



**WORKFORCE** 2020

**DEMOGRAPHIC SHIFT**

# The future demand for paid caregivers in a rapidly ageing society



[newzealand.govt.nz](http://newzealand.govt.nz)

Department of Labour  
TE TARI MAHI



## **WORKFORCE** 2020

### DEMOGRAPHIC SHIFT

The future demand for paid caregivers  
in a rapidly ageing society

**Acknowledgements**

This report was written by Juthika Badkar and reviewed by Associate Professor Paul Callister of the Institute of Policy Studies at Victoria University of Wellington. The data analysis was completed by Richard Manning.

**Disclaimer:** The Department of Labour has made every effort to ensure that the information contained in this report is reliable, but makes no guarantee of its accuracy or completeness and does not accept any liability for any errors. The Department may change the contents of this report at any time without notice.

© Crown copyright 2009

This material is Crown copyright unless otherwise stated and may be reproduced free of charge without requiring specific permission. This is subject to it being reproduced accurately and not being used in a derogatory manner or in a misleading context. The source and copyright status should be acknowledged. The permission to reproduce Crown copyright protected material does not extend to any material in this report that is identified as being the copyright of a third party.

Published by the Department of Labour  
PO Box 3705  
Wellington  
New Zealand  
[www.dol.govt.nz](http://www.dol.govt.nz)

For Department of Labour research, visit <http://www.dol.govt.nz/browse-dol.asp>

ISBN 978-0-478-33367-1

## **EXECUTIVE SUMMARY**

New Zealand's population is ageing due to a decline in the fertility rate and increases in life expectancy. The purpose of this report is:

To examine the current supply of paid caregivers for the elderly in New Zealand by developing a demographic profile of the caregiver workforce in New Zealand, and to project the future demand for paid caregivers.

The main findings of this research are summarised below.

### **Current and projected growth of New Zealand's aged population**

- Between 2006 and 2036, the proportion of the 65+ age group as a proportion of the working-age population is expected to double from 18 percent to 40 percent respectively.
- Within the 65+ age group, the growth is the strongest in the older age groups, mainly 75–84 and 85 years and over. These are the main age groups that would require care in New Zealand.
- The maximum growth in the 75–84 age group will occur during 2016–2026, at 4.1 percent per year.
- The maximum growth for the 85+ age group will occur during 2026–2036, at 5.0 percent per year.

### **The need for aged care in New Zealand**

- Assuming that the prevalence of disability does not change in each age group, the number of disabled people in the 65–74 and 75–84 age groups is projected to double between 2006 and 2036.
- The greatest increase in the number of older disabled people will be in the 85+ age group. This group is projected to increase by 3.5 times over the next three decades from 18,800 in 2006 to 66,800 in 2036.

### **Who provides care to older New Zealanders?**

- Caregivers are overrepresented in the older age groups (40 years and over) compared to the younger ages. In addition, 92 percent of our caregiver workforce are women.
- The ageing of caregivers is evident and critical. The growth in caregivers observed between the 2001 and 2006 Censuses is in the older 45+ age groups and not in the younger age groups.

### **Paid carers and older New Zealanders**

- The Department of Labour estimates that the number of paid caregivers needs to almost treble from the current 17,900 in 2006 to 48,200 in 2036 in order to meet the needs of the projected number of disabled older people requiring a high level of support.

### **Implications**

Department of Labour estimates show that 48,200 paid aged-caregivers are needed in 2036 in order to care for older disabled people requiring a high level of support. However, if the status quo is maintained, there will only be 21,400 aged-care workers available in 2036. It is evident that processes need to be implemented now, as the current pathway is not sustainable.

# CONTENTS

<b>EXECUTIVE SUMMARY .....</b>	<b>3</b>
<b>LIST OF TABLES AND FIGURES .....</b>	<b>5</b>
<b>1. INTRODUCTION.....</b>	<b>6</b>
1.1 Increasingly ageing population .....	6
1.2 Caregivers for the elderly .....	8
<b>2. RATIONALE.....</b>	<b>9</b>
2.1 Purpose and research objective .....	9
2.2 Structure of report .....	9
<b>3. METHODS .....</b>	<b>10</b>
3.1 Data sources .....	10
3.2 Statistical methods .....	10
3.3 Limitations .....	10
<b>4. RESULTS .....</b>	<b>12</b>
4.1 Current and projected growth of New Zealand’s aged population .....	12
4.2 The need for aged care in New Zealand .....	14
4.3 Who provides care to older New Zealanders?.....	16
4.4 Paid caregivers and older New Zealanders .....	18
<b>5. CONCLUSIONS AND RECOMMENDATIONS.....</b>	<b>20</b>
<b>REFERENCES .....</b>	<b>22</b>
<b>APPENDIX A – ADDITIONAL DATA TABLES.....</b>	<b>23</b>
<b>APPENDIX B – DETAILED METHODOLOGY .....</b>	<b>31</b>

## LIST OF TABLES AND FIGURES

Table 1: Projections of New Zealand’s children (0–14 years), working-age population (15–64 years) and aged population (65+ years).....	12
Table 2: New Zealand: Projected Growth of the population aged 65–74, 75–84 and 85+ .....	13
Table 3: The effects of different mortality assumptions on the growth of New Zealand’s future aged population, 2006–2036.....	14
Table 4: Disabled older people aged 65 years and over, by disability type and place of residence, 2006 .....	15
Table 5: New Zealand: Projected number of older disabled persons needing care, using low, medium and high disability assumptions, 2006–2036 .....	16
Figure 1: New Zealand: Age-sex structure of aged-caregivers and total workforce, 2006.....	17
Figure 2: New Zealand: Age-sex structure of aged-care workers, 2001 and 2006 .....	17
Table 6: New Zealand: Actual and projected number of paid caregivers needed for older New Zealanders aged 65 years and over, 2006–2036 .....	19
Table: A1. Projected ethnic population of New Zealand, by age and sex, 2006 (base)–2026.....	23
Table A2: Proportion of the population aged 65 and over by ethnic group, as at 30 June 2006, 2001 and 1996.....	24
Table A3: Proportion of population aged 65 and over by ethnic group and gender, as at 30 June 2006 .....	25
Table A4: Proportion of population aged 65 and over by ethnic group and gender, as at 30 June 2001 .....	26
Table A5: Proportion of population aged 65 and over by ethnic group and gender, as at 30 June 1996 .....	27
Table A6: Age and gender distribution of the 65+ population with a disability, 2006 .....	28
Table A7: Ethnic and gender distribution of the 65+ population with a disability, 2006 .....	29
Table A8: Occupational shares analysis, 1996–2011 .....	29
Table A9: Occupational forecasting: Personal care workers (513) and Caregivers (51316) .....	30
Table A10: Ethnic profile of the aged-care workforce, 2006 and 2001 .....	30

# 1. INTRODUCTION

## 1.1 Increasingly ageing population

Globally, longer lives and fewer births have resulted in an increasingly ageing population. New Zealand's population is also ageing, and according to the 2006 Census of Population and Dwellings, there were just under half a million residents aged over 65 years (495,600). The number of people aged 65 and over has doubled since 1970 to just under half a million in 2005, and by 2051, the number of people in this age group will reach 1.33 million.<sup>1</sup> What stands out from this is that, within the population aged over 65 years, people in the 85 years and over group have trebled since 1978 to approximately 55,000 in 2005. Projections for this age group suggest that, in 2051, there will be 320,000 people aged 85 years and over<sup>2</sup> (Dunstan and Thomson 2006).

Demographic ageing of the population is caused by two main processes – decreasing fertility rates<sup>3</sup> and improvement in life expectancy.

### A long-term decrease in fertility rates

Women born in the 1930s had an average of 3.5 births each during their lifetime, compared to women born in the early 1950s, who had an average of about 2.5 births each, and women born in the early 1970s, who had an average of about 2.2 births each. Internationally, fertility levels vary widely among the 30 Organisation for Economic Co-operation and Development (OECD) countries – total fertility rates ranged from 1.1 in Korea to 2.2 Mexico and Turkey in 2005. New Zealand had the fifth highest total fertility rate in 2005 (at 2.0).<sup>4</sup>

December 2008 fertility rates indicated that New Zealand women were giving birth to 2.18 children. Although this is the required level for the population to replace itself without migration (2.1 births per woman), this rate needs to be sustained over many years before 'replacement level' fertility can be claimed. The total fertility rate in New Zealand has been relatively stable over the last three decades, averaging 2.01 births per woman. During this time, the total fertility rate varied from 2.18 births per woman in 1990 and 2008 to 1.89 in 1998 and 2002. In contrast, women averaged 3.44 births during 1949–1978, with the fertility rate peaking at 4.31 births per woman in 1961 and then declining to 2.07 in 1978.<sup>5</sup> In addition, the median age for New Zealand women giving birth has increased over the past 20 years. In December 2006, the median age was 30.3

---

<sup>1</sup> Calculations made by using projection series 5.

<sup>2</sup> This is calculated using projections series 5. Projections of the very old are sensitive to mortality assumptions. Under the very low mortality scenario, this age group would number 480,000 in 2051. By comparison, under the high mortality assumption (series 1), this age group would number 260,000.

<sup>3</sup> The total fertility rate is the average number of births a woman would have during her life if she experienced the age-specific fertility rates of a given period.

<sup>4</sup> <http://www.stats.govt.nz/products-and-services/Articles/birthpopulationtrends-article09.htm>.

<sup>5</sup> <http://www.stats.govt.nz/products-and-services/hot-off-the-press/births-and-deaths/births-and-deaths-dec08-qtr-hotp.htm?page=para002Master>.

years, compared to 28.8 years in 1996 and 26.8 years in 1986 (Statistics New Zealand 2008a).

### **Improvement in longevity**

In the early 1970s, one in 12 of all New Zealanders was aged over 65; however, currently those aged 65 and over constitute one in eight. The population aged 65 and over is expected to more than double by 2051, when they will make up one-quarter or more of all New Zealand residents.<sup>6</sup> This is because the large baby boom cohorts born during 1946 to 1965 will enter into the 65+ age group in 2011 (Khawaja, Boddington and Tang 2007).

Due to increases in longevity, the older population is itself ageing. The median age of the 65+ population has increased by almost three years since the early 1950s (from 71.4 years to 74.2 years in 2006) and is projected to exceed 77 years by 2051. This is also confirmed by the growing concentration of population at ages over 84 years (Khawaja et al. 2007).

The number of New Zealanders aged 85 years and over is projected to more than quadruple, from just under 57,000 to 322,000 by 2051.<sup>7</sup> Those aged 65–74 years made up 70 percent of all residents over 64 in 1951, 53 percent in 2006 and are projected to drop to 40 percent by 2051. By contrast, over the same period, the share of those aged 85+ rose from 3.9 percent in 1951 to 11.7 percent in 2006 and is projected to rise to 24 percent in 2051. Māori, Pacific and Asian populations are likely to age less quickly than the European population due to ethnic differences in fertility, mortality and migration (Khawaja et al. 2007).

### **Declining national labour force participation**

An ageing population will lead to a decrease in the overall participation rate. New Zealand's labour force is projected to continue to grow from an estimated 2.24 million at 30 June 2006 to 2.65 million in 2031 and 2.79 million in 2061.<sup>8</sup>

New Zealand's labour force will age, and this is reflected by a rising median age and an increasing proportion of the labour force in the older ages. Half of the labour force will be aged over 42 years in 2011, compared with a median age of 40 years in 2006 and 36 years in 1991. The labour force aged 65 years and over is projected to increase from roughly 62,000 in 2006 to 160,000 in 2021 and about 200,000 from the mid-2030s (Statistics New Zealand 2008b).

The Potential Support Ratio (PSR) indicates the dependency burden on potential workers.<sup>9</sup> The impact of demographic ageing is noticeable in the PSR, which has dropped and will continue to fall. Globally between 1950 and 2000, the PSR fell from 12 to nine people in the working ages per each person 65 years or older. By 2050, the PSR is projected to fall to four working-age persons for each person 65 years or older (United Nations 2002).

---

<sup>6</sup> Between 1.17 million (series 1) and 1.48 million (series 9).

<sup>7</sup> Using projection series 5.

<sup>8</sup> Using mid-range projection series 5M.

<sup>9</sup> The number of persons aged 15–64 years per one older person aged 65 years or older.



## **1.2 Caregivers for the elderly**

In New Zealand, almost all caregivers are female. In the past, women had fewer options for employment, and due to increased opportunities in education, women are more likely now to participate in higher skill, less demanding and higher paid jobs than working as caregivers for the elderly. The way we live and our values have also changed such that there has been an increase in childless couples, smaller family sizes, fewer people living in extended family households and higher divorce rates. These changes have contributed to a decline in the pool of informal caregivers (Fine 2006). The Australian National Family Caregivers Association has estimated that the number of potential informal caregivers for each person needing care will decrease from 11 in 1990 to 4 by 2050 (Super as cited in Fine 2006). This is consistent with other developed countries.

In addition to the decline in informal caregivers, the availability of paid caregivers for the elderly is also rapidly decreasing. This is because of the ageing of the caregiver workforce itself and potential barriers to young workers being drawn to the aged-care industry (Hugo 2007; OECD 2009). A recent study in Australia estimates that, over the next three decades, 69,000 extra caregivers will be needed in residential care and 136,000 in non-residential care for older Australians aged over 75 years. This study recommends that policies need to be designed to increase workforce participation levels among older age groups and to draw into the workforce groups that are currently disengaged from it. It also recommends immigration to be considered as a potential means to recruit workers into the aged-care industry (Hugo 2007).

The longer-term demographic impact of an ageing population will affect the need for care, the availability of informal and formal caregivers and the affordability and provision of social provisions (Fine 2006). Caring for older people requires a unique set of skills, resources and personal relationships. The trend across all OECD countries suggests that there are fewer children and a growing number of old people in relation to the working-age population (OECD 2007).

## **2. RATIONALE**

### **2.1 Purpose and research objective**

As the prevalence of disability increases with age, the impact on the need for assistance and care in various day-to-day living is apparent. It has been established that an increase in the older population has crucial labour market implications around the current and future caregiver workforce (United Nations 2002; Fine 2006; Hugo 2007).

Therefore, the objective of this research is:

To examine the current supply of paid caregivers for the elderly in New Zealand by developing a demographic profile of the caregiver workforce in New Zealand, and projecting the future demand for paid caregivers.

The focus of this paper is on the need for care and availability of formal (paid) caregivers for the elderly. While informal (unpaid) caregivers are an important component, we have not examined this group because of the lack of reliable data sources at the time of this study.

### **2.2 Structure of report**

- Section 1 includes an introduction and a summary of existing research.
- Section 2 provides the purpose and research objective.
- Section 3 outlines the methodology, which includes the data sources and statistical methods.
- Section 4 contains the results, which includes the projected growth of New Zealand's older population, the need for aged care, a snapshot of the caregiver workforce in New Zealand and the projected demand for paid carers for older New Zealanders.
- Section 5 provides conclusions and implications around the need for caregivers in the context of the ageing population in New Zealand.
- The appendices provide additional data tables and detailed background to the analysis.

## **3. METHODS**

### **3.1 Data sources**

The data sources used when conducting this analysis were the 1996, 2001 and 2006 Censuses of Population and Dwellings, the 2006 Disability Survey of Residential Facilities, the 2006 Household Disability Survey, and Statistics New Zealand's 2006 Population Projections. In order to test boundaries, the series used from the 2006 Population Projections were the high mortality assumption series (series 3), the low mortality series (series 7), and the medium series (series 5), which is considered by Statistics New Zealand to be the most suitable for assessing future population changes.

### **3.2 Statistical methods**

The following definitions and assumptions were used in the analysis.

#### **Age groups**

Older people were grouped into the three age categories:

- 65–74 years
- 75–84 years
- 85 years and over.

#### **Industry and occupation classifications**

The industry and occupational data used to conduct the analysis were Australia New Zealand Standard Industry Classifications 1996 (ANZSIC96) and New Zealand Standard Classification of Occupations 1999 (NZSCO99) classifications. There is consistency in the data presented as there were no changes to the classification codes between the years. More detail on specific codes can be found in Appendix B.

#### **Ethnicity**

Where our analysis focuses on ethnic differentials, the total response output was used to categorise ethnicity in this report. Therefore, a person is counted more than once if they self-report more than one ethnic identity. The ethnic groups included are European/Other, Māori, Pacific Peoples and Asian.<sup>10</sup>

More detail on the methodology employed (including occupational and industry groupings) used for the tables and figures presented in this report can be found in Appendix B.

### **3.3 Limitations**

One of the main limitations is the quality of data collected on occupation in the Census. Occupational data on caregivers does not differentiate between caring for older people and disabled people across all age groups.

---

<sup>10</sup> The 'New Zealander' group introduced in the 2006 Census was combined with the 'European/Other' group.

The estimates provided do not factor in any productivity gains. We assume that the ratio of paid caregivers to those receiving care remains the same over the whole time period. Also, we do not factor in any income effects or shifts in demand, i.e. if incomes increase or social norms change, this might increase the relative demand for caregivers and the ratio of caregivers to those cared could increase.<sup>11</sup> We also do not take into account attrition (which is likely to occur in the existing caregiver workforce) and improvements in technology that could prolong the quality of life.

---

<sup>11</sup> We also assume that the ratio of informal carers to those receiving care remains the same.

## 4. RESULTS

### 4.1 Current and projected growth of New Zealand's aged population

Table 1 below demonstrates the immense demographic shift that will occur in New Zealand's aged and working-age population out to 2036.<sup>12</sup> The 0–14 age group will experience a small decline in the 2016–26 and 2026–36 periods, while the working-age population (15–64 years) will grow 0.55 percent per year in the 2006–16 period, 0.17 percent per year in the 2016–26 period and will undergo a small decline in the 2026–36 period.

The biggest growth, however, will occur in the 65+ age group, which will increase by 3.16 percent per year in the 2006–16 period, 3.13 percent per year in the 2016–26 period and 2.26 percent per year in the 2026–36 period. Between 2006 and 2036, the 65+ age group as a proportion of the working-age population is expected to double from 18 percent to 40 percent respectively. Within the 65+ age group, the proportion of men and women are relatively equal in the 'younger' old ages (65–74 and 75–84 years); however, the proportion of women double in the 85+ age group (refer to Tables A3, A4 and A5 in Appendix A). In addition to this, European/Other make up the largest proportion of New Zealand's aged population, followed by Asian, Māori and Pacific people (refer to Table A2 in Appendix A).

**Table 1: Projections of New Zealand's children (0–14 years), working-age population (15–64 years) and aged population (65+ years)<sup>13</sup>**

Year/Number by age	0–14	15–64	65+	65+ as % of working-age population
2006	888,300	2,784,700	511,600	18%
2016	895,500	2,942,800	698,500	24%
2026	877,500	2,992,800	950,200	32%
2036	859,800	2,978,500	1,187,700	40%

#### Annual Growth Rates

Period	0–14	15–64	65+
2006–16	0.08%	0.55%	3.16%
2016–26	-0.20%	0.17%	3.13%
2026–36	-0.20%	-0.05%	2.26%

Source: Statistics New Zealand 2006a.

Note: 0–14 (children), 15–64 (working-age) and 65+ (aged).

<sup>12</sup> The 15–64 age group is defined as working-age population in this report.

<sup>13</sup> Technical notes: Statistics New Zealand's series 5 Population Projections is the medium series, with projections based on three key assumptions – medium fertility, medium mortality and positive long-run annual net-migration of 10,000.

Within the 65+ age group, growth is strongest in the older age groups, mainly 75–84 and 85+. These are the groups that would most likely require paid care in New Zealand. Therefore Table 2 below demonstrates the projected growth of the 65–74, 75–84 and 85+ age groups. During 2006–16, the growth in the 65–74 age group is 3.7 percent per year; however, the biggest growth can be seen in the 85+ age group of 4.4 percent per year. The maximum growth in the 75–84 age group will occur during 2016–2026 at 4.1 percent per year, and for the 85+ age group, maximum growth will be during 2026–2036 at 5.0 percent per year.

**Table 2: New Zealand: Projected Growth of the population aged 65–74, 75–84 and 85+<sup>14</sup>**

<b>Year</b>	<b>65–74</b>	<b>% growth per annum</b>	<b>75–84</b>	<b>% growth per annum</b>	<b>85+</b>	<b>% growth per annum</b>
2006	275,700		177,800		58,200	
2016	395,700	3.7%	214,300	1.9%	89,400	4.4%
2026	508,100	2.5%	319,000	4.1%	127,100	3.6%
2036	573,300	1.2%	417,000	2.7%	206,200	5.0%

Source: Statistics New Zealand 2006a.

Table 3 compares the projected number of New Zealand future aged population out to 2036 under two sets of mortality assumptions: low and high.

The demand for paid care increases with age, and Table 3 shows that, in 2036, the number of people aged over 85 years will be 32 percent larger under the low mortality assumption than under the high mortality assumption (235,900 versus 178,700). In the 65–74 and 75–84 age groups, the differences are small (3.2 percent and 8.4 percent respectively). Given the vast difference in growth in the 85+ age group (based on the low and high mortality assumptions), one should be careful not to underestimate the actual growth in this population.

<sup>14</sup> Technical notes: Statistics New Zealand's series 5 Population Projections is the medium series, with projections based on three key assumptions – medium fertility, medium mortality and positive long-run annual net-migration of 10,000.

**Table 3: The effects of different mortality assumptions on the growth of New Zealand's future aged population, 2006–2036<sup>15</sup>**

<b>Age 65–74</b>			
<b>Year</b>	<b>Low</b>	<b>High</b>	<b>% difference between populations</b>
2006	275,700	275,700	
2016	397,400	393,900	0.9%
2026	513,100	502,500	2.1%
2036	581,700	563,800	3.2%
<b>Age 75–84</b>			
<b>Year</b>	<b>Low</b>	<b>High</b>	<b>% difference between populations</b>
2006	177,800	177,800	
2016	217,100	211,900	2.5%
2026	328,500	310,600	5.8%
2036	436,600	402,700	8.4%
<b>Age 85+</b>			
<b>Year</b>	<b>Low</b>	<b>High</b>	<b>% difference between populations</b>
2006	58,200	58,200	
2016	93,200	85,800	8.6%
2026	139,700	115,100	21.4%
2036	235,900	178,700	32.0%

Source: Statistics New Zealand 2006a.

## 4.2 The need for aged care in New Zealand

The incidence of disability increases with age, and this is a crucial factor in the need for care. Overall, 32 percent of those aged 65–74 years, 51 percent aged 75–84 and 71 percent aged 85 years and over reported some form of disability in the 2006 Household Disability Survey (Table A6, Appendix A).<sup>16</sup>

Table 4 below shows the type of disability reported by people aged 65 years and over in the 2006 Household Disability Survey. It shows that 13 percent of older disabled people lived in a residential facility, and of these, 98 percent had a physical disability. An interesting observation is that the majority of older people with a disability lived in households (87 percent) compared to 13 percent who

<sup>15</sup> Technical notes: Table 3 was constructed based on Statistics New Zealand's 2006 Population Projections. The series 'Low' relates to the assumptions of low future mortality, medium fertility and medium positive annual net migration of 10,000 (Statistics New Zealand's Population Projections Series 7). The series 'High' relates to Statistics New Zealand's Population Projections series 3, which is based on the assumptions of medium fertility, high mortality and positive annual net migration of 10,000.

<sup>16</sup> As a proportion of the total population in the specific age cohorts using 2006 Census data presented in Table 3.

lived in a residential facility. This suggests that older New Zealanders prefer to age and stay in their homes as long as possible.

**Table 4: Disabled older people aged 65 years and over, by disability type and place of residence, 2006**

	Household	Residential	Total
	Number		
Sensory	90,600	17,800	108,400
Physical	154,700	28,800	183,500
Intellectual	3,000	1,500	4,500
Psychiatric/psychological	10,200	6,200	16,400
Other	60,800	20,200	81,000
Total adults with disability	190,900	29,400	220,300
	Percentage		
Sensory	47.5%	60.5%	49.2%
Physical	81.0%	98.0%	83.3%
Intellectual	1.6%	5.1%	2.0%
Psychiatric/psychological	5.3%	21.1%	7.4%
Other	31.8%	68.7%	36.8%

Source: Household Disability Survey (Statistics New Zealand 2006c).

Note: As a person can report more than one disability, percentage totals do not add to 100%.

If we assume that the 2006 incidence of disability is maintained out to 2036, there will be a rapid increase in the number of older people with a disability who may require care. However, it is important to understand that not everyone reporting a disability will require paid care. The Household Disability Survey collected information on the level of support required by disabled persons, and respondents are classified as having low, medium or high support needs based on their need for assistance and/or special equipment relating to their disability. Those with medium support needs used or had an unmet need for some type of assistive device, aid or equipment. Those with high support needs received daily assistance with tasks such as bathing, preparing meals and so on (Statistics New Zealand 2007).

Based on these definitions, Table 5 presents the projected number of older persons with a disability that would require care, using low, medium and high disability scenarios (calculated using series 5 – medium population projections). The low scenario assumes the need for high levels of support, the medium scenario assumes medium and high levels of support and the high scenario assumes all levels of support, i.e. everyone with a disability.



**Table 5: New Zealand: Projected number of older disabled persons needing care, using low, medium and high disability assumptions, 2006–2036<sup>17</sup>**

<b>Low scenario – high level of support</b>				
	65–74	75–84	85+	Total 65+
2006	13,100	22,700	18,800	54,700
2016	18,800	27,400	28,900	75,100
2026	24,100	40,800	41,100	106,100
2036	27,200	53,700	66,800	147,700
<b>Medium scenario – medium and high levels of support</b>				
	65–74	75–84	85+	Total 65+
2006	55,000	71,500	38,100	164,800
2016	78,900	86,300	58,500	223,700
2026	101,400	128,600	83,300	313,300
2036	114,400	169,100	135,400	418,800
<b>High scenario – low, medium and high levels of support</b>				
	65–74	75–84	85+	Total 65+
2006	88,400	90,700	41,000	220,400
2016	126,900	109,400	63,000	299,300
2026	162,900	163,100	89,700	415,700
2036	183,800	214,500	145,700	544,000

Source: Household Disability Survey (Statistics New Zealand 2006c), Population Projections (Statistics New Zealand 2006a) and Census of Population and Dwellings (Statistics New Zealand 2006b).

Under the low scenario, while the number of disabled people in the 65–74 and 75–85 age groups will double (2.1 and 2.4 times respectively) between 2006 and 2036, the greatest increase can be observed in the 85+ age group, which will increase by 3.5 times over the next three decades from 18,800 in 2006 to 66,800 in 2036.<sup>18</sup>

Under the medium and high scenarios, the absolute increase in the number of disabled people is apparent; it seems unlikely that this will be the case for New Zealand.

### **4.3 Who provides care to older New Zealanders?**

This section examines the demographics of the caregiver workforce.<sup>19</sup> Figure 1 below superimposes the age-sex structure of caregivers with that of the total workforce in New Zealand. This figure not only demonstrates that caregiving is a highly gendered occupation (92 percent of our caregiver workforce are women),

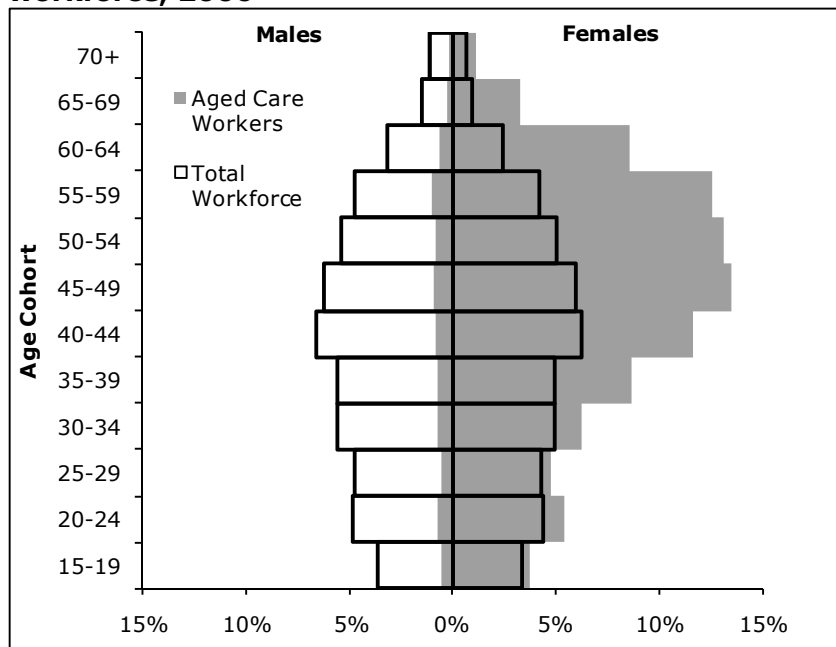
<sup>17</sup> Technical notes: Table 5 was calculated by multiplying the disability ratios for older people within the respective age cohorts (65–74, 75–84 and 85+) with the reported care needs (low, medium or high) from Statistics New Zealand’s 2006 Disability Survey by Statistics New Zealand’s Population Projections (series 5). Series 5 was the medium series, as it assumed medium mortality, medium fertility and medium annual net migration of 10,000 people. These tables therefore give an indication of the number of persons who are likely to require care over the next 30 years, based on older persons’ current care needs.

<sup>18</sup> This assumes that the prevalence of disability does not change in each age group.

<sup>19</sup> A detailed breakdown of the occupations included can be found in Appendix B.

but that caregivers are overrepresented in the older age groups (40 years and over) compared to the younger ages. An implication of this is that caregivers also grow old, retire and leave the workforce.

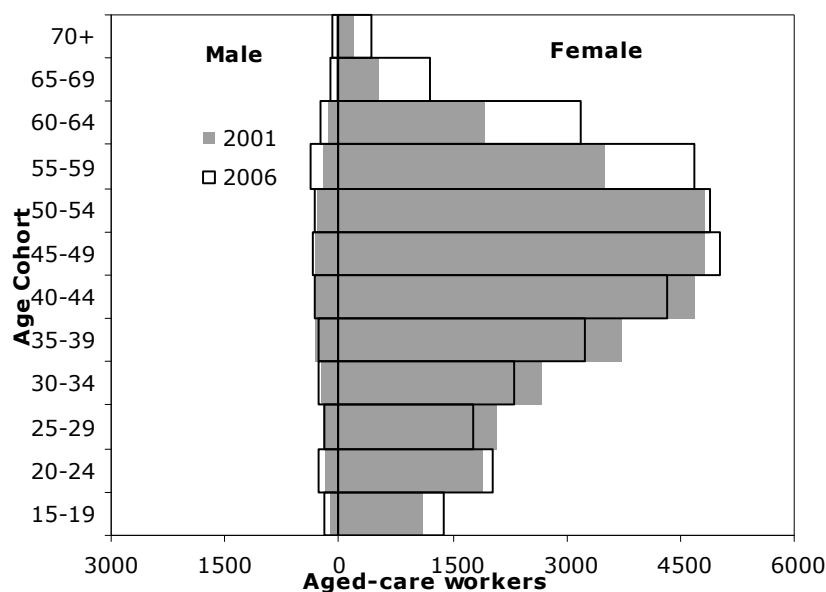
**Figure 1: New Zealand: Age-sex structure of aged-caregivers and total workforce, 2006**



Source: Statistics New Zealand 2006b.

The ageing of caregivers is evident and critical, and this is demonstrated in Figure 2 by overlaying caregivers in 2001 and 2006. This also indicates that the intercensal growth in caregivers has occurred in the older groups (from 45 years and over), and not in the younger age groups.

**Figure 2: New Zealand: Age-sex structure of aged-care workers, 2001 and 2006**



Source: Statistics New Zealand 2006b.

Table A10 in Appendix A examines the ethnic differences in the caregiver workforce, and it shows that, while the proportion of Māori and Pacific caregivers has remained consistent from 2001 and 2006, the proportion of European/Other caregivers has decreased from 82 percent in 2001 to 79 percent in 2006, while the proportion of Asian caregivers has doubled from 3 percent in 2001 to 7 percent in 2006.

#### **4.4 Paid caregivers and older New Zealanders**

Overall, the growth in the aged-care sector should not be seen in isolation from the total workforce. Occupational shares analysis over a 15-year period shows growth in personal care workers (NZSCO 513) in the health and community services. The overall growth in the share of personal care workers within health and community services suggest that this share, which rose from 18 percent in 1996 to 19 percent in 2006, could increase to 21 percent in 2011 (refer to Table A8, Appendix A for more detail).

In 2006, aged-care workers represented just under 1 percent of the total workforce. In numerical terms, this equates to roughly 17,900 aged-care workers. If this proportion is maintained out to 2036, a crude estimate suggests that there will potentially only be 21,400 aged-care workers available.<sup>20</sup> This is not sustainable given the increasing demand for aged-caregivers that is presented in Table 6.

The projected number of paid caregivers needed is based on the low scenario assumption of the projected number of older disabled persons needing care (i.e. only those requiring high levels of support). Table 6 shows that the annual percentage growth for caregivers during the 2006–2016 period is 3.2 percent, followed by 3.5 percent annually during the 2016–2026 period and 3.4 percent annually during the 2026–2036 period. In absolute numbers, the projected number of paid caregivers needs to almost treble from the current 17,900 in 2006 to 48,200 in 2036 in order to meet the need of the projected number of disabled older persons requiring high levels of support.

---

<sup>20</sup> The projection of the number of personal care workers for 2036 was calculated based on Statistics New Zealand's Labour Market projections (series 5M, which is the medium series, and assumes medium fertility, medium net annual migration of 10,000 and medium labour force participation rates). A ratio was calculated for the number of personal care workers to the total estimated workforce in 2006 based on the 2006 Census of Population and Dwellings. This ratio was then multiplied by the labour force projections to provide an estimate of the number of workers who could potentially be available.

**Table 6: New Zealand: Actual and projected number of paid caregivers needed for older New Zealanders aged 65 years and over, 2006–2036<sup>21</sup>**

<b>Year</b>	<b>Actual and projected number of disabled older persons requiring care (65+)</b>	<b>Actual and projected number of paid care workers needed</b>	<b>Percentage change per annum</b>
2006	54,700	17,900	
2016	75,100	24,500	3.2%
2026	106,100	34,600	3.5%
2036	147,700	48,200	3.4%

Source: Household Disability Survey (Statistics New Zealand 2006c) and Department of Labour projections (using Statistics New Zealand 2006b).

Note: As the three occupations (health assistant, nurse aide and caregiver) within 513 personal care workers can be included within a number of industries, only four specific 4-digit industries that employed health assistants, nurse aides or caregivers related specifically to aged care were included – nursing homes, accommodation for the aged, residential care facilities and non-residential care facilities.

The results presented in Table 6 relate to the number of specific aged-care workers (who are non-health professionals) required under the low scenario where only those disabled persons requiring high levels of support are taken into account. It is also assumed for simplicity that the ratio of care workers to disabled persons requiring care observed in 2006 (about 1:3) will apply over the 30-year projection period (2006–2036). However it is quite conceivable that this ratio, in effect, could change, leading to proportionately fewer or greater caregivers being required if different methods of care and technology are adopted.

The number of paid caregivers required, on the other hand, will be higher if the number of older disabled persons under medium (those requiring medium and high levels of support) or high scenarios (those requiring all levels of support) outlined in Table 5 are taken into account.

<sup>21</sup> Technical notes: Table 6 was calculated by dividing the fractions of older persons (65+) within the 2006 Disability Survey who identified as requiring a high level of care by the total persons within this age cohort from the 2006 Census. This fraction was then multiplied by series 5 of Statistics New Zealand's Population Projections for the years 2016, 2026 and 2036 to obtain an estimate of the numbers of older people who are likely to require care in the future years. These predictions of the persons who are likely to require care were then multiplied by the fraction of personal care workers to people who required a high level of care in 2006 to obtain the estimation of care workers needed. Refer to Appendix B for more details regarding the methodology.

## 5. CONCLUSIONS AND RECOMMENDATIONS

Over the next 30 years, the proportion of older people in New Zealand is projected to double, with the largest percentage growth occurring in the 85 years and over group. Currently, 17,900 paid caregivers are looking after older disabled New Zealanders requiring high levels of support.<sup>22</sup> As the incidence of disability increases with age, so does the need for care. As a result, the number of older disabled persons needing high levels of care is projected to treble over the next three decades.

Department of Labour estimates show that 48,200 paid aged-caregivers are needed in 2036 in order to care for older disabled people requiring high levels of support.<sup>23</sup> However, if the current proportion of aged-care workers to the total population is maintained over the next 30 years, there will only be 21,400 aged-care workers available. Therefore, it is evident that the projected pathway is not sustainable.

Consequently longer term planning around the future of the aged care sector is needed. The unsustainable pathway experienced in this sector requires a multifaceted approach that not only takes the workforce into consideration, but also requires other productivity gains for the aged care industry.

### **Longer term workforce planning**

Both the OECD report and Australian research strongly recommend that long-term planning around the future of the caregiver workforce is needed in order to meet the increasing demand for paid caregivers in OECD countries such as New Zealand (Hugo 2007; OECD 2009). Their other recommendations include:

- developing policies to increase workforce participation among older age groups who may be close to retirement, as well as encouraging part of the workforce that is currently disengaged from the labour force to consider elder care as a vocation
- developing training programmes and established career structures in the aged-care sector – better training opportunities could improve the quality of care and, in turn, could encourage retention of caregivers and job satisfaction
- to consider the immigration of low skilled workers as a potential means to recruit workers into the aged-care industry.<sup>24</sup>

---

<sup>22</sup> This is defined as requiring assistance with tasks such as bathing, preparing meals and so on.

<sup>23</sup> However it is important to note that these estimates are conservative as they are based on the assumption that the ratio of caregivers to those receiving care remains the same over the whole time period (1:3). Therefore, the estimates on the future demand for paid carers are at the lower scale. Our estimates are similar to research findings from Australia (Hugo 2007).

<sup>24</sup> Currently, the Department of Labour is involved with the Institute of Policy Studies on a research project funded by the Emerging Issues Programme on low skill migration and the role of migrant aged-caregivers. The analysis involves a demographic examination of the changing age structure, place of birth (New Zealand born vs. overseas born) and nationality of aged-caregivers in New Zealand. This report can be found at: <http://ips.ac.nz/publications/publications/show/270>

The research also suggests that wage rates be addressed across the care sector. This is important for New Zealand because of the strong growth of Australia's older population and the possibility of Australia attracting our caregiver workforce given the higher wage rates for caregivers in Australia.

### **Productivity gains**

Clearly the aged care sector has a range of workforce challenges, however as previously indicated this is unlikely to be able to solve the issues in the longer term. As such, the sector will need to address additional productivity gains by investigating and potentially investing in areas such as:

- the use of Information and Communication Technologies (ICTs) to improve efficiency in organising and planning paid caregivers' services. However, the uptake of ICTs is slow across the care sector in several countries (OECD 2009);
- workplace practices in the aged care sector also need to adjust in order to increase productivity.

Our current understanding of the dynamics of this labour market is limited, and the partial view presented does not offer any simple practice or policy remedies for the potential shortages of paid caregivers in the future. However, it is necessary to be aware that New Zealand's population is ageing rapidly and that, if processes are not implemented now, there will not be sufficient caregivers for the elderly in the future.

## REFERENCES

- Dunstan, K. and Thomson, N. (2006). *Demographic Aspects of New Zealand's Ageing Population*. Statistics New Zealand, Wellington.
- Fine, M. (2006). *A Caring Society? Care and the Dilemmas of Human Services in the 21st Century*. Palgrave/MacMillan, Houndmills.
- Hugo, G. (2007). *Contextualising the 'crisis in aged care' in Australia: A demographic perspective*. Australian Journal of Social Issues, 42 (2): 169-182.
- Khawaja, M., Boddington, W. and Tang, I. (2007). *New Zealand's 65+ Population: a statistical volume*. Statistics New Zealand, Wellington.
- OECD. (2007). *Society at a glance: OECD Social Indicators*. OECD, Paris.
- OECD. (2009). *The Long-Term Care Workforce: Overview and Strategies to Adapt Supply to a Growing Demand*. OECD, Paris. <http://apo.org.au/node/3719>.
- Statistics New Zealand. (2006a). *Projected Population of New Zealand by Age and Sex, 2006 (base) – 2061*. Statistics New Zealand, Wellington.
- Statistics New Zealand. (2006b). *Age Group by Sex, for the Census Night Population Count, 1996, 2001, and 2006*. Statistics New Zealand, Wellington.
- Statistics New Zealand. (2006c). *Disability Status By Pace of Residence, Age Group, Sex and Ethnic Group, 2006*. Statistics New Zealand, Wellington.
- Statistics New Zealand. (2007). *2006 Disability Survey*. Statistics New Zealand, Wellington.
- Statistics New Zealand. (2008a). *Demographic Trends: 2007*. Statistics New Zealand, Wellington.
- Statistics New Zealand. (2008b). *National Labour Force Projections: 2006 (base)–2061*. Statistics New Zealand, Wellington.
- United Nations. (2002). *World Population Ageing: 1950-2050*. Department of Economic and Social Affairs Population Division. Sales No. E.02.XIII.3. <http://www.un.org/esa/population/publications/worldageing19502050/>.

## APPENDIX A – ADDITIONAL DATA TABLES

**Table: A1. Projected ethnic population of New Zealand, by age and sex, 2006 (base)–2026**

Sex/ ethnicity	Year/ growth rate	Age					
		65–74		75–84		85+	
		Male	Female	Male	Female	Male	Female
European/ Other (including New Zealander)	<b>2006</b>	116,300	124,600	72,700	93,500	17,500	38,500
	<b>2016</b>	162,700	172,900	85,700	101,400	31,700	52,300
	<b>2026</b>	193,600	208,800	125,400	145,400	44,700	66,600
	<b>2006–16</b>	3.4%	3.3%	1.7%	0.8%	6.1%	3.1%
	<b>2016–26</b>	1.8%	1.9%	3.9%	3.7%	3.5%	2.4%
Māori	<b>2006</b>	8,800	9,700	2,600	3,600	300	700
	<b>2016</b>	12,900	14,900	5,100	6,600	800	1,400
	<b>2026</b>	20,900	25,100	8,500	11,100	2,100	3,300
	<b>2006–16</b>	3.9%	4.4%	7.0%	6.2%	10.3%	7.2%
	<b>2016–26</b>	4.9%	5.4%	5.2%	5.3%	10.1%	9.0%
Pacific	<b>2006</b>	3,600	4,400	1,300	1,700	100	400
	<b>2016</b>	6,000	6,700	2,300	3,200	400	700
	<b>2026</b>	9,700	10,800	4,200	5,200	1,100	1,800
	<b>2006–16</b>	5.2%	4.3%	5.9%	6.5%	14.9%	5.8%
	<b>2016–26</b>	4.9%	4.9%	6.2%	5.0%	10.6%	9.9%
Asian	<b>2006</b>	6,600	7,000	2,000	2,400	300	600
	<b>2016</b>	13,500	14,900	6,400	7,000	1,200	1,700
	<b>2026</b>	26,000	29,700	12,100	14,000	4,100	5,200
	<b>2006–16</b>	7.4%	7.8%	12.3%	11.3%	14.9%	11.0%
	<b>2016–26</b>	6.8%	7.1%	6.6%	7.2%	13.1%	11.8%

Source: Statistics New Zealand, 2006a.

Notes: Series 6 – assuming medium fertility, medium mortality, medium migration and medium inter-ethnic mobility.



**Table A2: Proportion of the population aged 65 and over by ethnic group, as at 30 June 2006, 2001 and 1996**

	<b>65-74</b>	<b>75-84</b>	<b>85+</b>	<b>65+</b>
	% of population			
<b>European/Other</b>				
2006	9.2%	5.2%	1.7%	14.4%
2001	7.4%	4.9%	1.6%	13.8%
1996	7.6%	4.4%	1.2%	13.2%
<b>Māori</b>				
2006	3.0%	1.0%	0.2%	4.1%
2001	2.5%	0.8%	0.1%	3.4%
1996	2.2%	0.7%	0.1%	3.0%
<b>Pacific</b>				
2006	2.6%	1.0%	0.2%	3.8%
2001	2.4%	0.9%	0.2%	3.4%
1996	2.2%	0.7%	0.1%	3.1%
<b>Asian</b>				
2006	3.4%	1.1%	0.2%	4.7%
2001	3.0%	0.9%	0.2%	4.2%
1996	2.1%	0.7%	0.2%	3.0%
<b>Total population</b>				
2006	6.6%	4.2%	1.4%	12.2%
2001	6.5%	4.1%	1.3%	11.9%
1996	6.7%	3.8%	1.1%	11.5%

Source: Statistics New Zealand, Estimated Resident Population as at 30 June 1996, 2001 and 2006.

**Table A3: Proportion of population aged 65 and over by ethnic group and gender, as at 30 June 2006**

	65-74	75-84	85+	65+
	% of population			
<b>European/Other</b>				
Male	7.4%	4.6%	1.1%	13.2%
Female	7.6%	5.7%	2.3%	15.6%
Total	7.5%	5.2%	1.7%	14.4%
<b>Māori</b>				
Male	2.9%	0.8%	0.1%	3.8%
Female	3.0%	1.1%	0.2%	4.4%
Total	3.0%	1.0%	0.2%	4.1%
<b>Pacific</b>				
Male	2.4%	0.8%	0.1%	3.4%
Female	2.9%	1.2%	0.3%	4.3%
Total	2.6%	1.0%	0.2%	3.8%
<b>Asian</b>				
Male	3.4%	1.0%	0.2%	4.6%
Female	3.3%	1.1%	0.3%	4.7%
Total	3.4%	1.1%	0.2%	4.7%
<b>Total population</b>				
Male	6.5%	3.8%	0.9%	11.2%
Female	6.7%	4.7%	1.9%	13.2%
Total	6.6%	4.2%	1.4%	12.2%

Source: Statistics New Zealand, Estimated Resident Population as at 30 June 2006.

**Table A4: Proportion of population aged 65 and over by ethnic group and gender, as at 30 June 2001**

	<b>65-74</b>	<b>75-84</b>	<b>85+</b>	<b>65+</b>
	% of population			
<b>European/Other</b>				
Male	7.3%	4.1%	1.0%	12.3%
Female	7.5%	5.7%	2.2%	15.3%
Total	7.4%	4.9%	1.6%	13.8%
<b>Māori</b>				
Male	2.3%	0.6%	0.1%	3.1%
Female	2.6%	0.9%	0.2%	3.7%
Total	2.5%	0.8%	0.1%	3.4%
<b>Pacific</b>				
Male	2.1%	0.7%	0.1%	2.9%
Female	2.6%	1.1%	0.2%	3.9%
Total	2.4%	0.9%	0.2%	3.4%
<b>Asian</b>				
Male	3.1%	0.8%	0.1%	4.0%
Female	3.0%	1.0%	0.3%	4.3%
Total	3.0%	0.9%	0.2%	4.2%
<b>Total population</b>				
Male	6.4%	3.4%	0.8%	10.6%
Female	6.6%	4.7%	1.8%	13.1%
Total	6.5%	4.1%	1.3%	11.9%

Source: Statistics New Zealand, Estimated Resident Population as at 30 June 2001.

**Table A5: Proportion of population aged 65 and over by ethnic group and gender, as at 30 June 1996**

	65-74	75-84	85+	65+
	% of population			
<b>European/Other</b>				
Male	7.4%	3.5%	0.7%	11.6%
Female	7.8%	5.3%	1.7%	14.8%
Total	7.6%	4.4%	1.2%	13.2%
<b>Māori</b>				
Male	2.1%	0.6%	0.1%	2.7%
Female	2.4%	0.8%	0.2%	3.3%
Total	2.2%	0.7%	0.1%	3.0%
<b>Pacific</b>				
Male	2.0%	0.6%	0.1%	2.6%
Female	2.4%	0.9%	0.2%	3.5%
Total	2.2%	0.7%	0.1%	3.1%
<b>Asian</b>				
Male	2.0%	0.6%	0.1%	2.7%
Female	2.3%	0.9%	0.2%	3.4%
Total	2.1%	0.7%	0.2%	3.0%
<b>Total population</b>				
Male	6.5%	3.0%	0.6%	10.1%
Female	7.0%	4.5%	1.5%	12.9%
Total	6.7%	3.8%	1.1%	11.5%

Source: Statistics New Zealand, Estimated Resident Population as at 30 June 1996.

**Table A6: Age and gender distribution of the 65+ population with a disability, 2006**

	Male	Female	Total
<b>Households</b>			
65-74 years	42,600	42,800	85,400
75-84 years	35,500	43,400	79,000
85+	9,100	17,500	26,600
65+	87,200	103,800	190,900
65-74 years	48.9%	41.2%	44.7%
75-84 years	40.7%	41.8%	41.4%
85+	10.4%	16.9%	13.9%
65+	100.0%	100.0%	100.0%
<b>Residential facility</b>			
65-74 years	1,700	1,300	3,000
75-84 years	4,400	7,400	11,800
85+	2,300	12,300	14,500
65+	8,400	21,000	29,400
65-74 years	20.2%	6.2%	10.2%
75-84 years	52.4%	35.2%	40.1%
85+	27.4%	58.6%	49.3%
65+	100.0%	100.0%	100.0%
<b>Total</b>			
65-74 years	44,300	44,100	88,400
75-84 years	39,900	50,800	90,800
85+	11,300	29,800	41,100
65+	95,600	124,700	220,300
65-74 years	46.3%	35.4%	40.1%
75-84 years	41.7%	40.7%	41.2%
85+	11.8%	23.9%	18.7%
65+	100.0%	100.0%	100.0%

Source: Household Disability Survey, Statistics New Zealand 2006c.

**Table A7: Ethnic and gender distribution of the 65+ population with a disability, 2006**

	Male	Female	Total
<b>Household</b>			
European/Other	81,000	95,700	176,800
Māori	4,300	6,000	10,400
Pacific	1,400	2,200	3,600
Asian	1,900	2,000	3,900
European/Other	92.9%	92.2%	92.6%
Māori	4.9%	5.8%	5.4%
Pacific	1.6%	2.1%	1.9%
Asian	2.2%	1.9%	2.0%
<b>Total</b>			
European/Other	89,200	115,900	205,100
Māori	4,500	6,500	11,000
Pacific	1,400	2,500	3,900
Asian	2,100	2,300	4,400
European/Other	93.3%	92.9%	93.1%
Māori	4.7%	5.2%	5.0%
Pacific	1.5%	2.0%	1.8%
Asian	2.2%	1.8%	2.0%

Source: Household Disability Survey, Statistics New Zealand 2006c.

Note: Residential is not presented due to low numbers.

**Table A8: Occupational shares analysis, 1996–2011**

Health and Community Services				
Occupations	1996	2001	2006	2011
513 Personal Care Workers	18.1	21.73	19.45	21.1
223 Nursing and Midwifery Professionals	22.51	20.17	19.82	18.15
222 Health Professionals (except Nursing)	8.73	8.14	8.25	7.88
334 Social Work Associate Professionals	3.78	4.69	5.2	5.98
122 Specialised Managers	3.21	3.94	4.9	5.71
322 Health Associate Professionals	5.36	5.34	5.43	5.45
Personal and Other Community Services				
Occupations	1996	2001	2006	2011
515 Protective Services Workers	14.5	15.68	15.47	16.19
514 Other Personal Services Workers	18.54	17.47	16.15	15
122 Specialised Managers	4.64	5.77	7.65	9.03
513 Personal Care Workers	5.08	1.44	1.15	0

Source: Based on Statistics New Zealand Industry:Occupation matrix from the 1996, 2001 and 2006 Censuses.

**Table A9: Occupational forecasting: Personal care workers (513) and Caregivers (51316)**

	513		51316		Ratio 51316:513
	Census	DEE <sup>1</sup>	Census	DEE	
<b>1996</b>	41,455		29,572		0.71
<b>2001</b>	43,116		30,903		0.72
<b>2006</b>	43,827	44,694	32,234	32,872	0.74
<b>2008</b>		45,258		33,286	
<b>2013</b>		52,950		38,944	
<b>2018</b>		64,573		47,492	
<b>2023</b>		76,401		56,192	

Source: Statistics New Zealand and Department of Labour occupational forecasts, March 2009.

<sup>1</sup> Department of Labour Employment Estimates.

Table A9 shows the forecast update (March 2009) of demand for employment across all occupations carried out by the Department of Labour and suggests that there could be a need for over 55,000 caregivers around 2023 – the furthest period for which such analysis is carried out. This compares with about 34,600 workers assessed to be required in 2026 under the high level of support low scenario in Table 6. These differences exist because they include personal care workers across all industries.

**Table A10: Ethnic profile of the aged-care workforce, 2006 and 2001**

	2006	2001	2006	2001
	Number		%	
European/Other	29,136	28,020	77.8%	81.7%
Māori	5,526	4,740	14.8%	13.8%
Pacific	2,865	2,205	7.7%	6.4%
Asian	2,598	1,080	6.9%	3.1%

Source: Statistics New Zealand, Census 2001 and 2006.

Note: Percentages do not add to 100% as ethnicity is based on total response.

The number of caregivers for the elderly is greater than that reported in Table 6 because:

- the methodology used to define the aged-care workforce is different in this table to what has been used in Table 6 – in this table, the aged-care workforce only includes three occupations: 51312 Health Assistant, 51314 Nurse Aide, 51316 Caregiver
- ethnicity is based on total response.

## APPENDIX B – DETAILED METHODOLOGY

The data sources used when conducting this analysis were the 1996, 2001 and 2006 Censuses of Population and Dwellings, the 2006 Disability Survey of Residential Facilities, the 2006 Household Disability Survey, and Statistics New Zealand's 2006 Population Projections. The series used from the 2006 Population Projections were the high mortality assumption series (series 3), the low mortality series (series 7) and the medium series (series 5), which is considered by Statistics New Zealand to be the most suitable for assessing future population changes.

**Tables 1–3:** These three tables were created based on the respective population projections series 3, 5, and 7.

**Tables 1 and 2** use the medium series (series 5) and calculates the proportion of the working-age population as a percentage of the population aged 65 years and over by dividing the number in the 65+ age cohort by the number in the 15–64 age cohort, assuming the latter is the working-age population. The annual average growth rates for Tables 1, 2, 5, 7 and 8 are calculated by dividing the later year of the two comparable years by the earlier year, placing this decimal to the power of one divided by the total number of years, and subtracting one from the final number to give a percentage that equals the annual average growth rate.

**Table 3** was constructed based on Statistics New Zealand's 2006 Population Projections. The series 'Low' relates to the assumptions of low future mortality, medium fertility and medium positive annual net migration of 10,000 (Statistics New Zealand's Population Projections series 7). The series 'High' relates to Statistics New Zealand's Population Projections series 3, which is based on the assumptions of medium fertility, high mortality and positive annual net migration of 10,000.

**Table 4** was sourced from Table Builder. In the 2006 Household Disability Survey, a person can report more than one disability; therefore, the percentage totals do not add to 100%.

**Table 5** was calculated by utilising information from the 2006 Census of Population and Dwellings, the 2006 Disability Survey of Households and Residential Facilities and Statistics New Zealand's Population Projections. The three respective scenarios (low, medium and high) were calculated in the following manner. First, the disability ratios for the respective age cohorts (65–74, 75–84 and 85+) were obtained by dividing the number of people within these age cohorts from the 2006 Disability Survey for the respective disability scenarios (low assumes only people who identify as requiring a high support need require support; medium combines high and medium support needs; high combines all three) by the number of people within these age cohorts from the 2006 Census. These ratios were then multiplied by series 5 (the medium series) of Statistics



New Zealand's Population Projections to provide an estimate of the potential demand for aged care for the years 2016, 2026 and 2036.

**Table 6** is based on Statistics New Zealand's Population Projections series 5, the 2006 Census of Population of Dwellings and the low scenario from Table 5. The total number of people over the age of 65 who were predicted to require care was first obtained. Personal care workers (classified as; NZSCO99 51312 Health Assistant, 51314 Nurse Aide and 51316 Caregiver) employed within the following ANZSIC96 4-digit industries: 08613 Nursing Homes, 08721 Accommodation for the Aged, 08722 Residential Care Facilities, and 08729 Non-residential Care Facilities on Census night in 2006,. The fractions of older persons (65+) within the 2006 Disability Survey who identified as requiring a high level of care were divided by the total persons within this age cohort from the 2006 Census. This fraction was then multiplied by series 5 of Statistics New Zealand's Population Projections for the years 2016, 2026 and 2036 to obtain an estimate of the numbers of older people who are likely to require care in the future years. These predictions of the persons who are likely to require care were then multiplied by the fraction of personal care workers to people who required a high level of care in 2006 to obtain the estimate of care workers needed.

**Figure 1** compares the age-sex distribution of the aged-care workforce to that of the entire population in 2006. The data source was the 2006 Census of Population and Dwellings. Within Figure 1, aged-care workers are defined using 3-digit NZSCO99 occupational groupings, which include 51312-Health Assistant, 51314-Nurse Aide and 51316-Caregiver within the 513-Personal Care Workers occupational groupings. (We exclude 51311-Hospital Orderly and 51313-Ambulance Officer.) The number of females and males within the respective age cohorts (15–19, 20–24 through to 65–69 and 70+) were divided by the total number of people within this entire occupational group, to obtain a percentage of the occupational group within each of the age cohorts by sex. This was then compared to the total population, which was calculated using the same methodology.

**Figure 2** compares the change in age-sex structure of 513-Personal Care Workers between 2001 and 2006. This was created by graphing the total numbers of people within these the respective age cohorts (15–19, 20–24 through to 65–69 and 70+) by sex. These age cohorts were used as they provide a good spread and show any significant shifts of the 513-Personal Care Workers workforce over the 5-year period (2001–2006). Within Figure 2, aged-care Workers are defined using 3-digit NZSCO99 occupational groupings, which includes 51312-Health Assistant, 51314-Nurse Aide and 51316-Caregiver within the 513-Personal Care Workers occupational groupings. (We exclude 51311-Hospital Orderly and 51313-Ambulance Officer.)

