



Australian Government

Department of Health and Ageing

**Technical Paper on the changing
dynamics of residential aged care
prepared to assist**

**the Productivity Commission Inquiry
*Caring for Older Australians***

by the Department of Health and Ageing

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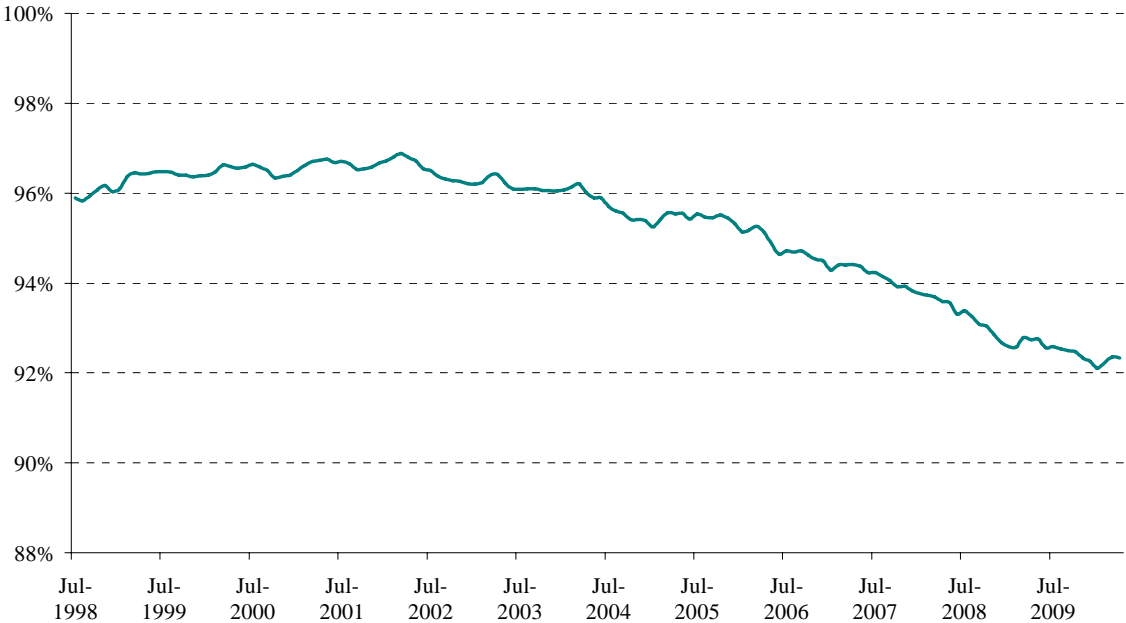
Technical Paper on the changing dynamics of residential aged care

- 1. This paper examines recent trends in three key aspects of the residential aged care system:
 - a) occupancy rates;
 - b) lifetime risk and age of entry to residential aged care; and
 - c) length of stay in residential aged care.

Occupancy

2. An aged care home’s occupancy rate is the proportion of operational places that are occupied by care recipients. Occupancy rates are driven by demand and supply side factors. The demand side factors include the size of the population in an aged care home’s catchment area that require residential aged care, which in turn depends on the age and frailty profile, and socio-economic characteristics, of the population in the catchment area. Supply side factors include the quality of, and prices charged by, the aged care homes as well as the extent of competition (number of residential places servicing the catchment area) and the presence of substitute services (for example, the number of community care packages servicing the catchment area). Over the last decade, the average level of occupancy for aged care homes has been declining. As Figure 1 indicates, across Australia there was a small increase in average occupancy rates between July 1998 (95.9 per cent) and March 2002 (96.9 per cent), with a steady decline since then to 92.3 per cent in April 2010 (see Figure 1).

Figure 1: Average occupancy rate, monthly, by sector, July 1998 to April 2010



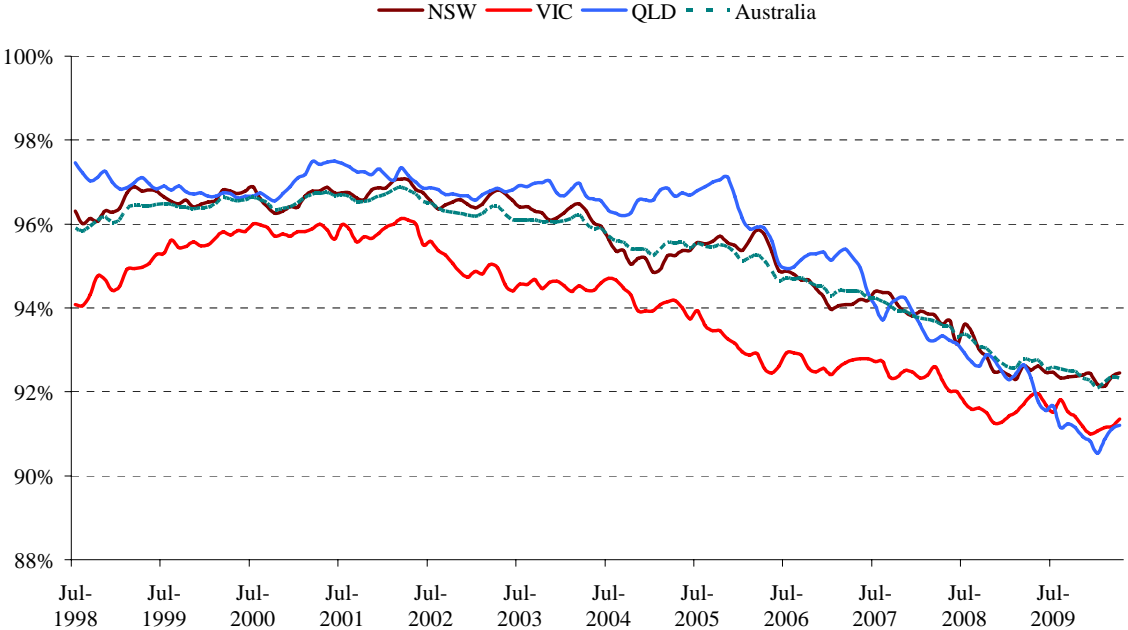
3. As Figure 2 shows, the decline in occupancy rates has been occurring across the three largest states. Not surprisingly, given the share of the population living in New South Wales,

the average occupancy rate in New South Wales has consistently tracked the average occupancy rate across Australia. Currently, the average occupancy rate in New South Wales is 92.5 per cent. Over the last twelve months, occupancy rates in New South Wales have, on average, been exactly at the national average.

4. Average occupancy rates in Victoria, on the other hand, have been consistently below the Australian average by about 1.3 percentage points. Currently, the average occupancy rate in Victoria is 91.4 per cent. Over the last twelve months, occupancy rates in Victoria have, on average, been 1.0 percentage point below the national average.

5. Average occupancy rates in Queensland were consistently above the national average until January 2008 but now appear to be dropping below the national average. Currently, the average occupancy rate in Queensland is 91.2 per cent. Over the last twelve months, occupancy rates in Queensland have, on average, been 1.3 percentage points below the national average.

Figure 2: Average occupancy rate, monthly, NSW, VIC and QLD, July 1998 to April 2010



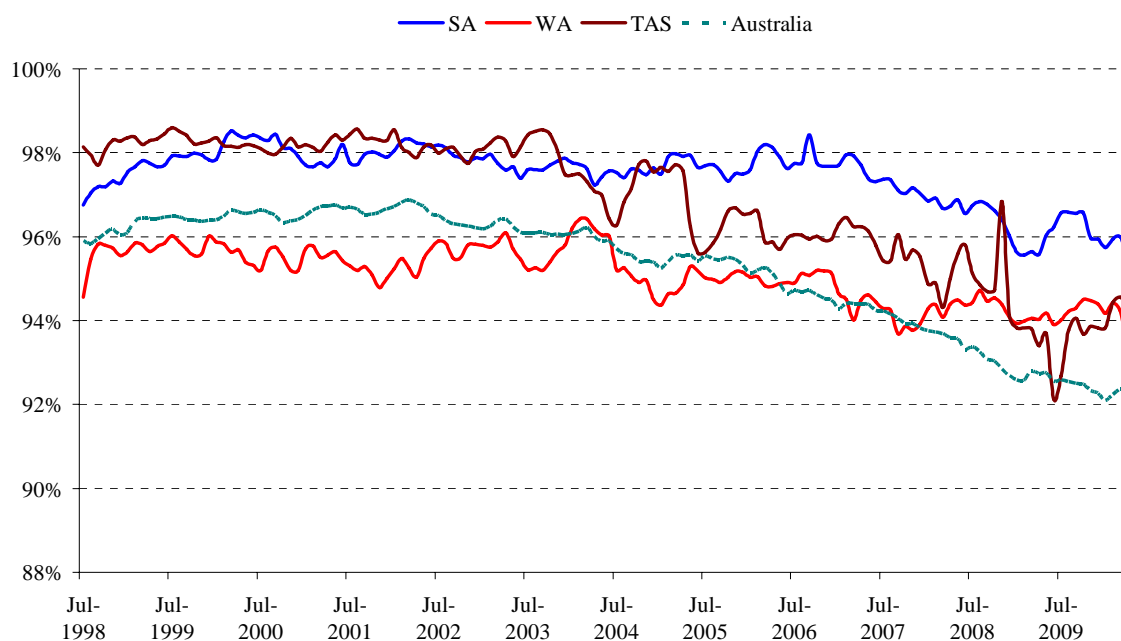
6. Average occupancy rates in South Australia, Western Australia and Tasmania have also been declining, although to a smaller extent (see Figure 3). In South Australia, average occupancy rates have been consistently higher than the national average (by 2.2 percentage points, on average, since July 1998). Peak occupancy occurred in South Australia in March 2000, and has been declining at 0.3 percentage points per year since then. The average occupancy rate in South Australia is currently 95.6 per cent. Over the last twelve months, occupancy rates in South Australia have, on average, been 3.7 percentage points above the national average.

7. In Western Australia, average occupancy rates were consistently below the national average until December 2003 and have been consistently above the national average since April 2007. Currently, the average occupancy rate in Western Australia is 93.3 per cent. Over

the last twelve months, occupancy rates in Western Australia have, on average, been 1.8 percentage points above the national average.

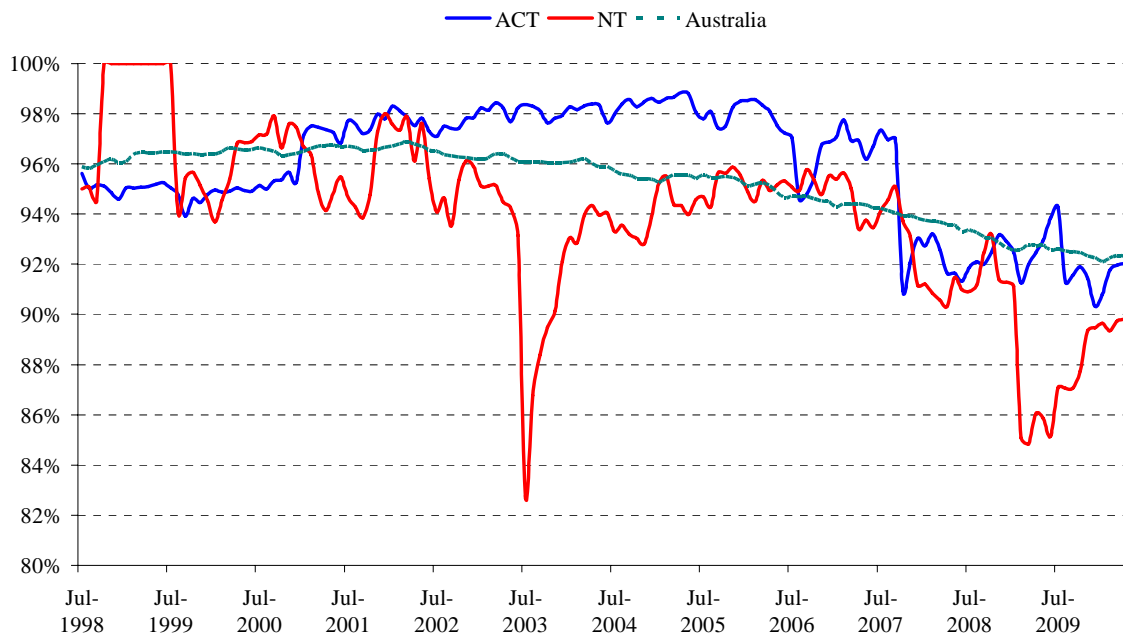
8. In Tasmania, average occupancy rates peaked at 98.6 per cent in July 1999 and stayed at or above 98 per cent until November 2003. Since then they have been declining by about 0.6 percentage points per annum. The average occupancy rate in Tasmania is currently 94.4 per cent. Over the last twelve months, occupancy rates in Tasmania have, on average, been 1.3 percentage points above the national average.

Figure 3: Average occupancy rate, monthly, SA, WA and TAS, July 1998 to April 2010



9. As Figure 4 shows, average occupancy rates in the two territories are, because of their smaller size, much more volatile. In the Northern Territory, the significant dips in the average occupancy rate in July 2003 and February 2009 are most probably due to the opening of new services, which take some time to fill. Because of the small number of homes in the territory, a new home opening can have a significant effect on the overall occupancy rate. Discounting this effect, the average occupancy in the territory appears to track the Australian average. The average occupancy rate in the Northern Territory is currently 89.8 per cent. Over the last twelve months, occupancy rates in the territory have, on average, been 4.3 percentage points below the national average but are clearly trending back towards the national average.

10. Average occupancy rates in the Australian Capital Territory were significantly above the national average between July 2000 and July 2007. Again the dips in occupancy in July 2006 and July 2007 are most probably associated with the opening of new aged care homes. Currently, the average occupancy rate in the ACT is 92.0 per cent. Over the last twelve months, occupancy rates in the ACT have, on average, been 0.4 percentage points below the national average but appear to be trending back towards the national average.

Figure 4: Average occupancy rate, monthly, ACT and the NT, July 1998 to April 2010

Trends and variations in occupancy by sector

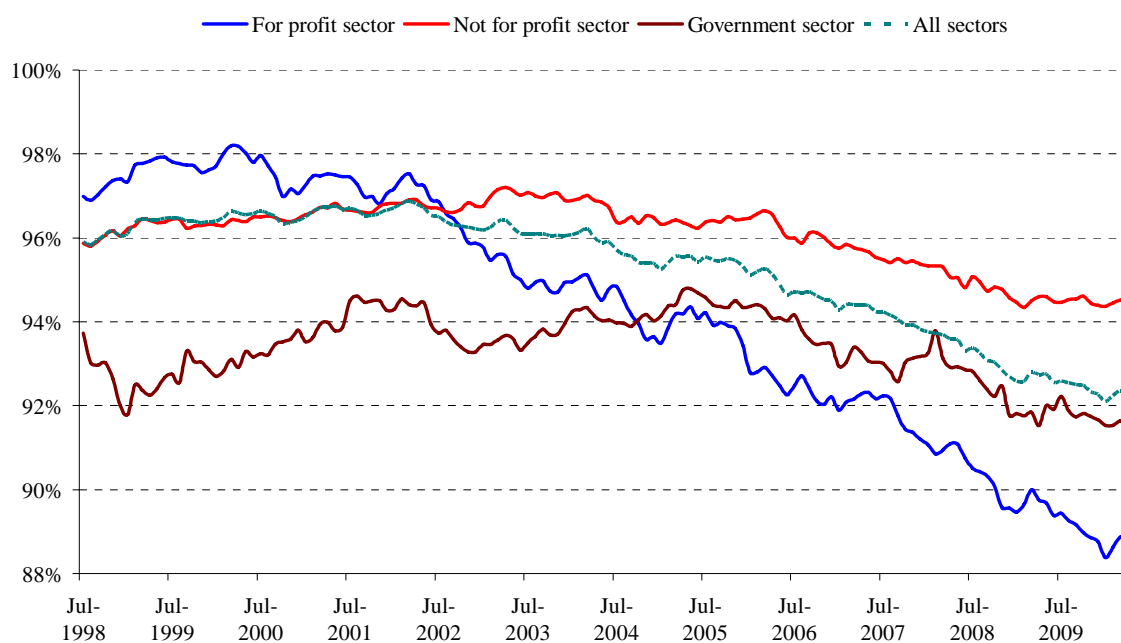
11. The decline in occupancy rates has not been uniform across the residential aged care sector. As Figure 5 shows, the decline has been most dramatic in the for-profit sector, where occupancy peaked in 98.2 per cent in March 2000 and has been declining steadily since April 2001, with an average decline in occupancy since then of 1.0 percentage points per year. Currently, the average occupancy rate in the for-profit sector is 88.9 per cent. Over the last twelve months, occupancy rates in for-profit sector have, on average, been 3.4 percentage points below the national average.

12. In the not-for-profit sector, by contrast, occupancy peaked lower but later (at 97.2 per cent in April 2003) and although it has also been declining steadily since then, the rate of decline, at 0.5 percentage points per annum, has been only half that which has obtained in the for-profit sector. Currently, the average occupancy rate in the not-for-profit sector is 94.5 per cent – some 5.6 percentage points higher than in the for-profit sector. Over the last twelve months, occupancy rates in not-for-profit sector have, on average, been 2.1 percentage points above the national average.

13. Average occupancy rates in the government sector have been more volatile, in part because of the smaller size of the sector. It is noticeable, however, that average occupancy rates in the government sector have been above those in the for-profit sector since October 2004. The extent to which the average occupancy rates in the government sector is below the average in the residential aged care system overall closed sharply between April 1999 (4.2 percentage points) and April 2005 (0.8 percentage points). Currently, the average occupancy rate in the government sector is 91.6 per cent – some 2.7 percentage points higher than in the for-profit sector but 2.9 percentage points lower than the not-for-profit sector. Over the last

twelve months, occupancy rates in not-for-profit sector have, on average, been 0.6 percentage points below the national average.

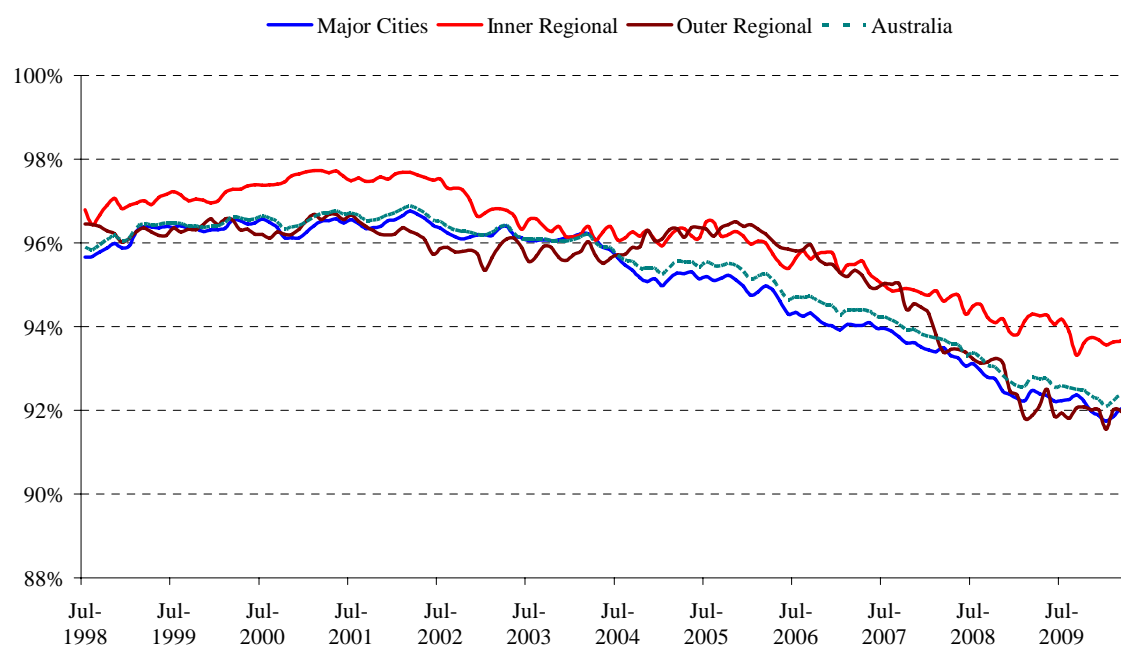
Figure 5: Average occupancy rate, monthly, by sector, July 1998 to April 2010



Trends and variations in occupancy in remoteness areas

14. As Figure 6 indicates, the decline in the national occupancy rate has also occurred in the average occupancy rates in Major Cities, Inner Regional areas and Outer Regional areas.

Figure 6: Average occupancy rate, monthly, Major Cities, Inner Regional areas and Outer Regional areas, July 1998 to April 2010



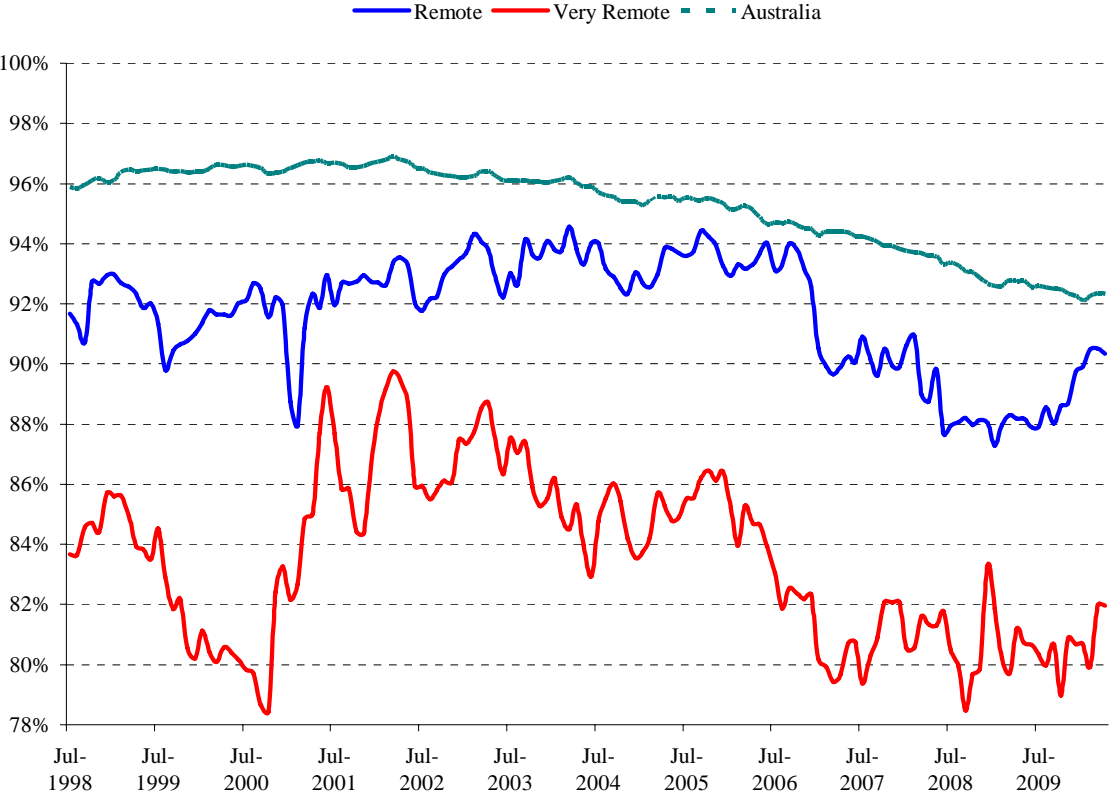
15. The average occupancy rate in Major Cities closely tracks the national average because of the preponderance of aged care homes in this remoteness area. However, it has always been slightly below the national average (an average of 0.2 percentage points below since 1998). Currently, the average occupancy rate in Major Cities is 92.0 per cent.

16. The average occupancy rate in Inner Regional areas has always been higher than the national average (by 0.9 percentage points on average since 1998). Currently, the average occupancy rate in Inner Regional areas is 93.8 per cent. Over the last twelve months, occupancy rates in Inner Regional areas have, on average, been 1.4 percentage points above the national average.

17. The average occupancy rate in Outer Regional areas tended to be slightly below the national average until July 2004. From July 2004 until February 2008 they were above the national average, peaking at 1.3 percentage points above the national average in January 2006. Since February 2008, the average occupancy rate in Outer Regional areas has again fallen below the national average. Currently, the average occupancy rate in Outer Regional areas is 91.8 per cent. Over the last twelve months, occupancy rates in Outer Regional areas have, on average, been 0.5 percentage points below the national average.

18. As Figure 7, average occupancy rates in Remote and Very Remote areas have been more volatile and have also been consistently lower than the national average.

Figure 7: Average occupancy rate, monthly, Remote and Very Remote areas, July 1998 to April 2010



19. The average occupancy rate in Remote areas has always been lower than the national average (by 3.6 percentage points on average since 1998). There was a significant relative

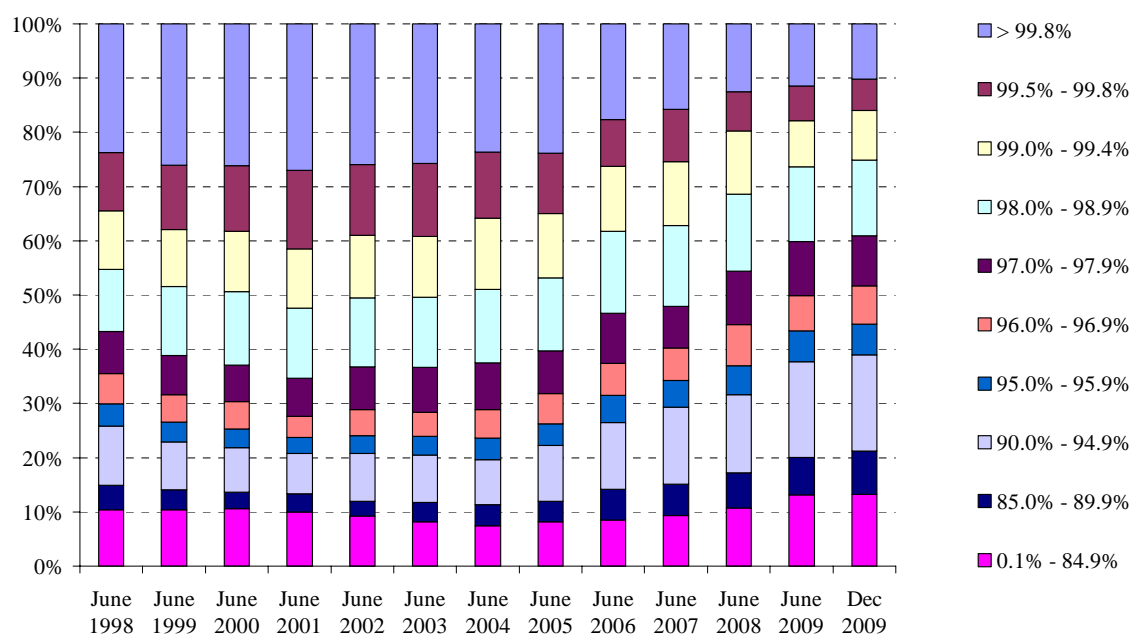
improvement in the average occupancy rate in Remote areas up to the end of 2006, when it was less than one percentage point below the national average. Since then, however, it has returned to its more historical relative level. Currently, the average occupancy rate in Remote areas is 90.3 per cent. Over the last twelve months, occupancy rates in Inner Regional areas have, on average, been 3.3 percentage points below the national average.

20. The average occupancy rate in Very Remote areas has always been significantly below the national average (by 11.7 percentage points in average since 1998). Currently, the average occupancy rate in Very Remote areas is 82.0 per cent. Over the last twelve months, occupancy rates in Inner Regional areas have, on average, been 11.6 percentage points below the national average.

Trends in occupancy rates at the aged care home level

21. Although there has been a decline in occupancy rates, on average, this does not seem to have affected all services. Figure 8 provides frequency distributions of the occupancy rates of all aged care homes from June 1998 to December 2009.

Figure 8: Frequency distribution of occupancy rates, June 1998 to June 2010



22. There has been a decline in the proportion of homes that are experiencing very high occupancy rates (say, above 98 per cent), from 56.7 per cent to 39.1 per cent. However, it is still the case that two in five aged care homes are operating with occupancy rates above 98 per cent and, indeed, one in ten aged care homes are operating with an occupancy rate above 99.8 per cent.

23. At the other end of the scale, the proportion of aged care homes operating with occupancy rates below 85 per cent has increased by only 2.9 percentage points in the last 12 years – from 10.4 per cent in June 1998 to 13.4 per cent in December 2009. The proportion of aged care homes operating with occupancy rates below 95 per cent has increased from 25.9 per cent in

June 1998 to 38.9 per cent in December 2009. On the one hand there are more homes operating with these lower levels of occupancy, but on the other hand such homes have always been a part of the aged care system.

Characteristics of aged care homes with low and high occupancy levels¹

24. Figure 9 below shows the results of a regression analysis of the occupancy rates of all aged care homes operating in June 2009 against several key variables. The results, as discussed below, are indicative of some of the drivers of occupancy. However, it should be noted that the overall explanatory power of the regression model is low, with an adjusted R square of 5.8 per cent. The base case for the model is a not-for-profit aged care home in a major city which does not offer care on an extra service basis.

Figure 9: Regression analysis -- drivers of occupancy rate, June 2009

Regression Statistics						
Multiple R	0.243842	Standard Error	10.99235			
R Square	0.059459	Observations	2964			
Adjusted R Square	0.056913					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	8	22572.51	2821.563	23.35116	5.42E-35	
Residual	2955	357058.1	120.8318			
Total	2963	379630.6				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	100.52	2.721773	36.93015	< .001	95.17	105.86
Residential aged care ratio	-0.04	0.027399	-1.33128	0.183	-0.09	0.02
Community care ratio	-0.28	0.050602	-5.43637	< .001	-0.38	-0.17
ARIA score	-0.46	0.148299	-3.1011	0.002	-0.76	-0.16
Size	-0.01	0.006286	-1.86174	0.063	-0.03	0.00
85+/70+ pop	0.25	0.120357	2.075521	0.038	0.01	0.49
Extra service status	-10.19	1.715947	-5.94098	< .001	-13.60	-6.82
Profit status	-3.54	0.503526	-7.0272	< .001	-4.53	-2.55
Government status	-3.59	0.635887	-5.64866	< .001	-4.84	-2.34

25. The first variable is the residential care ratio for the planning region in which the aged care home is located. The analysis shows that, all other things being equal, a one point increase in the residential care ratio for the planning region will reduce occupancy by 0.04 per cent. However, the p-value (0.183) indicates that this result is not statistically significant.

¹ Low occupancy is defined as less than 80 per cent. High occupancy is defined as above 98 per cent

26. The second variable is the community care ratio for the planning region in which the aged care home is located. The analysis shows that, all other things being equal, a one point increase in the community care ratio for the planning region will reduce occupancy by 0.28 per cent. In this case, the p-value indicates that this result is statistically significant and there is a 95 per cent probability that the impact of a one point increase in the community care ratio for the planning region will be a reduction in the occupancy rate of between 0.17 per cent and 0.38 per cent.

27. The third variable is the remoteness of the aged care home, measured by its ARIA score. The analysis shows that, all other things being equal, a one point increase in the ARIA score of an aged care home will reduce occupancy by 0.46 per cent. In this case, the p-value indicates that this result is statistically significant at the 99 per cent level, and there is a 95 per cent probability that the impact of a one point increase in an aged care home's ARIA score will be a reduction in the occupancy rate of between 0.16 per cent and 0.76 per cent.

28. The fourth variable is the size of the aged care home is located. The analysis shows that, all other things being equal, a one bed increase in the size of an aged care home will reduce occupancy by 0.01 per cent. However, the p-value (0.063) indicates that this result is not statistically significant.

29. The fifth variable is the ratio of the size of the population aged 85 or over in the planning region to the size of the population aged 70 or over in the planning region. This variable is a proxy for the frailness of older people in the planning region – the higher the variable the relatively more very old people there are in the planning region. The analysis shows that, all other things being equal, an increase in the age profile of the older people in the planning region will increase occupancy. However, the p-value (0.038) indicates that this result is not statistically significant.

30. The sixth variable is the extra service status the aged care home. The analysis shows that, all other things being equal, aged care homes that offer car on an extra service basis can expect to have a lower than average occupancy rate (by 10.2 per cent). In this case, the p-value indicates that this result is statistically significant and there is a 95 per cent probability that extra service status reduces occupancy by between 6.8 per cent and 13.6 per cent.

31. The seventh variable is the for-profit status the aged care home. The analysis shows that, all other things being equal, aged care homes in the for-profit sector will have occupancy rates than aged care homes in the not-for-profit sector (by 3.5 per cent). In this case, the p-value indicates that this result is statistically significant and there is a 95 per cent probability that extra service status reduces occupancy by between 2.5 per cent and 4.6 per cent.

32. The last variable indicates if the aged care home is operated by the government sector. The analysis shows that, all other things being equal, aged care homes in the government sector will have occupancy rates than aged care homes in the not-for-profit sector (by 3.6 per cent). In this case, the p-value indicates that this result is statistically significant and there is a 95 per cent probability that extra service status reduces occupancy by between 2.4 per cent and 4.9 per cent.

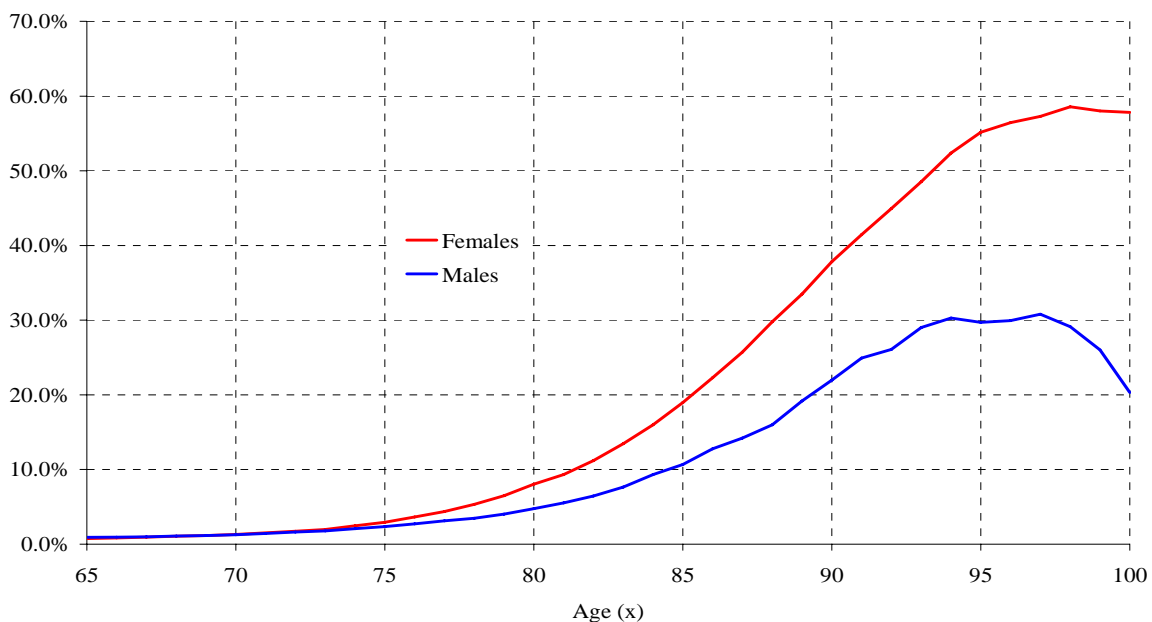
Lifetime risk and age of entry to residential aged care

33. In understanding the demand that population ageing will put on the need for residential aged care it is important to understand the likelihood that a person that is not currently in residential aged care will enter residential aged care at some time in the future.² This likelihood is termed lifetime risk of entry. The section examines the life time risk of entry into permanent residential aged care and the age at which people enter into permanent care.

Lifetime risk of entry to residential aged care

34. The lifetime risk of entry to permanent residential aged care is not well understood, perhaps because, as Figure 10 illustrates, at age 80 only 4.8 per cent of men and 8.0 per cent of women are receiving permanent residential aged care at any one time. Even at the peak of usage only 30.3 per cent of men (at age 94) and 58.6 per cent of women (at age 98) are receiving permanent residential aged care at any one time.

Figure 10: Probability of being in receipt of permanent residential aged care, by age, by sex, 2007-08



35. However, such cross-sectional data tends to understate the likelihood that an individual will require permanent residential aged care at some time in their life. The Australian Institute of Health and Welfare have suggested that better estimates can be provided by life table

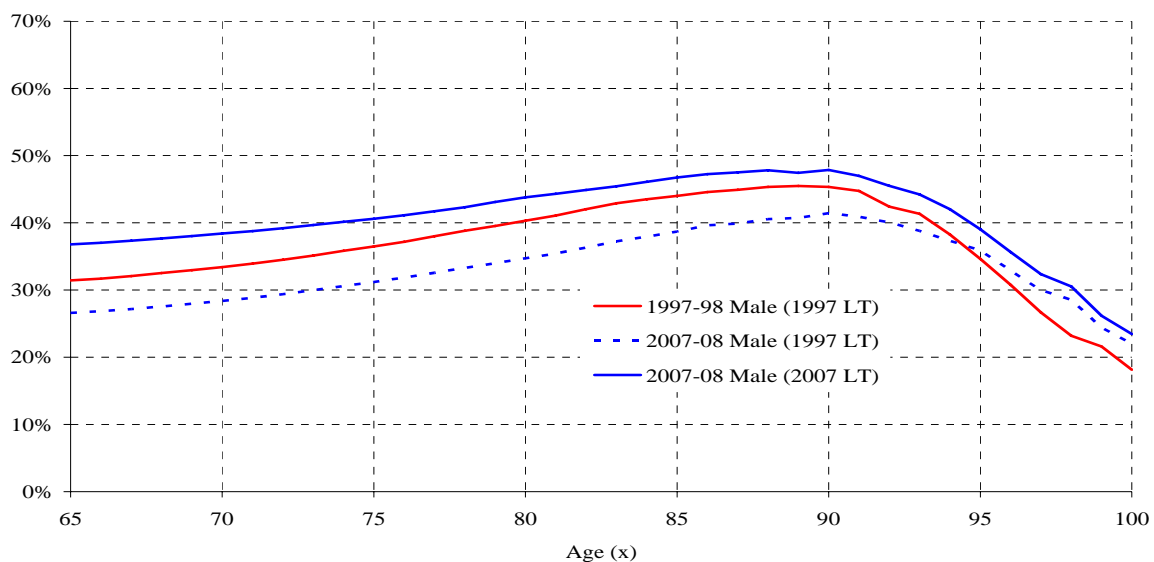
² David Cullen (2007) 'The financial impact of entering aged care'. *Australasian Journal on Ageing* **26**(3), September 2007, pp.145–147.

David Cullen (2006) 'Factoring the cost of aged care into retirement planning'. Paper delivered at the 14th Colloquium of Superannuation Researchers, Centre for Pensions and Superannuation, University of New South Wales, July 2006.

analysis.³ Figure 11 illustrates the (remaining) lifetime risk of entry to permanent residential aged care at different ages for men who have never received permanent residential aged care, based on 2007-08 aged care data and the standard life tables.⁴ Figure 12 illustrates the same data for females.

36. In 2007-08, the likelihood that a female aged 65 year old would enter permanent residential aged care in her lifetime was 54 per cent and for a male this risk was 37 per cent. The likelihood that someone will enter into residential aged care in their lifetime increases with age, although this risk declines again for the very old. In 2007-08, for females, the likelihood of entering residential age care, for those who have not been previously admitted, was at its highest during their early to mid-eighties where the likelihood of entry was around 60 per cent. For males, the peak likelihood of entering into residential aged care was during their mid to late-eighties where the likelihood of entry is around 48 per cent.

Figure 11: Male lifetime risk of entry into permanent residential aged care, 1997-98 and 2007-08



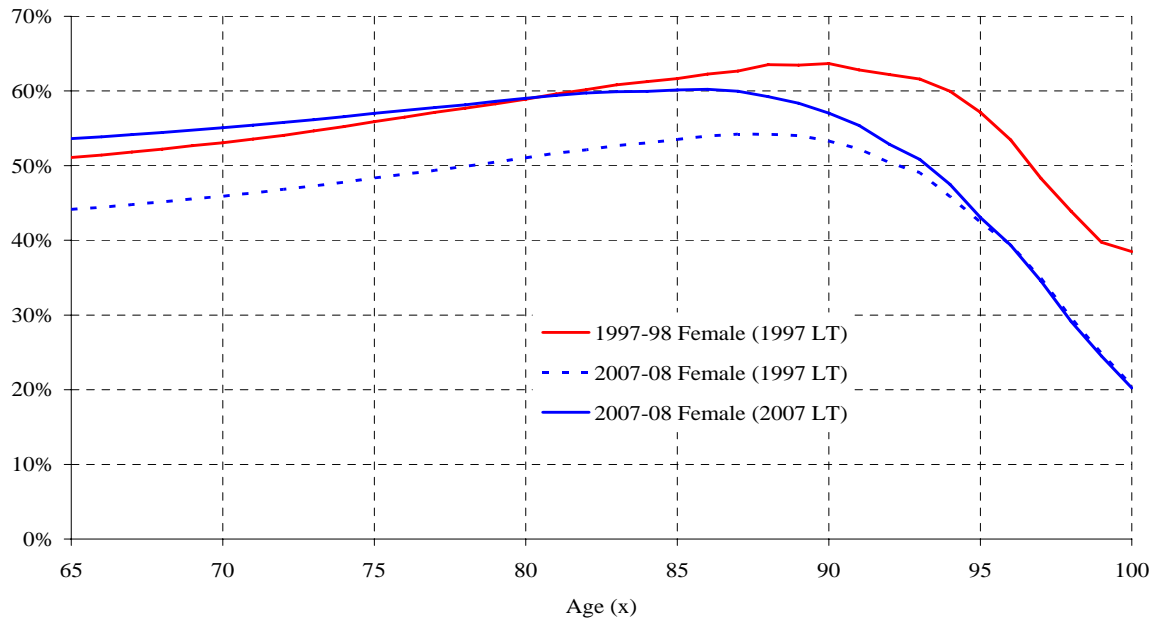
37. The likelihood that a person will enter permanent residential aged care in their lifetime is increasing. In 1997, the lifetime risk of a female aged 65 years old entering permanent residential aged care was 51; this had increase by 3 percentage point in the next decade. Similarly for males the lifetime risk for a male of the same age entering permanent residential aged care was 31 per cent. The driving factor behind this increase is that people are living longer, which is leading to a larger proportion of people living to an age where they require aged care services. This can be seen by applying the 1997 life table to the 2007-08 first admission rates; the life time risk drops because if people died at the same age specific rates as experienced in 1997-98 there would be fewer people living to the ages where there are high

³ Mason, F, Z Liu and P Braun (2001). *The probability of using an aged care home over a lifetime (1999-00)*. Welfare Division Working Papers. Canberra, Australian Institute of Health and Welfare.

⁴ Australian Bureau of Statistics (ABS) (2006) *Australian Historical Population Statistics, 2008*. (Cat. No. 3105.0.65.001) Canberra: ABS.

rates of admissions into residential aged care (Figure 11 and Figure 12). The likelihood of entering care would have been even higher, however, there was an offset due to a shift to older ages for people entering care.

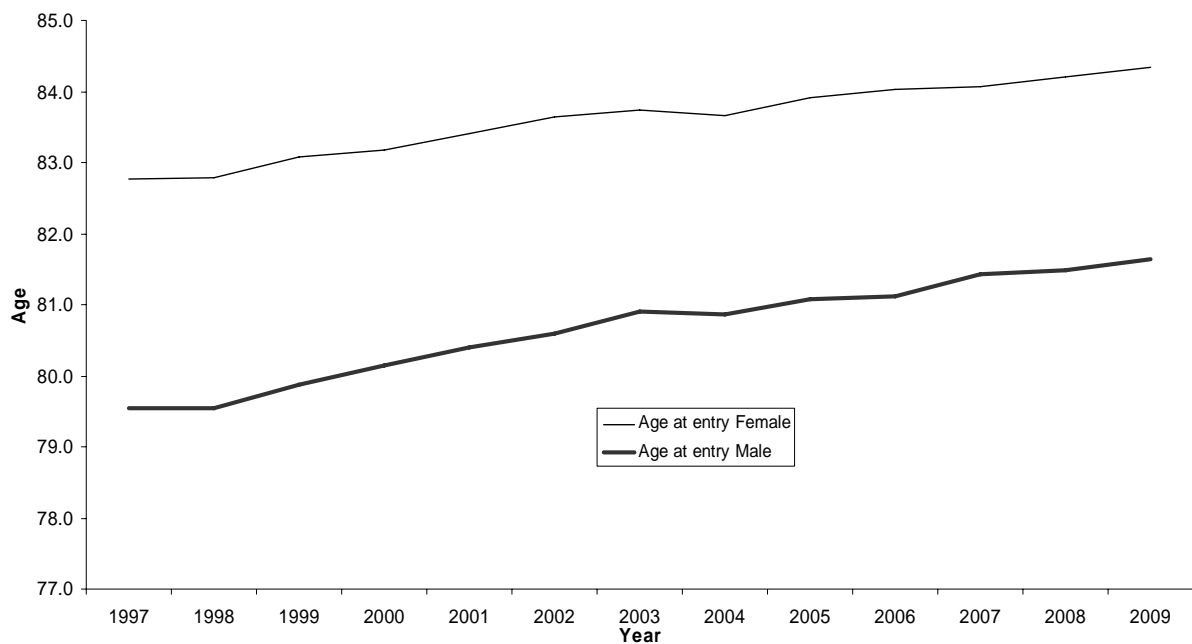
Figure 12: Female lifetime risk of entry into permanent residential aged care, 1997-98 and 2007-08



Age of first admission to residential aged care

38. The age of entry for both sexes has also been increasing (Figure 13).

Figure 13: Average age at entry, by sex and year



39. In 1997-98 the average age of entry into residential aged care for female was 82.8 years; by 2008-09 this had increased to 84.3 years. For males, over the same period, the average age of entry into residential aged care increased from 79.5 years to 81.6 years. The inter-quartile range of the age at entry has been narrowing. While both the lower quartile and upper quartile age at entry are increasing, the lower quartile is increasing at a faster rate than the upper quartile. Given there is no clear trend in the median length of stay, the increasing age at entry will result in demand for services not increasing as rapidly as the population is ageing.

40. Underlying the increasing age at entry has been a change in the age-specific first ever admission rates. The age-specific first ever admission rates has been decreasing at younger ages for both males and females. For males there has been a pronounced increase in the age specific rates in the very old, whereas there has been little change for females at these ages (Figure 14 and Figure 15).

Figure 14: Male age specific first admission rate and number of admissions, 1997-08 and 2007-08

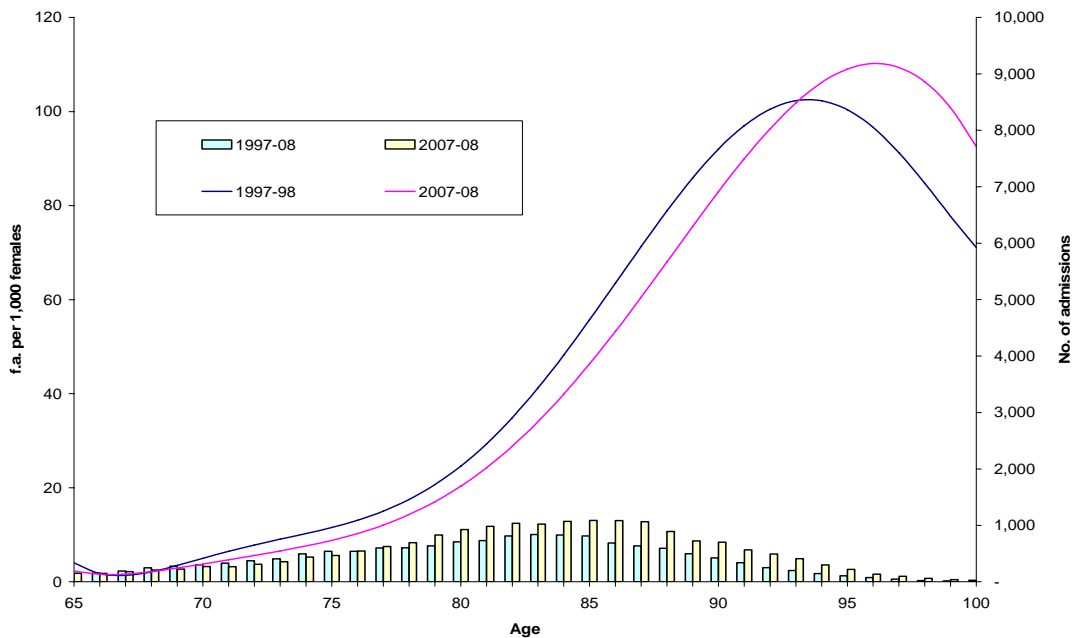
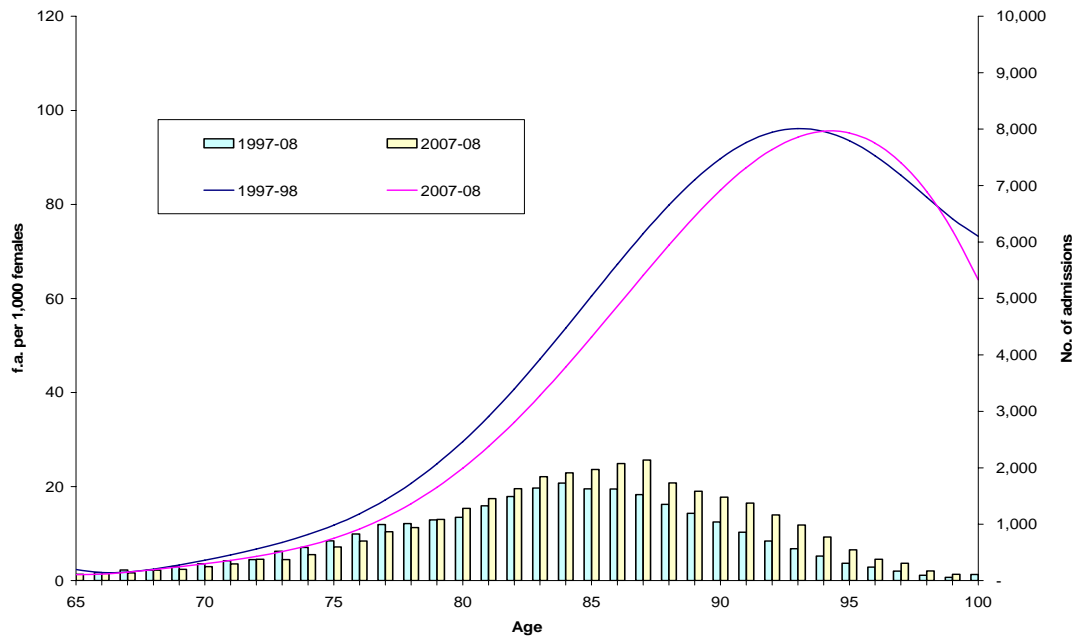


Figure 15: Female age specific first admission rate and number of admissions, 1997-08 and 2007-08



41. This change in first ever admissions rates can be decomposed into changes due to population ageing and changing age specific first ever admissions rates. It is clear from the decomposition that the demand for residential aged care is not accelerating at the same rate as the population is ageing due to the increasing age of first entry. For both sexes there is very little difference in the first admission rates, the decomposition shows that population ageing would have increased the female first admission rate by about 20 per cent and the males by 30 per cent, however, the changing age specific rates significantly dampened these increases (Table 1).

Table 1: Decomposed first admissions rates between 1997-98 and 2007-08, by sex

	First admission rates per 1,000 population		Total change	Change due to:		
	1997-98	2007-08		Population age structure	Changing age specific rate	Interaction
Female	2.96	3.05	+0.09	+0.59	-0.44	-0.06
Males	1.71	1.87	+0.08	+0.52	-0.29	-0.07

42. The first ever admission rates increases rapidly after the age of 80 years old for both sexes. If the current first ever admission rates continue into the future, the number of first ever admissions will increase at around the same rate as the 80 year and over population is increasing. If the trend in the delayed age of first admission continues, the number of first admissions will increase at a slower rate than the population is ageing.

Length of stay in residential aged care

43. The length of time care recipients spend in residential aged care is an important measure of demand for services and service utilisation. Changes in this measure over time will have significant ramifications for aged care planning and funding. This section examines length of stay patterns for all permanent residential aged care admissions between 1997-98 and 2008-09.⁵

Issues with the standard commentary on length of stay

44. The *Aged Care Act 1997* brought together hostels and nursing homes in one system and allowed low-care residents of former hostels to remain in the same facility, or ‘age in place’ as their dependency increased. All else being equal, this should have led to a reduction in the proportion of low care residents leaving to transfer to another aged care service.

45. To date, analysis of the length of stay in residential aged care has focussed on discharges, i.e. the length of time spent in care by people discharged from care in a particular period. Applying this kind of analysis to residential aged care is problematic for a number of reasons. Recent history in the residential aged care sector is marked with a significant amount of structural reform resulting in large growth in the resident population and a changing propensity of residents to move between homes.

46. The permanent resident population has been growing steadily every year. Looking at length of stay from a discharge only perspective ignores recently admitted new residents who are still in care – only the ones that have been discharged are included and they are, by their very nature, the ones that have stayed a relatively short amount of time. The remaining residents are eventually discharged over time, and by their very nature they are the longer staying ones. This shows up in the data as an increasing average length of stay over time.

47. Total permanent admissions into residential aged care for each year 1997-98 to 2008-09, how many of these admissions were subsequently discharged, and how long people in that admission cohort stayed in care are presented in Table 2. The following analysis is based on a survival analysis of this data.

⁵ The analysis controls for residents shifting between homes by treating all readmissions occurring within 28 days as the one stay in care (less the time away). Readmissions after 28 days are considered a new admission into care and are recorded as a separate length of stay. In the following analysis, all references to admissions and discharges relate to non-transfer admissions and discharges as described above.

Table 2: Admissions, discharges, and length of stay by year of admission, 1997-98 to 2008-09⁶

Cohort	Number in cohort	Number in cohort discharged	Number in cohort still in care	Length of stay (days)			
				25th percentile	Median	75th percentile	90th percentile
1997-98	45,849	44,599	1,250	170	702	1,624	2,795
1998-99	43,072	41,578	1,494	164	683	1,613	2,774
1999-00	43,074	41,079	1,995	170	690	1,598	2,745
2000-01	44,339	41,461	2,878	182	708	1,636	2,771
2001-02	45,177	41,366	3,811	179	704	1,624	2,717
2002-03	48,914	43,259	5,655	182	726	1,648	2,718(a)
2003-04	51,123	43,053	8,070	191	751	1,650	-
2004-05	50,367	39,903	10,464	190	734	1,608	-
2005-06	51,228	36,872	14,356	184	718	1,602(a)	-
2006-07	51,998	32,507	19,491	188	716	-	-
2007-08	54,686	27,933	26,753	181	702	-	-
2008-09	55,179	19,452	35,727	184	-	-	-
Average annual change(b)				1.6 (p<0.05)	2.9 (p=0.13)	0.2 (p=0.93)	-15.1 (p<0.05)

Findings

48. The length of stay over the period 1997-98 to 2008-09 has been, on average, virtually constant. The median length of stay was about 700 days for people admitted in 2007-08, and there has not been any significant change in the median over time. Similarly, there has not been any change in the length of stay among the relatively longer staying residents either – the length of stay for the 75th percentile was 1600 days for people admitted in 2005-06 (the last year for the 75th percentile has been reached). Relatively shorter staying residents however have been staying in care slightly longer over time. The length of stay for the 25th percentile was around 180 days for people admitted in 2008-09 and this measure has grown by 1.7 days each year over the period. In addition, length of stay for the 90th percentile has recorded a decline of 15 days per year over the period, but this is only known for admission cohorts up to 2002-03.

49. Analysis of the survival curves for each admission cohort shows that the amount of time permanent residents are spending in care is not increasing. These curves (Figure 16) show the

⁶ Notes to Table 2:

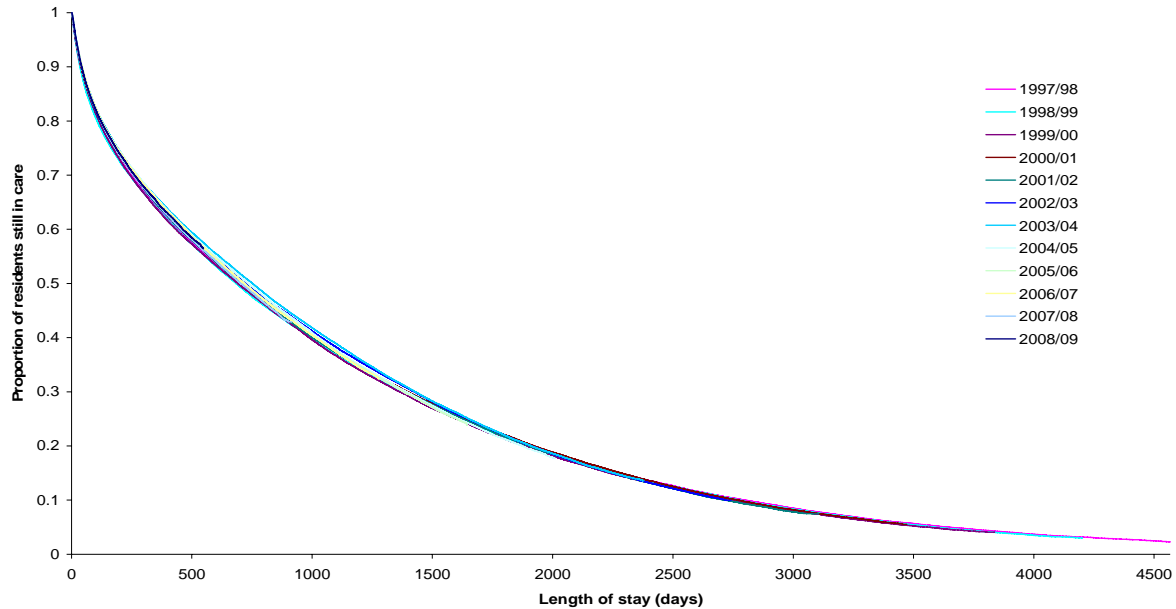
(a) Although these percentiles have not been discharged, it is possible to determine a value that people in that percentile will have at least stayed for.

(b) Changes in length of stay were tested for statistically significant differences at the 95% confidence level.

‘-’ denotes missing percentile values due to censored records for people who have not yet been discharged.

proportion of people admitted in each year that are still in care after a particular time. As would be expected given the flatness of the interquartile ranges over time, the curves are very close to each other (although statistical testing on the curves reveal that they are significantly different). Despite the significant variation in curves, they shift in both directions from year to year, meaning that it is not possible to infer any trend in length of stay over time.

Figure 16: Survival curves for admissions into permanent residential aged care 1997-98 to 2008-09



Length of stay for selected population groups

50. The following analysis looks at length of stay in permanent residential aged care for different population sub-groups. All admissions during the period 1997-98 to 2008-09 are used, resulting in a large sample size (n=585,000) to analyse. As outlined above, the year of admission is not associated with a changing length of stay so the results will not be affected by any time series trend.

ACAT level on entry

51. People with higher care needs stay in care for relatively shorter times. The median length of stay for people admitted into permanent residential aged care with a high ACAT assessment is 450 days. The median stay for people admitted with a low ACAT assessment is over twice as long at 1,120 days (

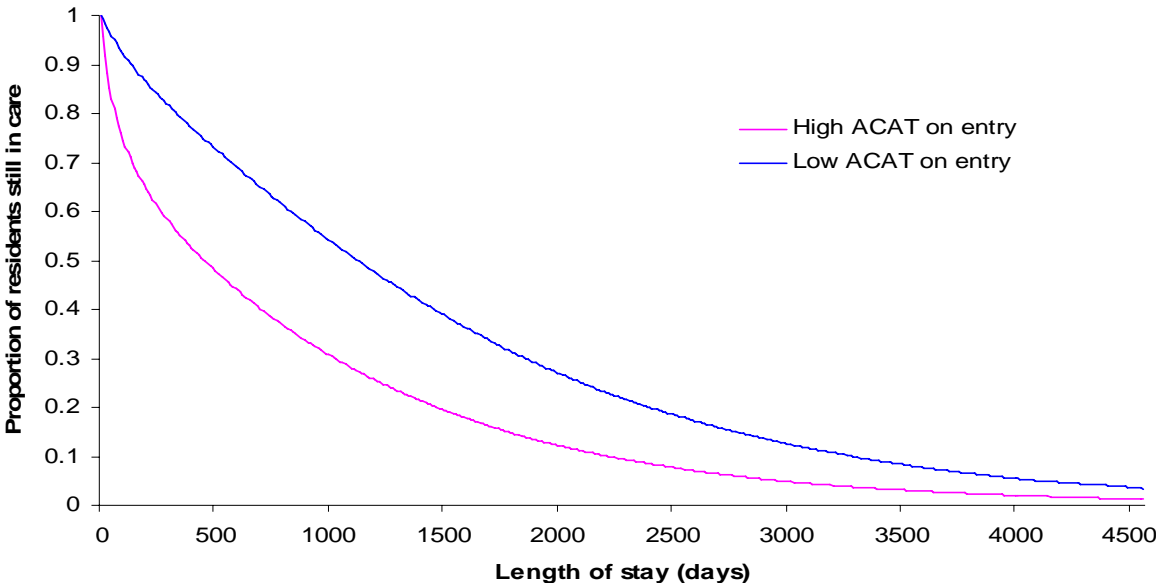
52. Table 3 and Figure 17).

Table 3: Length of stay in permanent residential aged care by ACAT level (days)

ACAT level on entry	25th percentile	Median	75th percentile
High	90	450	1,220
Low	440	1,120	2,100

53. The difference in length of stay between people of either ACAT level is more pronounced early on. Almost 10 per cent of high ACAT residents are discharged from care within 20 days compared with less than 2 per cent of low ACAT residents – the 10th percentile of low ACAT residents is not reached until 130 days.

Figure 17: Survival curve for admission into permanent residential aged care by ACAT level



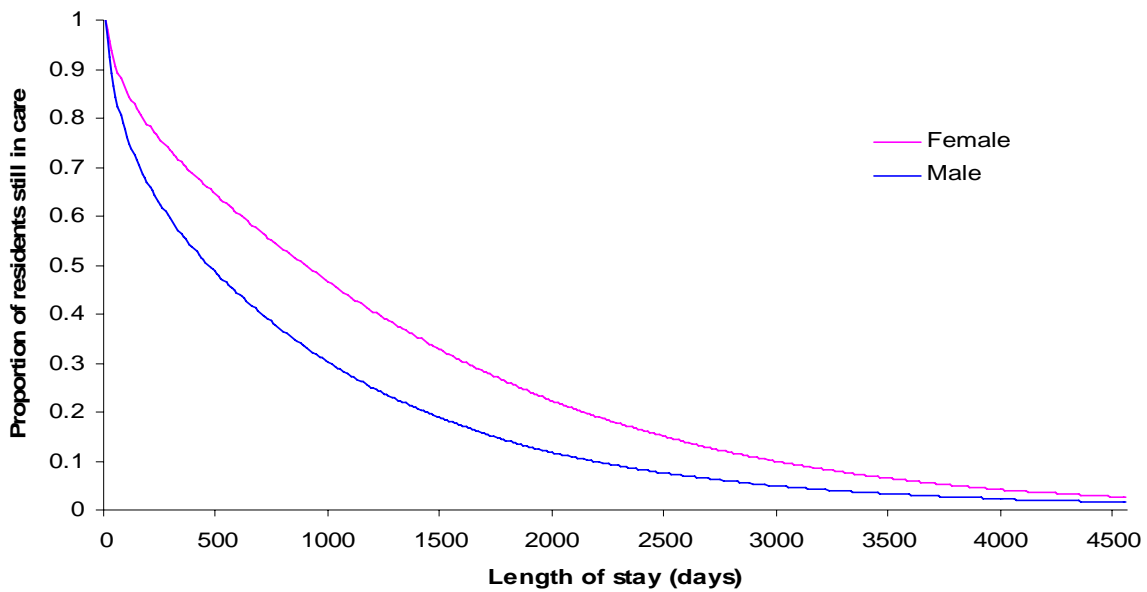
Sex of resident

54. Females stay in care, on average, around twice as long as males – the ratio is slightly greater than this (as high as 2.5) for periods of stay up to about 800 days (for females) and then gradually declines to 1.4 when length of stay is around 3,000 days. Further analysis shows that these results are similar for men and women of the same age and are not affected by differences in the age structures of male and female resident populations. The median length of stay for females is 890 days and compares with 460 days for males (Table 4 and Figure 18).

Table 4: Length of stay in permanent residential aged care by sex of resident (days)

Sex of resident	25th percentile	Median	75th percentile
Female	250	890	1,850
Male	100	460	1,190

Figure 18: Survival curve for admission into permanent residential aged care by sex



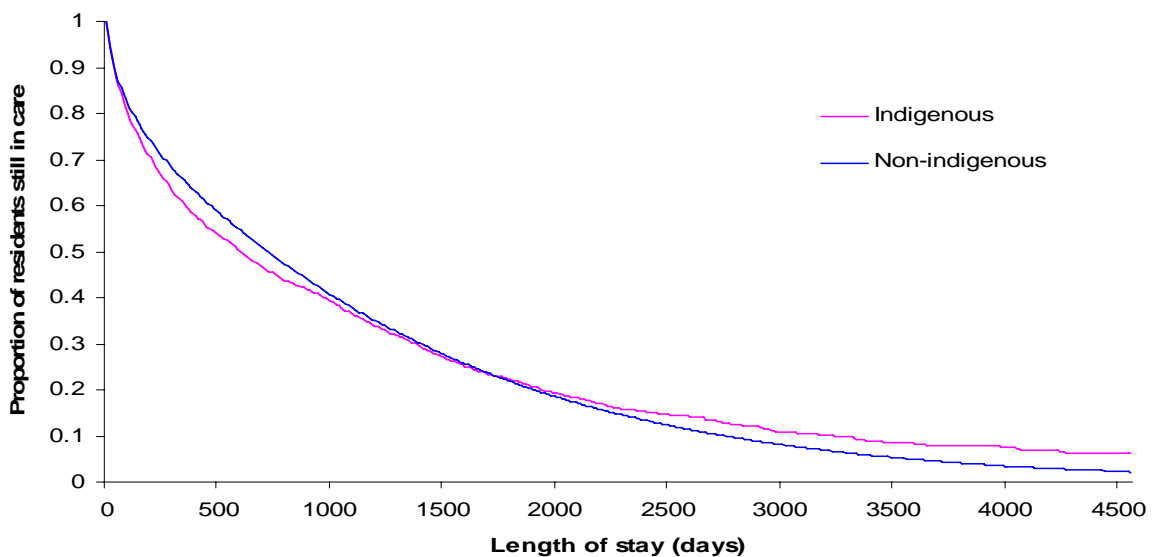
Indigenous status

55. Length of stay patterns are affected by Indigenous status. While the interquartile range in Table 5 shows that non-Indigenous people stay in care longer than Indigenous people, the survival curves actually cross at the 77th percentile (corresponding to 1,740 days in care) from which point on Indigenous people record higher lengths of stay (Figure 19).

Table 5: Length of stay in permanent residential aged care by Indigenous status (days)

Indigenous status	25th percentile	Median	75th percentile
Indigenous	140	590	1,600
Non-indigenous	180	720	1,630

Figure 19: Survival curve for admission into permanent residential aged care by Indigenous status



Country of birth

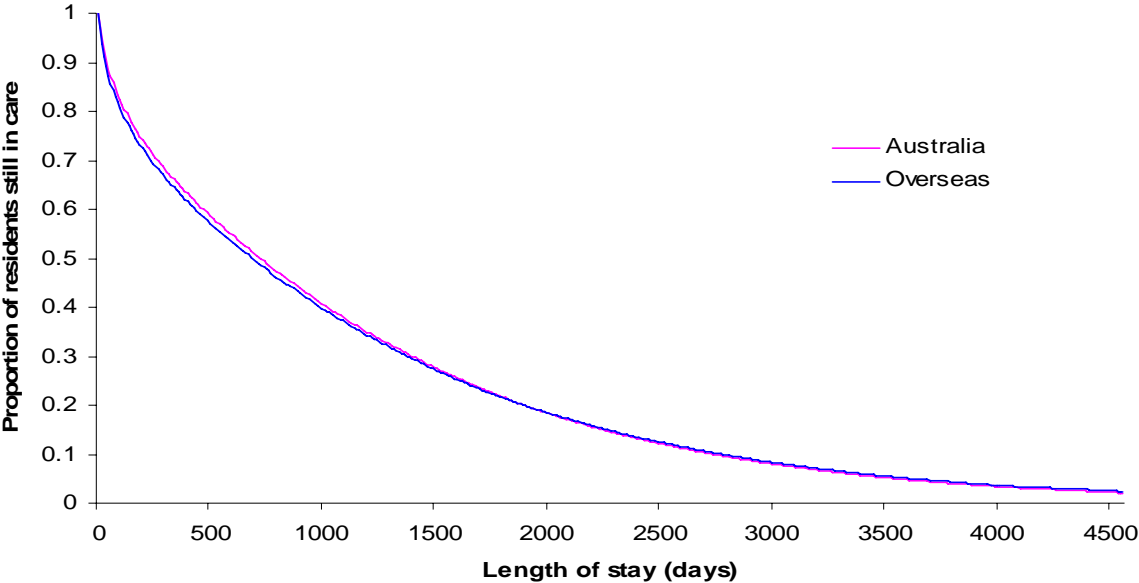
There is little evidence to suggest that length of stay is affected by being born in Australia or overseas. At any given point on the survival curve there is very minimal difference in the time spent in care. The median length of stay is 720 days for residents born in Australia and 680 days for those born overseas (Table 6).

Of interest however, is that while Australian-born residents tend to stay slightly longer early on, the lines cross at the 81st percentile (corresponding to 1,940 days in care) from which point on overseas-born residents stay slightly longer (Figure 20).

Table 6: Length of stay in permanent residential aged care by country of birth (days)

Country of birth	25th percentile	Median	75th percentile
Australia	180	720	1,620
Overseas	160	680	1,610

Figure 20: Survival curve for admission into permanent residential aged care by country of birth



Age at entry

56. As would be expected, there is a clear relationship between the age at which someone enters care, and how long they remain in for. That is, younger residents record much longer lengths of stay than residents in older age groups. The median length of stay for people who enter at less than 60 years of age is 930 days. This declines in every 10-year age group to 570 days for those aged 90 years or older on entry (Table 7).

57. The difference in the length of stay between age groups is more pronounced towards longer periods of stay. In fact, there is almost no difference in the length of stay in the 25th percentile (at least not according to age), yet at the 75th percentile length of stay is almost three times higher in the youngest age group than the highest. The length of stay for 75th percentile in the 0-59 years age group is 3,150 days. About 17 per cent of people 60-69 on

entry end up staying that long, compared with 10 per cent of people 70-79, 6 per cent of people 80-89 and only 2 per cent of people aged 90+ (Figure 21).

Table 7: Length of stay in permanent residential aged care by age at entry (days)

Age at entry	25th percentile	Median	75th percentile
0-59	160	930	3,150
60-69	150	800	2,280
70-79	170	770	1,840
80-89	190	730	1,590
90+	160	570	1,220

Figure 21: Survival curve for admission into permanent residential aged care by age at entry

