Will residential aged care facilities meet long-term demand?

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Abstract

Purpose – This paper aims to provide an invaluable insight into long-term forecasting of demand for aged care facilities. This will ensure the provision of adequate supply by government bodies, stakeholders and developers in order to meet the anticipated level of demand, without creating an over-supply or an under-supply scenario.

Design/methodology/approach – Using an innovative approach, different data sources were collectively used to forecast separate individual supply and demand levels, which were then examined together in order to measure the difference between the two variables between 2009-2020. A case study approach was used for Victoria, Australia.

Findings – The paper finds that, although there is excess supply between 2009-2010 and 2019-2020, the period between 2010 and 2019 will experience an under-supply period which cannot be easily rectified over the short term.

Research limitations/implications – The case study was limited to residential care facilities in Victoria, Australia, although some countries have substantially different age profiles and accommodation supply for older residents. Forecasts are based on information sources from various data suppliers and collectively analysed.

Practical implications – The results are also of direct interest to place managers and planning authorities who are charged with providing medium- and long-term visions and plans for specific locations. This type of research is essential when planning for the eventual aging of the population, where the methodology can be replicated in different areas. Most importantly, this research approach provides a solid basis for decisions regarding the supply of residential aged care facilities as opposed to a simple estimate.

Originality/value – The study adopted a unique approach to analysing the individual supply and demand components for aged care facilities over the long term. This approach is able to accurately determine when there will be an under-supply or over-supply situation and thus provide the opportunity to address the difference before it occurs. This will allow informed decisions about planning aged care facilities in the future to be made as required.

Introduction

Increasingly the level of population ageing, driven by an increased life expectancy as new cures and preventions of disease and illnesses are found, has been emerging as an important issue (Brown, 1996). However, each country has varying proportions of older residents; for example, population ageing is most acute in developed countries and less
acute in under-developing countries (United Nations, 2006). As shown in Figure 1, the proportion of Australia’s age structure are similar to those for Canada, New Zealand, the USA and, to a lesser extent, the UK. Like most developed countries, Australia experiences a higher median age (35.4 years compared to the world average of 26.4 years), higher life expectancy and lower fertility in comparison to less developing countries.

Australia’s aging population is anticipated to increase further due to a demographic shift in the age structure of the population. Currently, the population aged 65 years and over is growing at the rate of approximately one-fifth of the total population aged between 15 and 64 years. However, by 2026 the number of persons aged over 65 years is projected to be growing at three times the rate of the total population aged between 15 and 64 years (Department of Health and Ageing, 2006).

As the aged population continues to increase each year, an increasing number of people will require specialised care facilities to meet their needs. This aspect – in addition to other socio-demographic trends including increasing rates of labour force participation of women, geographic separation between immediate family members, decreasing family size – suggest that the informal care, traditionally provided by family members will decline and will in turn place enormous demand on aged care facilities (Newman, 1987).

Over time as the number of aged persons increases there will be more people with severe medical problems requiring health care services and the provision of facilities, which in turn has implications for developers and providers of this type of accommodation. The perceived heightened demand for facilities creates an opportunity to expand upon and further develop a sector that has been regarded as a highly specialised asset class. The provision, however, needs to reflect accurate demand and ensure that development (i.e. level of supply) is in line with demand (AIHW, 2006). Therefore the starting point is to have an accurate forecast of supply and demand levels for this type of accommodation.

This research examines the extent to which supply of residential care facilities in Australia will be able to meet future long-term demand up until 2020, where the requirement to provide serviced care is rapidly emerging as an increasingly important issue. Provision of facilities, hence supply, will be measured in terms of the service a facility has the capability and capacity to provide via the number of beds or places developed which are available to accommodate and care for aged persons.

For the purposes of this research, the focus has been placed on services provided by government residential care facilities. In this context residential care facilities provide accommodation, meals, cleaning services, furnishings, furniture and equipment and specialised personal or nursing care to elderly persons who can no longer live independently, as assessed by an Aged Care Assessment Team (ACAT) (Office of Legislative Drafting and Publishing, 2006). Therefore residential aged care facilities are often required as the result of the onset of illness, frailty and dementia, when home-based care is no longer a practical or safe option and provision is of critical importance (Hendy et al. 2004).

**Long-term aging population trends**
Demand for residential aged care facilities is driven by both demographic and economic issues, although demographic factors, including population aging, health expectancies and access to informal care, are highlighted as the primary factor (Hogan, 2004). In Australia in 1976 approximately one in six older people were aged 80 years and over; by 1996 it was one in five and by 2016 it will be one in four. Figure 2 shows that by the year 2051, over 9 percent or 2.3 million people are forecast to be aged over 80 years (ABS, 2006).

The primary driving factors of Australia's ageing population were identified as fertility, mortality and migration (Kippen, 2002). Note that fertility has fallen to unprecedented low levels and is currently below the level required to replace the population, whilst morality rates at older ages have fallen between 20 and 50 percent since the early 1970s. An examination of Australia's demographic pattern revealed that following the Second World War when fertility rates reached 3.5 children per woman, a large baby boom commenced and continued into the early 1960s (Harding, 2005). At present this generation, commonly referred to as the “baby boomers”, are approaching retirement age and will exert a significant influence on Australia's aged population until 2050 (City of Melbourne, 2002). This is due to the large size of this group in contrast to the preceding cohort and the cohort following i.e. “X” generation.

Following the “baby boom” years, an era known as the “baby bust” occurred in the early 1980s with fertility rates declining to below 2 children per woman (Harding, 2005). Coupled with increasing longevity, these factors are forecast to increase further the portion of the aged population, with 2.4 persons of working age for every person aged 65 years and over in 2040, compared to 7.3 in 1960, and also the number of very elderly in the population (Czaja, 1990).

**Health considerations**

The significance of an aging population to residential care provision was highlighted after it was confirmed that the underlying determinant of the need for care is the level of disability in the community (Howe and Scholfield, 1996). A relationship between aging and deteriorating physical health has commonly been accepted and cross-sectional data using a variety of measures of health have consistently supported the association between age and health (Markides, 1989).

On the one hand, better health services in a modern society postpones illness (e.g. deteriorating physical illness) until later in life, and along with compression of morbidity (i.e. reduced period of suffering) the demand for medical services is likely to be reduced; this could be due to longer periods free of disability and a shorter period of disability followed by death sooner. This was, however, strongly challenged by subsequent research and it has been accepted that compression of morbidity is in fact seeing an increased concentration of health problems in old age, which in turn causes a higher demand for heath care facilities (Schneider and Brody, 1983).

**Emergence of dementia**

Hogan (2004) further highlighted that dementia and associated implications are the key changes to the health status of the elderly, since dementia is the fourth largest cause of death for persons aged 65 years and over. Primary forms of dementia include Alzheimer’s disease, Vascular Dementia, Lewy Body Disease, Fronto temporal Dementia, Creutzfeldt-Jakob Disease (CJD), and Subcortical Dementia (including Parkinson’s Disease and Huntington’s Disease), and other results caused by disease of the brain, usually of a chronic or progressive nature in which there is disturbance of multiple higher cortical functions, including memory, thinking, orientation, comprehension, calculation, learning capacity, language, and judgment (World Health Organization, 2006). The onset of dementia can be described in terms of a series of stages, from initial and mild symptoms to a terminal decline of the central nervous system. Therefore people with dementia require both informal care available from within the family and community as well as the provision of formal care services by the government and other organisations (Department of Human Services, 2006).

**Economic considerations**

Although the primary demand for residential care facilities is driven by health issues, the importance of pricing arrangements was demonstrated by Nyman (1989), whose assessment of private demand for care facilities found that private consumers are very responsive to price differences among facilities. In accordance with the *Aged Care Act 1997* (Office of Legislative Drafting and Publishing, 2006), residents entering into a residential care facility face two types of fees, namely resident fees and accommodation charges.

To meet the increasing demand for aged care and its high cost to taxpayers, residents are required to make a reasonable contribution towards the cost of their care. The resident care fees paid are the difference between the total fee payable and the Australian Commonwealth Government subsidy that is provided. The residential care fee can vary depending on the resident’s pensioner status (full pensioner, partial pensioner or non-pensioner), and their requirement for extra services. Approximately 65 percent of residents in residential aged care receive full means tested pensions, and a further 25 percent receive part pensions (Department of Human Services, 2006). Under income testing arrangements, the Australian government makes the largest contribution towards meeting aged care costs for the overwhelming majority of residents. Accommodation payments are arranged between the resident and/or their representative, and the service provider. Note that the government does not receive any part of the accommodation payment and does not determine the amount of such payment in individual cases. However, it prescribes a number of legal requirements for accommodation payments under the operation of the *Aged Care Act 1997*.

**Supply of residential aged care facilities**

Supply of residential care facilities is a consequence of a complex web of public and private relationships and transactions. In a study of the supply of care facilities undertaken in the UK, Kendall *et al.* (2002) identified three broad key influences: micro-level, meso-level and macro-level. The model in Figure 3 highlights that supply is influenced by:
The local and national political economies that determine which provision is made and also shapes what is possible in the markets. Included are external factors, in particular access to funding and interest rates for construction of facilities and developments in the property market. Note these affect the value of the alternative uses to which residential care facilities can be put, especially bearing in mind that most residential care facilities are not purpose-built.

- Institutions created by public purchasers because they design contracting regimes, as well as the less visible “relational” aspects which take shape in this context. Together these mediate resource flows.

- Motivation, profits and price levels of care providers that are governed by local demand for services.

**Previous studies into the relationship between supply and demand**

Elderly population growth, health improvements and changing sex composition of the elderly population are identified as key forces behind movements in residential care in the USA (Lakdawalla and Philipson, 1999). The study analysed the relative growth of beds and the elderly population aged 75 years and above, and the findings concluded that aging can lower the demand for market care by increasing the supply of family care-givers, which in turn substitutes for market care. Furthermore it was found via demographic analysis that the elderly male population is growing faster than the elderly female population. This suggests that if the trend continues there will be relatively more healthy elderly men to function as spousal caregivers. This factor, along with improvements in the health of the elderly, indicates that possibly per capita demand for aged care will continue to decline over the long term. Note this argument refers to the level of care needed (i.e. increasingly people do not necessarily go directly into aged care) rather than the amount of demand being how many older residents there are in society.

An earlier Australian study (Gibson and Liu, 1995) examined the impact of population ageing on future use and supply of residential aged care services. Their research forecast hostel and nursing home use from 1993 to 2021 based on 1993 patterns of actual use, followed by a comparison with projected levels of supply. The study found that there might be a general under-supply of residential aged care from the turn of the century, including a likely undersupply of nursing home-type care for high-dependency aged people particularly between 2006 and 2016. However, the study recognised that the data on which the long-term supply was based had shortcomings. The standard planning ratio, namely the number of beds available per 1,000 persons aged 70 and over was determined using 1983 data; it was not sensitive to the changing internal age structure of population 70 and over, and in particular the increasing proportion of the population aged 80 years and over (AIHW, 2000). Clearly persons aged 80 years and over are at greater risk of admission to residential care (Gibson and Liu, 1995).

One of the early studies into nursing homes in Australia estimated the probability of the first nursing home admission over a lifetime and the probability of nursing home use in the remaining lifetime at particular ages (Liu, 1998). Although this study is over a decade old the results identified a substantially larger cohort of older people than is usually acknowledged are at risk of nursing home admission at some point in their lives. Furthermore the findings
suggested that the chance of entering a nursing home after turning age 65 is actually one in three, although only 3 percent of people aged 65 years and over were resident in a nursing home on any one day in 1994-1995 (Liu, 1998).

It is clear that population ageing combined with health considerations has emerged as an important issue and provides the factors required to drive demand for new/improved residential care facilities, whilst the role of the government has been shown to be the key determinant in the supply of services. Previous studies undertaken in the examination of the relationship between supply and demand have produced conflicting results, which in turn have created an opportunity for further research.

Research methodology

For the purposes of this study, “long-term” has been defined as the period from 2009 to 2020. This time frame was selected in order to measure the relationship between supply and demand. Most importantly this time frame is determined in order to assess if development would meet required needs and to ascertain the direction developers and planners need to move to ensure there is an optimal balance between supply and demand. To evaluate supply and demand considerations over the long term, various alternative scenarios were modelled to provide a more comprehensive analysis of possible outcomes. It is acknowledged that over the projected period the supply and demand drivers are increasing susceptible to change and more difficult to determine accurately.

Evaluation of long-term supply

Long-term supply has been assessed by application of planning ratios based on the number of people aged 65 years and over. To determine the number of persons aged 65 and over, ABS (2001) population projections have been further examined to identify the total number of aged persons per year. This has been undertaken by combining the projected numbers of males and females for the following standard age categories as categorised by the Australian Bureau of Statistics:

- years;
- years;
- years; and
- over 85 years.

Once these population figures were identified a planning ratio was applied. Planning ratios are established by the government and used to determine the number of funded places to be provided, hence the number of places that can receive subsidies. The prime assessment of long-term supply has been based on the application of the current planning ratio of 88 places per 1,000 persons aged 65 years and above (ABS, 2006). This enables an assessment of government planning policy to determine whether provision is sufficient to meet projected demand.

Two further scenarios are additionally modelled. This is vital to represent sensitiveness in the market due to the timeframe being considered and also to reflect possible changes in
In a similar manner to population forecasts where there is also a high series and a low series, commonly referred to as a “sensitivity analysis” from a property perspective, a better case scenario and a lower case scenario was examined. Therefore ratios of 90 places (i.e. slightly higher) and 86 places (i.e. slightly lower) to 1,000 persons aged 65 and above were adopted to reflect an increase and decrease respectively of supply to the current provision – see Table I. The rationale associated with the magnitude of these changes is given by recent alterations to the commonwealth government’s planning ratio from 90 to 88 places per 1,000 persons aged over 65. The decreased ratio of 86 is representative of a further decline to the current supply provisions.

**Evaluation of long-term demand**

The methodology applied in the assessment of long-term demand is listed in Table II. Similarly, the number of additional persons each year with dementia, as given by Access Economics (2005) has been added to the number of people requiring residential aged care services.

Incorporation of dementia prevalence data in the assessment of long-term demand overcomes limitations of previous research that assumes that levels of disability will remain constant into the future. This approach is supported by previously observed trends. However, it is also possible that age-specific disability rates will decline in older age groups as population health and technologies for enhancements will improve or alternatively that changes to the provision of informal care will place increased pressure of formal residential care facilities. A starting point for these projections is an earlier foundation study by Gibson (1998), although the results must be updated to reflect the time gap since this study was completed. For these reasons the percentage of the population requiring aged care service has been altered in order to incorporate projected dementia data which relevant literature has emphasised as a pertinent consideration.

**Long-term supply and demand analysis**

**Projected supply drivers**

Over the long term, the population in Victoria aged over 65 years is anticipated to increase by 28.7 percent from 531,365 persons in 2005 to 745,045 in 2020. This represents an additional 213,680 persons, equating to the number of persons aged over 65 growing at an average rate of 2.6 percent or 19,425 persons per annum. Between the years of 2009 and 2013 the number of persons aged 65 years and over will increase on average by 13,244 persons or 2.3 percent per annum. In contrast the rate of growth is anticipated to be the highest between the years of 2014 and 2017 with an average increase of 3.3 percent per annum. In particular between 2016 and 2017 the aged population will increase by 4.2 percent with an addition 28,221 persons anticipated to be included during the year (see Figure 4). Overall the population is anticipated to age further, with persons aged 65 years and over in 2020 representing 13.3 percent of the total population. This is in contrast to being only 10.2 percent of the total population in 2009.
Application of the various planning ratios to the population aged 65 years and over confirm similar trends. However the planning ratios involve three separate assessments of the long-term level of supply as shown in Figure 5. Based on the current planning ratio and the provision of 88 places per 1,000 persons aged over 65 years, the supply of residential aged care facilities will need to grow from 46,760 beds in 2009 to 65,564 beds in 2020. This represents an overall increase of 18,804 beds with the supply of aged care beds peaking at 4.2 percent between 2016 and 2017.

Increasing the planning ratio to the previously applicable level of 90 places per 1,000 persons aged 65 and above (see (a) in Figure 5) will result in an overall increased supply of 19,231 beds over the long term. This represents an increase from 47,823 beds in 2009 to 67,054 in 2020. Note that the assessment of long-term supply provides the greatest level of service provision in comparison to the other supply projections.

Conversely, the lowest supply forecasts are given by application of a ratio of 86 beds per 1,000 persons aged over 65 (see (b) in Figure 5). In this scenario supply will increase by 18,376 beds over the long term, up from 45,697 beds in 2009 to 64,074 beds by 2020. Note there is significant variation between the supply assessments, with a 27.7 percent or 20,986 place difference between the supply generated by the highest and lowest applied ratios in 2020.

**Projected demand**

Over the long term, the prevalence in dementia is anticipated to increase from 59,945 in 2009 to 83,602 persons in 2020. Over this time period dementia prevalence will increase by an average of 3.0 percent per annum. Figure 6 illustrates a relatively stable rate of change over the long term with reference to the effect of dementia, demonstrating a stronger growth on average of 3.2 percent between the years 2009 and 2011. Then it is projected that from 2012 to 2015 the growth rate of dementia will gradually decline to a low of 2.8 percent; however, it will then stabilise at 2.9 percent from 2016 to 2020.

The largest change in terms of magnitude is anticipated between the years of 2019 and 2020 when the prevalence of the number of persons with dementia will increase by 2,405 persons. Conversely the largest increase is between 2012 and 2013 with 1,997 additional persons anticipated to suffer from dementia and related illnesses. Table III indicates that over the long term the number of such people will continuously increase at a relatively constant rate, averaging 2,151 additional persons per annum.

The predictions for the assessment of the number of persons projected to be aged 65 years and over in the long term shows that on average this population will increase each year at a rate of 3.1 percent or by 27,690 persons. The population will increase from 744,722 persons in 2009 to 1,049,311 persons in 2020. The rate of growth will be positive over the entirety of the long term, with the strongest growth anticipated between the years of 2009 to 2012, particularly between 2011 and 2012 with a rate of growth of 3.8 percent expected for the year. Following this increase in the growth rate, there will be continued increases although this will begin to decline and then stabilise between 2.8 percent and 3.2 percent for the remainder of the long term (see Figure 7).
Over the long term, the number of people requiring residential aged care services was modelled to reveal potential outcomes, which in turn could be used to reflect sensitivities in the market and the uncertainty of long-term influences, e.g. a cure for dementia. Application of the current proportion (6 percent) of the population that require services to the population aged 65 years and over shows that required supply will increase from 44,683 in 2009 to 62,595 places in 2020 as illustrated in Figure 8.

The numbers of persons with dementia have been added to these requirement projections to assess the total long-term demand for residential aged care facilities. Overall the total number of places required over the long term are illustrated in Figure 9.

Following a 6.7 percent p.a. increase in dementia prevalence between the years of 2009 and 2010, the rate of dementia prevalence in Victoria’s population is projected to increase on average by 3.1 percent annually between 2010-2020. The growth rate is anticipated to exhibit a broad declining trend. Nonetheless, the prevalence of dementia will increase from 59,945 to 83,602 over the term that equates to a total increase of 23,657 persons per year.

**Long-term results**

After simultaneously examining the projected supply and demand derived outcomes over the long term, an oversupply of residential aged care facilities is anticipated between the years of 2009 and 2010, and from 2020, as shown in the areas marked B in Figure 9. In the initial year of the long-term analysis, an over-supply situation is projected where there will be 2,077 additional beds. This will be followed by a state of equilibrium in 2010 and 2019 where supply of residential aged care facilities will equal demand. However, between 2010 and 2019 which is the majority of the long term period, it is clear that supply will not adequately meet projected demand as shown by the area marked A in Figure 10.

A maximum shortage of 1,836 places is anticipated in 2015, where the long-term difference between supply and demand reflected by the number of beds is shown in Figure 11.

**Conclusion**

This research constructed a longitudinal model where the analysis has provided an invaluable insight into the interaction between the supply and demand of aged care facilities over the long term. The methodology for this study was based on earlier research undertaken by Gibson and Liu (1995) and was founded on a direct comparison between supply and demand fundamentals. Over a long-term period, there are periods when the long-term supply is unable to meet projected demand, although this finding is not consistent across the entire research period. The projected long-term provision of residential aged care facilities is estimated to meet demand in between 2010 and 2011 and also between 2019 and 2020. However, in between these periods a distinct increase in the number of person aged 65 and over will have a substantial impact on demand, where this trend was also observed by Harding (2005) who argued that the long-term impact of the “baby boom” generation will begin to affect the need for residential care facilities. This factor appears to be the primary factor driver of long-term demand for care.
Based on historical evidence and population projections this research has also demonstrated the increasing prevalence of dementia is projected to impact on the demand for aged care, which again highlights a potential shortfall for accommodation. However, the growth rate of dementia cases should be relatively stable over the long term with the rate of dementia prevalence that remains relatively constant, being in the order of 3.0 percent per annum over the long term. This confirms that population aging will be the key driver of demand and that dementia prevalence over this term will have a relatively minor impact.

These findings have identified increases in forecast levels of demand present, which when compared to forecast supply levels, will clearly provide the aged care industry with significant challenges over the long term. Adopting this long-term supply and demand model will allow private sector developers to identify the optimal timing for a proposed aged care facility, especially with regard to the certainty of demand for industry stakeholders, e.g. financiers. Although the case study was based in Victoria, Australia, it is envisaged the research methodology could be readily applied to similar urban areas for forecast purposes, e.g. to satisfy lending criteria for financing purposes.

**Implications for long-term supply**

The extent of service provision is to vary over the long term with supply projected to exceed demand in the first and final years of the long-term period (2009-2020). A surplus of 2,077 and 200 beds is anticipated in 2009 and 2020, although there will be a shortage between 2010 and 2019. Demand is forecast to increase significantly between 2009 and 2011 with a sharp increase in the ageing population and the numbers of persons requiring care, accompanied by an increase in the rate of growth in dementia prevalence. The peak shortage of 2,048 beds is anticipated in 2015, although considering the size of the market this represents of only 3.5 percent of projected demand. Nonetheless, it has been shown that the primary driver of supply, being government regulation and funding of residential aged care places, should be altered to allow further development and rectification of the predicted undersupplied market. A solution is to increase the planning ratio of care places provided between the years of 2010 and 2019, which in turn will enable a response from developers in the form of the built environment to be delivered to meet market conditions.

**Areas for further research**

This study has been undertake on a relatively broad perspective and has been focused on the provision of residential aged care facilities in Victoria. The conclusions reached have contradicted previous research undertaken in the USA, although the findings are generally in line with previous studies conducted in Australia. This suggests that possible research into the extent of supply could be expanded to investigate the projected levels of supply and demand within each Australian state. In addition, the opportunity exists to expand upon research presented herein and to assess, via location and sub market analysis, areas within Victoria that will be the most affected and also exposed to market forces.

Further research could examine the economic factors of demand, such as an older person's preferences for particular types and standards of care, income levels and distribution of residents, and government contributions to the funding of services. Finally, the scope of this
study could be more narrowly defined to examine whether the projected inefficiencies in the levels of supply and demand are concentrated on either high care and low care facilities that together comprise residential care facilities. Such a study would enable service providers to deliver a product that would more accurately provide for the required level of care. As the infrastructure and design and layout additionally required vary between high and low care facilities this would present further challenges and significance to the property and construction industries.


Figure 1 An international comparison of the proportion of over 60 year olds
Figure 2 Growth in the aged population in Australia – 2001 to 2051

Source: ABS (2006)

Figure 3 Residential care supply in context

Source: Kendall et al. (2002)
Figure 4 Projections of persons aged 65 and over (2009-2020)

Figure 5 Assessed supply based on government planning ratios (2009-2020)
Figure 6: Dementia prediction (2009-2020)

Figure 7: Persons aged over 65 years between 2009 and 2020
**Figure 8** Aged residents requiring care (2009-2020)

**Figure 9** Anticipated demand and rate of change for residential care (2009-2020)
**Figure 10** Projected supply and demand for residential care (2009-2020)

*Projected Demand*  
*Projected Supply*

**Figure 11** Difference between long-term supply and demand
Table I  Long-term supply ratios

<table>
<thead>
<tr>
<th>Supply assessment</th>
<th>Data source</th>
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<tr>
<td>Population aged 65 and over</td>
<td>ABS (2001)</td>
</tr>
<tr>
<td>Requirement for residential aged care facilities (6 percent)</td>
<td>Gibson (1998)</td>
</tr>
<tr>
<td>Dementia prevalence</td>
<td>Access Economics (2005)</td>
</tr>
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<td>Total long-term demand = (aged population × 6 percent) + change in dementia prevalence</td>
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Table II  Long-term demand data

<table>
<thead>
<tr>
<th>Year</th>
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<tr>
<td>2019-2020</td>
<td>2,405</td>
</tr>
</tbody>
</table>

Table III  Annual long-term increases in dementia prevalence

References


Department of Human Services (2006), *Dementia Demographics*, Department of Human Services, Melbourne.


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