2.0 per cent for the year, the projection was 2.1 per cent. ^b For example, if the base case was 2 per cent for the year, the projection was 3 per cent. Variations on the base case commenced in the year 2000-01.

Sources: Data to 1999-2000 are from National Accounts data from Econdata, the 2000-01 estimate is based on the growth rate forecast in the Budget Papers, while later estimates are based on Rothman's (1998) projections.

B5 Data for different demographic scenarios

Table B.5 ABS Population Projections: series 1, 2 and 3 (millions)

	2000/01	2005/06	2010/11	2020/21
Population series 1	19.445	20.588	21.705	23.826
Population series 2 ^a	19.421	20.394	21.289	22.926
Population series 3	19.411	20.278	21.057	22.440
Aged 70+ series 1	1.728	1.885	2.095	2.947
Aged 70+ series 2	1.728	1.883	2.090	2.933
Aged 70+ series 3	1.728	1.881	2.086	2.919
Aged 65+ series 1	2.403	2.660	3.044	4.243
Aged 65+ series 2	2.403	2.657	3.036	4.220
Aged 65+ series 3	2.403	2.653	3.028	4.198

^a Population projections used in base case.

Source: ABS (2000).

B5 Data for unit cost experiment

Table B.6 Unit cost experiment: base care plus one per cent per year in unit costs (\$)

	1996-97	2000-01	2005-06	2010-11	2020-21	2030-31
Nursing homes	42 420	44 143	46 395	48 761	53 863	59 498
Hostels	18 897	19 664	20 667	21 722	23 994	26 505
CACPs	9 308	9 686	10 180	10 699	11 818	13 055
HACC	413	430	452	475	524	579
Carers pensions	58	60	63	67	74	81
Informal care	157	164	172	181	200	221

Source: Estimates based on sources described in chapters 3 and 5.

Table B.7 Unit cost experiment: base case less one per cent per year in unit costs (\$)

	1996-97	2000-01	2005-06	2010-11	2020-21	2030-31
Nursing homes	42 420	40 749	38 752	36 853	33 329	30 142
Hostels	18 897	18 152	17 263	16 417	14 847	13 427
CACPs	9 308	8 941	8 503	8 086	7 313	6 614
HACC	413	397	377	359	324	293
Carers pensions	58	56	53	50	46	41
Informal care	157	151	144	137	124	112

Source: Estimates based on sources described in chapters 3 and 5.

Table B.8 Unit cost experiment: base care plus one off 5 per cent increase in residential care costs from 2001 (\$)

	1996-97	2000-01	2005-06	2010-11	2020-21	2030-31
Nursing homes	42 420	44 542	44 542	44 542	44 542	44 542
Hostels	18 897	19 842	19 842	19 842	19 842	19 842
CACPs	9 308	10 000	10 000	10 000	10 000	10 000
HACC	413	392	392	392	392	392
Carers pensions	58	58	58	58	58	58
Informal care	157	157	157	157	157	157

Source: Estimates based on sources described in chapters 3 and 5.

B6 Data for policy experiment

Table B.9 Changes to base case settings for policy experiment
Settings change from 2006

	1997	2001	2006	2011	2021	2031
Assumed nursing home coverage rate ^a	0.0477	0.0455	0.0300	0.0300	0.0300	0.0300
Number in nursing homes	74 233	78 645	56 488	62 709	87 981	118 837
Additional HACC clients ^b	0	0	24 021	20 903	29 327	39 612

^a Coverage rate was 0.0477 in the base case. ^b Set equal to the number of nursing home residents in the base case less the number in the experiment.

Source: Estimates based on sources described in chapters 3 and 5.

C The development of long-term aged care policy

There have been a number of phases in the evolution of long-term aged care policy in Australia in recent years:

- From the early 1950s to the middle 1970s, where the available evidence indicates that government intervention resulted in an overgrown institutional care sector coupled with underdeveloped community care;
- efforts to alleviate this with the Commonwealth's 'Aged Care Reform Strategy' period from the late 1970s to 1996-97, when the Residential Aged Care Structural Reform Package was introduced; and
- present aged care arrangements which essentially reflect the Commonwealth 1996-97 Structural Reform Package.

C1 Government involvement to the 1970s

Government involvement in the provision of long-term aged care developed out of concerns about the adequacy of housing accommodation for the aged in the immediate post Second World War period (Kewley, 1973). However, the first really significant Commonwealth involvement came in 1954, with the introduction of a capital improvement subsidy for non-profit organisations providing accommodation (but not nursing care) for the aged (table A.1). The subsidy appears to have had considerable impact. By 1964, 1 033 grants had been approved, providing accommodation for over 18 000 people (Kewley, 1973 p. 320). However, unmet demand for aged accommodation remained high. There were long waiting lists for hostel accommodation and 'donations' in excess of standard fees in order to ensure access.

In 1966, the capital subsidy was extended to homes providing nursing, as well as accommodation services, and a personal care subsidy was introduced in 1969 (table A.1 and Kewley, 1973, p. 389). Initially, this subsidy was limited to residents aged 80 or over in hostel-like accommodation. But it was extended in 1973 to residents of any age who needed, and were receiving, personal care services (Gibson 1998 p. 30 and p. 220). As Gibson points out, in the late 1960's and early 1970's, the impact of these two measures was to provide both capital and recurrent

Commonwealth subsidies for the provision of nursing home style accommodation, making such facilities an attractive financial investment (1998 p. 30).

Table C.1 Major milestones in the development of aged care
Post Second World War to the early 1970s

<i>Year</i>	<i>Development</i>
1954	Commonwealth Aged Persons Act provides for subsidies to non-profit organisations to purchase or build accommodation for the aged. Not originally intended to cover nursing homes but policy changes extended its coverage to some nursing homes in 1966. The subsidy was extended to local government in 1967.
1956	Subsidy introduced for non-profit providers of home nursing.
1962	Commonwealth nursing home benefit introduced. Initial arrangements were subsequently modified a number of times.
1969	Commonwealth introduces capital grants to the States for providing accommodation for aged pensioners eligible for supplementary assistance (ie assistance to pensioners paying rent and who were almost entirely dependent on the pension).
1969	Commonwealth provides for a personal care subsidy to every resident aged 80 years or more in hostel-like accommodation. Subsidy was extended in 1973 to those requiring personal care under 80 years.
1969	Commonwealth provides capital grants to the States on a dollar-for-dollar basis to provide home care services. Grants for home care modified in 1973 to 2 dollars-to-dollar basis. Commonwealth also provides grants for paramedical help to aged persons in their own homes.
1970	Eligible organisations subsidised for the provision of meals.
1972	Commonwealth provides for capital grants for the establishment of hostel-like accommodation through the <i>Aged Persons Hostel Act 1972</i> .
1972	Commonwealth introduces Participating Nursing Home Scheme which involves full cost reimbursement
1973	Domiciliary Nursing Care Benefit introduced.
1975	Commencement of Deficit Financed Nursing Home Scheme which involves full cost reimbursement.

Source: Gibson 1998, Kewley 1973, Gregory 1993.

By the early 1970s, there were signs that the subsidy regime had encouraged over provision of nursing home care relative to hostel accommodation. Estimates of the number of persons unnecessarily in nursing home beds ran as high as 25 per cent (Kewley p. 476). Recognition of this problem, and the escalating costs of nursing home care, led the Commonwealth to introduce new policies and programs. The key element of these changes was the expansion of funding for hostels. The *Aged Persons Hostel Act 1972* provided capital subsidies for hostel accommodation, on a one for one basis, and for cash grants for the cost of hostel beds (Kewley p. 477, Gibson p.31). There was a clear recognition by government at this time that hostel care was both more economical and more appropriate for less dependant older people (Gibson 1998 p. 31).

The Commonwealth also introduced new measures for nursing homes in the early 1970s. The Participating Nursing Home Scheme and the Deficit Financed Scheme

(introduced in 1975) were based on full cost reimbursement by the Commonwealth. As a consequence, there was little incentive to minimise inputs and increase efficiency — the Commonwealth simply met costs — and nursing home unit costs increased faster than the rate of inflation (Gregory 1993 p. 2).

The Commonwealth also introduced a number of measures to constrain supply in the early 1970s, including controls on the growth of new beds and fees. But, in an apparently contradictory move, it also decided to subsidise the deficits of nursing homes run by voluntary organisations. The net impact of the Commonwealth's measures appears to have been highly expansionary, especially in the voluntary or not-for-profit sector. In the five years from 1975 to 1980, there was a 47 per cent increase in voluntary sector nursing home beds, an 18 per cent increase in government nursing home beds and a 7 per cent increase in for-profit nursing home beds (Gibson 1998, p. 31).

C2 The aged care reform strategy

In the late 1970s and early 1980s a number of inquiries pointed to problems in aged care arrangements. In 1977 the 'Holmes Committee Report' recommended consolidation of home care programs, expansion of assessment and rehabilitation provisions, review of nursing home financing, review of capital subsidy arrangements for self-contained accommodation, hostels and nursing homes and a review of cost-sharing arrangements with the States. Similarly, in 1982 the 'McLeay Report' described, documented and criticised the inadequacy of home-based services (Gibson 1998 p. 31-32).

Against this background, the Commonwealth Government introduced a set of policy changes, increasingly referred to as the decade wore on as the *Aged Care Reform Strategy* (Gibson 1998, p. 33). The major objective of this strategy was to reduce the proportion of aged persons in relatively high cost long-term care, such as nursing homes, and increase the proportion supplied by lower cost hostel and home and community care providers. The consequence of this policy is that expenditure on nursing homes slowed appreciably. Between 1968-69 and 1982-83, Commonwealth real expenditure on nursing homes increased on average by 13.5 per cent per year. In contrast, it averaged only 3.6 per cent per year from 1982-83 to 1989-89 and 2.9 per cent from 1988-89 to 1991-92 (Saunders 1990 p. 4, 1989 p. 18).

A further key objective of the strategy was to improve the coverage and efficiency of long-term aged care programs by integrating the various modes of supplying aged care services: home, community, hostel and nursing homes.

Key elements of the strategy were to:

- establish targets for the provision of residential care places and assistance through services provided in the home;
- introduce Aged Care Assessment Teams (ACATS) to determine eligibility for residential care and to provide advice on in-home services to those not requiring residential care; and
- introduce the HACC program.

The target for nursing home beds were set at 40 per thousand persons aged 70 or more; and for hostels, 60 places per thousand persons aged 70 or over (since revised to 50 places). These targets were to be achieved by 2011.

The HACC program consolidated earlier Commonwealth and Commonwealth/State initiatives in financing care services provided by community organisations. These earlier initiatives provided for financing of home help and for organisations providing meals, construction subsidies for senior citizen centres and subsidies for aged care paramedical staff such as physiotherapists (Gibson 1998 p.32).

The method of funding for non-government nursing homes also changed substantially. Earlier systems, which essentially reimbursed operators' costs, were replaced by a system in which nursing homes received funding based on estimates of the various components of their operating costs, such as nursing and personal care, meals and building maintenance. The new approach to nursing home funding improved the efficiency of the sector by providing greater incentives for operators to minimise costs. For example, nursing homes could keep the difference between their allowed expenditure on certain items, such as food, laundry electricity and building maintenance. Similarly, if a nursing home spent more on nursing and personal care costs (by far the largest component of total costs) than was funded by the Commonwealth, it had to meet the extra cost beyond a 1.5 per cent tolerance level.

Nevertheless problems remained. The new funding arrangements provided insufficient incentive for additional investment in facilities. Nursing home owners would gain no extra income from such investment and controls over the number of nursing homes meant nearly all operated at near capacity, regardless of the state of their buildings (PC 1999, Gregory, 1993 and Tasman Asia Pacific 1997).

C3 The Residential Aged Care Structural Reform Package

In its 1996-97 budget, the Commonwealth Government introduced the *Residential Aged Care Structural Reform Package* which, with minor modifications, effectively set the parameters for current long-term aged care funding and provision. Major

new directions stemming from the reform package were a focus on funding, including a more user pays orientation; the merging of funding provisions for nursing homes and hostels; and the establishment of a new quality standards agency for the residential sector. The package also introduced the Residential Care Classification Scheme.

Other major elements of the system remain unchanged, including the emphasis on home-based and community care, rather than residential care where possible (AIHW 1997 p. 239).

C3 Outline of current arrangements

Fees and charges

Since the introduction of the *Residential Aged Care Structural Reform Package*, nursing home and hostel residents entering care since March 1998 face two types of fees.

- Care fees, consisting of a fixed fee set at 85 per cent of the aged pension. All residents must pay at least this basic fee. If their private income exceeds a certain threshold, they also pay an additional care fee depending on the level of their private income.
- Depending on the value of their assets, they may also face an *accommodation charge* (high level care residents) or an *accommodation bond* (low level care residents).

Residents in care before 1 March 1998 do not have to pay any income tested care fee. (PC 1999).

Before the introduction of HACC (in 1985) and its precursor programs, fees and charges for home and community services were largely a matter for service providers and their clients. The existing HACC regulatory regime was introduced following a review of the efficiency and effectiveness of HACC in 1995, when the Commonwealth and the States jointly developed guidelines for consistent HACC fees and charges nation-wide (AIHW 1997 p. 258).

Most of the finance for CACPs comes from the Commonwealth. However, each CACP has a managing organisation that may charge additional fees subject to Commonwealth regulations (the *Aged Care Act 1997* provides for the Commonwealth to, amongst other fee-related matters, set maximum daily fees). At present, fees for aged pensioners cannot exceed 17.5 per cent of the weekly pension. For those on higher incomes, fees must not exceed 17.5 per cent of the aged pension plus 50 per cent of their income in excess of the aged pension rate.

Supply regulation

Following reviews in the late 1970s and early 1980s of nursing home and other aspects of long-term aged care, the Commonwealth moved to control the number of residential care places relative to the size of the aged population. At the same time, it increased the number of hostel and CACP places relative to nursing homes. This was to be achieved by setting target ratios for residential care and CACPs.

By 1986 there was a target ratio of 100 residential places per thousand people aged 70 or more (Gibson, 1998 p. 35). However, in its 1995–96 budget, the Commonwealth lowered the ratio to 90 residential places per 1000 persons aged 70 or over (50 of these places were to be in hostels and 40 in nursing homes). This target was to be achieved by 2011 (Mathur 1996, p. 37)). At the same time, the Commonwealth announced its CACP target of 10 places per 1000 people aged 70 or more by 2011. In 1998, the Commonwealth announced that the number of CACP places was to increase to 12 per 1000 people aged 70 or more by 2002-03.¹

To achieve these targets, the Commonwealth controls the allocation of new residential care places and CACPs to providers and to residents. The allocation of new residential places to providers begins with State/Territory planning advisory committees allocating new places between regions and special needs groups. The Secretary of the Commonwealth Department of Health and Aged Care then invites applications from approved providers who are assessed against criteria which include experience, expertise and the suitability of their premises and the availability of concessional places. Once new places are allocated, providers can make them operational by building new facilities or adding to existing ones (PC 1999, p. 38).

Quality of care regulation

At the Commonwealth level, residential care standards cover health and personal care, resident life style and the physical environment and safety. It is the responsibility of the Aged Care Standards and Accreditation Agency (ACSAA) to enforce the standards by periodic assessment.

One of the ACSAA's main instruments for gaining compliance is the certification and accreditation requirement. In order to ask residents to pay a bond or accommodation payment, residential facilities must be certified as meeting certain building and care standards. While certification is not mandatory at present, to

¹ Information Sheet 2, *Expand and Improve Community Aged Care Packages*, Department of Health and Family Services, May 1998.

continue to receive Commonwealth funding after January 2001, all providers have to achieve *accreditation* status as well as comply with certification standards (PC 1999).

Since 1991, the States and the Commonwealth have used an agreed set of standards, *The Home and Community Care National Service Standards*, to regulate HACC service quality. In broad terms, the Standards define service quality and indicate expected outcomes and are included in all agreements between the service providers and the relevant State or Territory government. The individual States and Territories may also have requirements additional to the nationally agreed standards. Compliance with the standards is monitored and subject to periodic reviews (HACC Standards Working Group, undated).

D Time series data for chapter 4

Table D1 **Government expenditure on residential care**

	<i>Total government expenditure on nursing homes^a</i>	<i>Commonwealth expenditure on hostels^b</i>	<i>Government residential care expenditure</i>	<i>Government expenditure on CACPs</i>
	\$m	\$m	\$m	\$m
1989-90	1 771	156	1 927	0
1990-91	1 962	190	2 152	0
1991-92	2 013	234	2 247	2
1992-93	2 076	275	2 351	3
1993-94	2 041	312	2 353	7
1994-95	2 102	363	2 465	18
1995-96	2 277	417	2 694	33
1996-97	2 454	478 ^d	2 932	52
1997-98 ^c	2 712	614	3 156	84
1998-99 ^c	na	na	3 291	122
1999-00 ^c	na	na	3 495	150

^a These data differ from those in AIHW 1999b. The latter actually relate to Commonwealth expenditure and ignore sources of funding from other levels of government. ^b State and local government expenditure are not available. Based on ABS 1995-96 survey of community services, it appears to be approximately 10 per cent of Commonwealth expenditure (see footnote to table 4.1). ^c Total residential care expenditure estimated for these years by assuming the total government increase is the same as the increase in Commonwealth expenditure. ^d The AIHW and the Department of Health and Aged Care differ on this figure. The Department's figure is given here. The AIHW figure was \$474 million.

Source: AIHW (Health Expenditure Bulletins) and data supplied by the Department of Health and Aged Care.

Table D.2 **Public expenditure on HACC financed home and community care programs**

	<i>Commonwealth expenditure</i>	<i>States and Territories expenditure</i>	<i>HACC Target population</i>	<i>Total public expenditure^b</i>	<i>Estimated number of clients per month^a</i>
	\$m	\$m	Number	\$m	Number
1989-90	242	166	na	407	na
1990-91	278	188	na	466	na
1991-92	315	206	na	521	na
1992-93	348	223	1 041 700	571	na
1993-94	378	241	1 060 610	619	220 000
1994-95	412	259	1 078 783	671	235 000
1995-96	438	275	1 097 406	712	250 000
1996-97	470	292	1 114 601	762	260 000
1997-98	500	308	1 131 855	808	270 000
1998-99	532	323	1 149 328	855	290 000
1999-00 ^a	569	339	1 167 485	909	311 481

^a Estimates supplied by the Department of Health and Aged Care, except for 1999-00, which was estimated by assuming the percentage increase was the same as for the previous year. ^b The data may not sum due to rounding.

Source: Department of Health and Aged Care.

Table D3 Population, residential care and Community Aged Care Package (CACP) recipients

	<i>Population aged 70 years or more</i>	<i>Nursing home residents^a</i>	<i>Hostel residents</i>	<i>Total residential care places (including CACPs)</i>	<i>Persons receiving CACP packages</i>
	Number	Number	Number	Number	Number
1989-90	1 231 030	70 437	41 357	111 794	0
1990-91	1 279 325	71 023	42 619	113 643	0
1991-92	1 325 718	71 932	45 750	117 918	235
1992-93	1 371 142	72 259	49 058	121 788	470
1993-94	1 418 688	72 009	52 886	126 122	1 227
1994-95	1 462 038	72 461	55 663	130 666	2 229
1995-96	1 510 871	72 683	58 208	135 322	4 083
1996-97	1 555 556	72 489	60 082	138 695	6 124
1997-98	1 598 758	na	na	144 379	9 517
1998-99	1 643 929	na	na	149 067	13 113
1999-00	1 684 929	na	na	154 295	16 582

^a Data for 1989-90 to 1993-94 were estimated by applying utilisation rates of 97 per cent for nursing homes and 93 per cent for hostels to times series data on the number of nursing home and hostel places respectively.

Sources: Department of Health and Aged Care and ABS population data (cat. no 3102.0) access from DX (Econdata) database.

Table D4 Implicit price deflator (IPD) for Gross Domestic Product (GDP), price deflators for long-term aged care expenditures and GDP data

	<i>IPD for GDP</i>	<i>Price deflator for nursing homes^a</i>	<i>Price deflator for hostels and HACC^b</i>	<i>GDP^c</i>
	1996-97=1	1996-97=1	1996-97=1	\$ million
1989-90	0.88	0.77	0.80	384 238
1990-91	0.91	0.81	0.84	396 684
1991-92	0.93	0.86	0.88	405 962
1992-93	0.94	0.90	0.91	426 747
1993-94	0.95	0.91	0.92	449 416
1994-95	0.96	0.94	0.94	473 380
1995-96	0.99	0.97	0.97	506 976
1996-97	1.00	1.00	1.00	532 170
1997-98	1.01	1.03	1.03	564 653
1998-99	1.01	1.07	1.05	595 417
1999-00	1.03	1.11	1.09	632 290

^a Index derived from a weighted average of 30 per cent of the IPD for GDP and 70 per cent of an index based on female ordinary time earnings. ^b Index derived from a weighted average of 50 per cent of the IPD for GDP and 50 per cent of an index based on female ordinary time earnings. ^c The GDP figure for 1999-00 was estimated by applying the Commonwealth Budget projected GDP growth for that year.

Source: Australian National Accounts 1998-99, ABS Cat. No. 5204.0, accessed from DX (Econdata) database.

References

- ABS (Australian Bureau of Statistics) 2000, *Population Projections Australia 1999-2101*, Cat. No. 3222.0, Commonwealth of Australia, 2000.
- 1998a, *Population Projections 1997 to 2051*, Cat. No. 3222.0, Commonwealth of Australia, 1998.
- 1998b, *Income Distribution Australia 1996-97*, Australian Bureau of Statistics, 2 July 1998, Cat. No. 6523.0.
- 1993, *Disability Ageing and Carers: Summary of Findings, Australia 1993*, Cat. No. 4430.0, Commonwealth of Australia 1993.
- AIHW (Australian Institute of Health and Welfare) 1997, *Australia's Welfare: Services and Assistance 1997*, AIHW Cat. No. AUS 8, Commonwealth of Australia 1997.
- 1995 *Australia's Welfare Services and Assistance 1995*, AGPS, Canberra 1995.
- 1998a, *Nursing Homes in Australia 1996-97: A statistical overview*, Aged Care Statistics Series Number 3, AIHW Cat. No. AGE 9, Commonwealth of Australia 1998.
- 1998b, *Hostels in Australia 1996-97: A statistical overview*, Aged Care Statistics Series Number 3, AIHW Cat. no. AGE 10, Commonwealth of Australia 1998.
- 1999a, *Residential Aged Care Facilities in Australia 1998: a Statistical Overview*, AIHW Cat. No. AGE 14, Canberra, AIHW and DHFS (Aged Care Statistics Series).
- 1999b, *Australia's Welfare 1999: Services and Assistance*, Canberra, AIHW.
- Bacon, B. 1998, *Household Wealth and the Age: An Income Distribution Survey Analysis*, Paper 98/3, Retirement and Income Modelling Section, Commonwealth Treasury.
- 1999, *Ageing in Australia: Some Modelling Results and Research Issues*, Paper 99/1, Retirement and Income Modelling Section, the Treasury.
- Bassuk, S., Thomas, A. and Berkman, L. 1999, 'Social disengagement and incident cognitive decline in community-dwelling elderly persons', *Annals of Internal Medicine*, (131,3), 165-173, August.

-
- Beck, B. 1996, 'The Economics of Ageing: All our tomorrows', *The Economist*, January 27.
- Bentleys 1998a, *National Aged Care Survey Results 1996-97: Nursing Homes*, Bentleys MRI Chartered Accountants Financial Benchmarking Report commissioned by James Underwood & Associates, Queensland, 1998.
- Bentleys 1998b, *National Aged Care Survey Results 1996-97: Hostels*, Bentleys MRI Chartered Accountants Financial Benchmarking Report commissioned by James Underwood & Associates, Queensland, 1998.
- Coopers & Lybrand WD Scott 1985, *Cost of Nursing Home and Hostel Services*, Department of Community Services Commissioned study, AGPS July 1985.
- Costa, D. 2000, Long-term declines in disability among older men: medical care, public health and occupational change, NBER Working Paper No. W7605, March.
- Creasey, H. 1999, 'Compression of morbidity: evidence in relation to the age of onset of neurological disorders', in Department of Health and Aged Care, *Compression of Morbidity: Workshop Papers*, Occasional Paper Series No. 4, Canberra.
- Creedy, J. 1999, *Population Ageing and the Growth of Social Expenditure*, Melbourne Institute of Applied Economic and Social Research Working Paper No. 7/99, The University of Melbourne, Melbourne.
- Deaton, A. and Paxson, C. 1999, Mortality, education, income and inequality among American cohorts, NBER Working Paper No. W7140, May.
- DH&AC (Department of Health and Aged Care) 1998, *Community Care Statistics 1997-98, December 1998*.
- DH&FS (Department of Health and Family Services) 1997, *Community Care Statistics 1996-97*, Department of Health and Family Services December 1997.
- DHHCS (Department of Health, Housing and Community Services) 1993, Home and Community Care Unit Costs Study, Alt Statis and Associates, AGPS, March 1993.
- DHS&H (Department of Human Services and Health) 1995, Aged and Community Care Division, *The Efficiency and Effectiveness Review of the Home and Community Care Program*, Aged and Community Care Service Development and Evaluation report Number 18, AGPS, Canberra.
- Edvartsen, T.O. 1996, *Possibilities and Problems in a Cross-Country Comparative Analysis of Long term Care Systems*, in 'Long Term Care: Economic Issues and Policy Solutions', (eds) Roland Eisen and Frank A. Sloan, *Developments in Health Economics and Public Policy*, Vol.5, Kluwer Academic Publishers, 1996

-
- Fries, J. 1980, 'Aging, natural death and the compression of morbidity', *New England Journal of Medicine*, 303, 130-36.
- Gallagher, P. 1996, *Assessing the National Saving Effects of the Government's Superannuation Policies: Some Examples of the New Rimgroup Saving Methodology*, Retirement Income Modelling Unit Paper, The Commonwealth Treasury. (available on internet at www.treasury.gov.au/organisations/rimtf).
- Gibson, D. 1998, *Aged Care: Old Policies, New Problems*, Cambridge Press.
- Gibson, D. and Goss, J. undated, *The Coming Crisis of Australian Aged Care: Fact or Fiction*, forthcoming in the Australian Journal of Ageing, date unknown.
- Gregory, R. 1993, *Review of the Structure of Nursing Home Funding Arrangements, Stage 1*, Department of Health, Housing, Local Government and Community Services Aged and Community Care Division Aged and Community Care Service Development and Evaluation Report Number 11, AGPS, Canberra.
- HACC Standards Working Group, (Sub-group of HACC Officials) undated, *The Home and Community Care National Standards Instrument and Guidelines*.
- Howe, A. and Sarjeant, H. 1999, 'Ageing and the cost of health services', in Policy Implications of the Ageing of Australia's Population, Productivity Commission and Melbourne Institute of Applied Economic and Social Research, AusInfo, Canberra.
- Howe, A. 1999, 'Trends in aged care utilisation: interpretations and implications of compression of morbidity', in Department of Health and Aged Care, *Compression of Morbidity: Workshop Papers*, Occasional Paper Series No. 4, Canberra.
- Jacobzone, S., Cambois E, Chaplain E and Robine JM, 1988, *The Health of Older Persons in OECD Countries: Is it Improving Fast Enough to Compensate for Population Ageing?*, OECD Labour Market and Social Policy Occasional Papers No. 37, DEELSA/WD(98)8. Paper is available from the OECD internet site.
- Jacobzone, S., Cambois E., and Robine J.M., 2000, *Is the Health of Older Persons in OECD Countries Improving Fast Enough to Compensate for Population Ageing?* OECD Economic Studies, Number 30, 2000/1, OECD Paris.
- Johnson, P. and Falkingham, J. 1992, *Ageing and Economic Welfare*, Sage Publications 1992.
- Kewley, T. H., 1973, *Social Security in Australia: 1900-72*, Sydney University Press, second edition 1973.
- Lakdawalla, D. and Philipson, T. 1999, Aging and the growth of long-term care, NBER Working Paper No. W6980, February.

-
- Manton, K. 1999, 'National Long Term Care Survey', in Maddox, G.L.(ed.) *Encyclopedia of Aging*, Second Edition. Springer, New York.
- Manton, K. and Yashin, A. 1999, 'Inequalities of life: Statistical analysis and modeling perspectives' in Sauvain-Dugerdil, C.(ed.) *Age Between Nature and Culture*, University of Geneva: Geneva Switzerland.
- Manton, K., Stallard, E., Corder, L. and Singer, B., 1998, 'The effects of health changes on the projections of future health service needs for the U.S. elderly population', *Proceedings of the National Academy of Science*, (95),15618-15622, available at http://cds.duke.edu/MPAPERS_INDEX600.HTML.
- Mathers, C., Penm R., Carter, R. and Stevenson C. 1998, *Health System Costs of Diseases and Injury in Australia 1993-94*, AIHW Health and Expenditure Series Number 2, AIHW Cat no. HWE 5, Commonwealth of Australia 1998.
- Mathers, C. 1999, 'International trends in health expectancies: do they provide evidence for expansion or compression of morbidity', in Department of Health and Aged Care, *Compression of Morbidity: Workshop Papers*, Occasional Paper Series No. 4, Canberra.
- Mathur, S. 1996, *Aged Care Services in Australia's States and Territories*, AIHW Aged Care Series Number 2, AIHW Cat. No. AGE 1, Commonwealth of Australia, 1996
- McDonald, P. and Kippen, R. 1999, 'Ageing: the social and demographic dimension', in Policy Implications of the Ageing of Australia's Population, Productivity Commission and Melbourne Institute of Applied Economic and Social Research, AusInfo, Canberra.
- McCallum, J., Botsman, P., Clarke, A., Pearse W., and Keogh S., 1998, *Ensuring Quality of Later Life: Financing Aged Care Services within the Context of an Ageing Society*, South West Health care Papers No. 7, Centre for Health Outcomes and Innovations Research (CHOIR) University of Western Sydney, September 1998.
- McCallum, J. 1999, 'The new morbidity picture: substitution versus compression?', in Department of Health and Aged Care, *Compression of Morbidity: Workshop Papers*, Occasional Paper Series No. 4, Canberra.
- Myers, G. 1997, Emerging demographic changes in an ageing world: an overview, paper presented at the 1997 World Congress of Gerontology, Adelaide.
- OECD 1998a, *Maintaining Prosperity in an Ageing Society*, OECD, Paris.
- 1998b, *Long Term Services to Older People, a Perspective on Future Needs: the Impact of Improving Health of Older Persons*, OECD Ageing Working Paper 4.2 OECD, Paris.

-
- OECD 1999, *OECD Economic Surveys Australia 1998-99*, OECD Paris.
- Parham, D. 1999, *The New Economy? A Look at Australia's Productivity Performance*, Productivity Commission Staff Research Paper, Commonwealth of Australia, May 1999.
- PC (Productivity Commission) 1999a, *Nursing Home Subsidies*, Inquiry Report No 4, 13 January 1999, Commonwealth of Australia 1999.
- 1999b, *Private Hospitals in Australia*, Commission Research Paper, AusInfo, Canberra.
- Rickwood, D. 1994, *Dependency in the Aged: measurement and client profiles for aged care*, AIHW Welfare Division Working Paper No 5.
- Rothman, G. 1998, *Projections of Key Aggregates for Australia's Aged-Government Outlays, Financial Assets and Incomes*, Retirement Income Modelling Unit Conference Paper 98/2, The Treasury, Paper for the Sixth Colloquium of Superannuation Researchers, University of Melbourne July 1998.
- Saunders, P. 1989, *Towards an Understanding of Commonwealth Social Expenditure Trends*, Social Policy Research Centre, University of New South Wales, Discussion Paper No 11, May 1989.
- 1990, *Reflections on the Review of the Home and Community Care Program*, Social Policy Research Centre, University of New South Wales, Discussion Paper No 22, August 1990.
- Schofield, H. and Hermann, H., 'Characteristics of Carers in Victoria', *Family Matters*, Australian Institute of Family Studies, No 34 May 1993.
- Schulz, J. 1997, *The Economics and Financing of Long-Term Care*, 1997 World Congress of Gerontology, Adelaide.
- Steering Committee for the Review of Commonwealth/State Service Provision 1998, *Report on Government Services 1998*, Commonwealth of Australia, February 1998.
- Steering Committee for the Review of Commonwealth/State Service Provision 1999, *Report on Government Services 1999*, Commonwealth of Australia, February 1999.
- Tasman Asia Pacific 1997, *HESTA Report into Strategic Capital Needs of the Residential Aged Care Industry 1997-2003*, Tasman Asia Pacific and Economic Insights, June 1997.
- UK Long Term Ageing Report 1999, (UK Royal Commission Report 1999, chaired by Sir Stewart Sutherland), *With Respect to Old Age: Long term care-Rights and Responsibilities*, A Report by the (UK) Royal Commission on Long Term Care,

March 1999, internet on 6/9/99, <http://www.official-documents.co.uk/document/cm41/4192/4192-01.htm>

Vanston, N. 1998, 'The Economic Impacts of Ageing', *OECD Observer*, 212, June/July.

Waidmann, T. and Manton, K. 2000, *Measuring Trends in Disability Among the Elderly: An International Review*, Urban Institute, June.

Walsh, J.W. and De Ravin, J.W. 1995, *Long Term Care-Disability and Ageing*, Transaction Annals of the Institute of Actuaries of Australia.

White-Means, S. and Hong, G. 1996, *Giving Incentives and the Well-Being of Children Who Care for Disabled Parents*, Health and Retirement Study 96-040. December.