

The New Zealand Health, Work and Retirement Longitudinal Study 2006-2016

Key findings from the
New Zealand Health, Work
and Retirement Longitudinal
study: tracking the health and
wellbeing of people aged
55+ in New Zealand

HART

Health and Ageing Research Team



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Contents

Foreword	4	Chapter One. Healthy Ageing	14
Acknowledgements	5	Key messages	14
Introduction to the New Zealand Health, Work and Retirement Study	6	Background	14
Six biennial surveys 2006-2016	6	Health 2006-2016	14
Multiple methods	6	Health, age, gender, and education	16
Multiple cohorts	7	Mortality	17
Impact of the New Zealand Health, Work and Retirement Study	8	Future avenues	17
The Current Report	9	Policy recommendations	17
The 2006 cohort	10	Chapter Two. Cognition	18
Analytic approach to the report	10	Key messages	18
Core measures	11	Background	18
Executive Summary	13	Health and cognitive performance 2010-2012	18
		Future avenues	20
		Policy recommendations	20
		Chapter Three. Work and Retirement	21
		Key messages	21
		Background	21
		Work status 2006-2016	21
		Health and work status 2016	21
		Future avenues	23
		Policy recommendations	23
		Chapter Four. Economic Wellbeing	24
		Key messages	24
		Background	24
		Health and economic wellbeing 2006-2016	24
		Future avenues	25
		Policy recommendations	25
		Chapter Five. Health Behaviours	26
		Key messages	26
		Background	26
		Health behaviours 2006-2016	26
		Future avenues	28
		Policy recommendations	28
		Chapter Six. Housing	29
		Key messages	29
		Background	29
		Home ownership 2006-2016	29
		Health and housing satisfaction 2016	30
		Future avenues	31
		Policy recommendations	31
		Chapter Seven. Caregiving	32
		Key messages	32
		Background	32
		Caregiving 2006-2016	32
		Health and caregiving 2016	33
		Future avenues	34
		Policy recommendations	34
		Chapter Eight. Māori Cultural Indicators	35
		Key messages	35
		Māori identity 2006-2016	35
		Identity and cultural engagement	35
		Future avenues	37
		Future Directions for the New Zealand Health, Work and Retirement Study	38
		Appendix A – New Zealand Health, Work and Retirement Study scientific output 2006-2016	39
		Journal articles	39
		Published Abstracts	41
		Appendix B – Weighted Grand Means for ACE-R Domain Scores	44
		Endnotes	45
		Report Contributors	47
		Contact Details	47

Foreword

National dialogue about New Zealand's ageing population has developed rapidly over recent decades. This period has seen changes in the focus of debates as well as real structural and attitudinal changes toward ageing. Population ageing is a critical and unprecedented demographic change occurring worldwide. This demographic shift has attracted attention to the importance of supporting the health and wellbeing of older persons. International policy responses have largely focussed on encouraging and facilitating older people to maintain positive health-related behaviours and to remain engaged in society, particularly in terms of economic contributions.

In New Zealand, the Positive Ageing Strategy developed in 2001 remains the focus of government policy. This strategy drew on research to date at that time, international policy frameworks, and extensive community consultation to propose ten goals for older people in New Zealand: 1. Secure and adequate **income**; 2. Equitable, timely, affordable and accessible **health services**; 3. Affordable and appropriate **housing** options for older people; 4. Affordable and accessible **transport**; 5. Older people feel safe and secure and can **age in the community**; 6. **Culturally appropriate services** that allow choices for older people; 7. Older people living in **rural communities** are not disadvantaged; 8. People of all ages have **positive attitudes** to ageing and older people; 9. **Employment opportunities** – elimination of ageism and the promotion of flexible work options; 10. Increasing opportunities for **personal growth and community participation**.

The 2014 report on the national Positive Ageing Strategy shows that despite some legislative changes such as those to introduce flexible work options, legal protection of retirement village residents, and ongoing work to improve health care including the provision of community health care services, the broader social changes envisioned and specified in the 2001 document are difficult to achieve in practice. There are ongoing issues with ageism in the workplace and in employment practices, lack of access to community participation in education and training, and lack of affordable and appropriate housing solutions for disadvantaged older people. There is also a strong discourse of intergenerational competition in our society, which threatens younger people and dismisses the current and ongoing contributions of the older generation.

To address these issues and to develop and implement the goals of the Positive Ageing Strategy, we need sound knowledge to provide the basis for clear achievable targets for successful change. For example, current government focus on supporting "age-friendly" communities could support ideals of transport provision, safety, community participation and holistic health outlined in the Positive Ageing Strategy. However, we need more clear and specific evidence-based targets for change in communities across New Zealand.

The New Zealand Health, Work and Retirement (HWR) study has been designed to provide this evidence. The HWR has three core strengths. First, it is a longitudinal study which to date has surveyed the experiences of older people in New Zealand over ten years. Following people across time as they age has more power to provide information about the causal effects of a lifetime of ageing, and of the different environments that support or detract from wellbeing. The newly implemented linkage of HWR data with participant's national health record data enhances the power of the study to identify important contributing factors to healthy ageing. A second strength is that the information is provided by a diverse, randomly-selected cohort of older people drawn from the electoral roll, so that the findings from our studies represent a wide range of New Zealanders. The third strength is the undertaking of an over-sample of the Māori population to ensure representation of Tangata Whenua in the evidence that is produced. The voices of Kaumātua and Kuia must be heard more strongly in national policy and contribute to the ongoing ideals of the New Zealand Ageing Strategy.

This report represents a sample of findings from a group of participants who have been contributing to the HWR surveys over ten years. The experiences of this diverse group of people provide valuable information on the long-term contributions of environmental, social, and personal experiences to healthy ageing. We ask how things have turned out for this group of people after ten years of change, and what are the important factors that are associated with those changes.

The HWR aims to continue to provide focussed targets for change in policy and practice and contribute to new understandings of ageing itself. As we follow representative cohorts of older people into the future, we will garner a better understanding of what is changing about ageing and how society can adapt well to current demographic shifts.

Professor Christine Stephens
Professor Fiona Alpass

Acknowledgements

We would like to thank the agencies who have supported this research into the health and wellbeing of older people in New Zealand, including the **Health Research Council of New Zealand**, the **Foundation for Research, Science, and Technology**, the **Ministry of Science and Innovation**, the **Ministry of Business, Innovation and Employment** and, the **EQC Biennial Grants Programme**.

We would like to acknowledge the contribution of the Health and Ageing Research Team's **Māori Advisory Group** who are engaged as part of a voluntary peer review process on projects that have a focus on Māori populations to ensure that projects are conducted and reported with consideration and respect to Māori participants. This group consists of the team convener (Brendan Stevenson, School of Health Sciences, Massey University) and four community members, including representation by Mana Whenua. In 2016-2017 these roles were filled by Peti Nohotima (Tuhoe; Māori Researcher and Author), John Waldon (Tuhoe, Ngāti Kahungunu, Ngāti Porou; Māori Researcher), Natasha Tassell-Matamua (Te Atiawa, Ngāti Makea ki Rarotonga; Senior Lecturer, Massey University), and Roly Fitzgerald (Rangitane, Ngāti Porou; Māori educator).

The Health and Ageing Research Team would also like to acknowledge the valuable input received through consultation with **stakeholders and end users**, which has helped the study to remain responsive to the questions faced by these departments and interest groups.

The Health, Work and Retirement study is the flagship initiative of the **Health and Ageing Research Team (HART)**. The HART is an interdisciplinary group of researchers who undertake projects related to understanding the health and wellbeing of older New Zealand adults and includes researchers from Massey University's School of Psychology (Professor Fiona Alpass, Professor Christine Stephens, Dr Joanne Taylor, Dr Rachel Pond, Dr Joanne Allen, Dr Agnes Szabo, Ms Vicki Beagley, Dr Gillian Craven, Dr Claire Budge), School of Health Sciences (Professor Steve La Grow, Dr Mary Breheny, Dr Andy Towers, Mr Brendan Stevenson), School of Social Work (Dr Polly Yeung), School of People, Environment and Planning (Associate Professor Juliana Mansvelt) as well as team members from other institutions, including Dr Sally Keeling (Otago University), Dr Judith Davey (Victoria University Wellington) and Dr Jack Noone (University of New South Wales). The HART would like to acknowledge the continued support of the School of Psychology, the College of Humanities and Social Sciences, and Research Support Services at Massey University who have supported the work of researchers and students on the study.

Finally, we would like to thank the **over 11,000 New Zealand residents who have participated** in the study since it began in 2006. Together, these participants have returned surveys, participated in face-to-face cognitive assessments and qualitative interviews, telephone interviews, and provided consent for the study to link to their anonymised national health record data. It is the efforts, generosity and civic mindedness of these individuals that have made possible the body of knowledge about the health and wellbeing of older persons in New Zealand. Thank you.

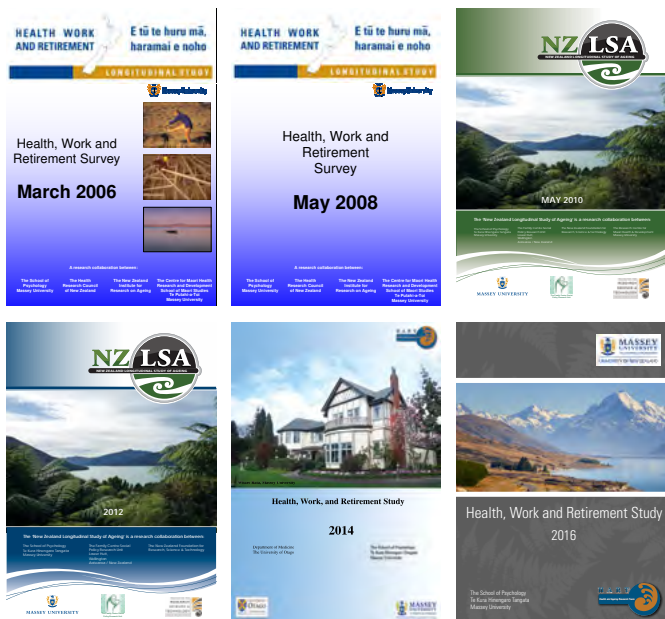


Introduction to the New Zealand Health, Work and Retirement Study

The New Zealand Health, Work and Retirement (HWR) study began in 2006 as the first longitudinal study of ageing of its kind in New Zealand. Modelled after international studies of ageing, including the **US Health and Retirement Study** and the **English Longitudinal Study of Ageing**, the HWR study was designed to examine experiences of health and wellbeing of older New Zealanders and provide capacity to benchmark this population against a range of health and wellbeing indicators, internationally.

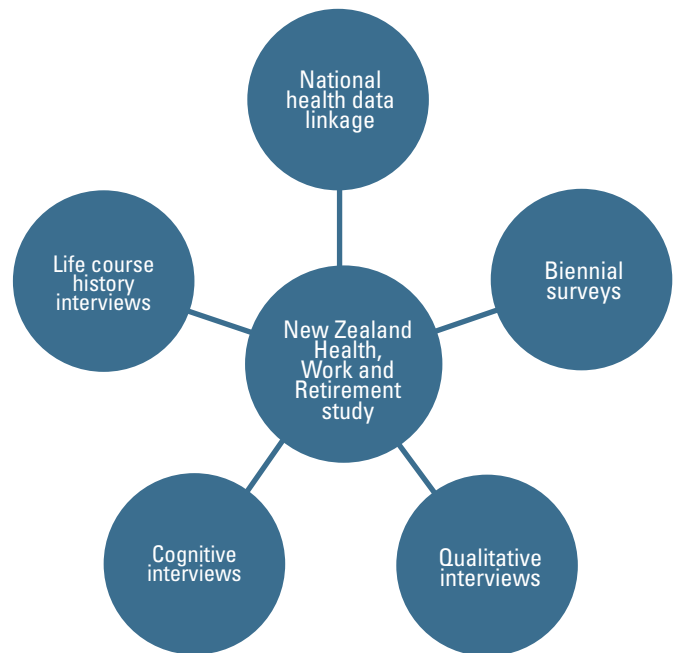
SIX BIENNIAL SURVEYS 2006-2016

At its core, the study is a survey of the experiences of ageing in New Zealand completed every two years by a large sample of older New Zealanders, who are randomly selected from the electoral roll. An over-sample of people of Māori descent is undertaken to ensure adequate representation of this important group. The survey is designed to investigate ageing within three broad areas: **health and wellbeing** (e.g., physical, emotional, cognitive); **social participation** (e.g., family support, social capital, participation); and **economic participation** (e.g., meaning of work, employment, retirement). To respond to issues of current concern to New Zealand, each survey also has a section providing a more in-depth examination of an issue of current focus in New Zealand. In 2016, the survey had a focus on housing and neighbourhood quality.



MULTIPLE METHODS

In addition to the biennial survey, the study has conducted off-wave surveys to assess retirement (2009) and social and internet connectivity (2013), face-to-face assessments of cognitive performance (2010 and 2012), and in depth qualitative interviews on a range of issues. More recently the study has approached participants for consent to link study data to their anonymised national health records. To date, the study has involved over 11,000 participants who have in total completed and returned over 24,000 postal surveys. In addition to the biennial survey, the study has conducted off-wave surveys to assess retirement (2009) and social connectivity (2013), conducted over 1,903 face-to-face assessments of cognitive performance (2010 and 2012), in-depth qualitative interviews on a range of issues, and over 800 telephone interviews regarding participants' early and mid-life experiences (2017). More recently over 3,500 participants have provided consent for the study to link to their anonymised national health records.



MULTIPLE COHORTS

Participant cohorts in the HWR study have been drawn from random samples of people aged 55 years and over who are listed on the New Zealand electoral roll, on which around 97.6% of eligible voters aged over 50 years are enrolled. Since its launch, participants in the HWR study have been re-approached every two years to complete the survey. As illustrated in Table 0.1, additional cohorts have been recruited to the study over time to both broaden and maintain the capacity of the study to represent the experiences of older persons in New Zealand.

This ongoing recruitment enables the study to remain sensitive to changes in the experiences of ageing in New Zealand, which may differ between age groups who are impacted differently through events and policies that have occurred during their life course.

The 2016 survey marked a decade of follow-up with the original cohort of older New Zealanders, first recruited in 2006 aged 55-70, now aged 65-80. Over this decade, the majority of study participants have moved from being engaged full-time in the workforce, into retirement, or at least its modern equivalent. The continued participation of these older New Zealanders in the study has allowed the development of a resource which is unique in its ability to describe key transitions associated with later life.

Table 0.1. Cohorts included in each wave of the Health, Work and Retirement study surveys and face-to-face cognitive assessments 2006-2016.

COHORT Year (N Recruited)	2006 Survey	2008 Survey	2010 Survey	2010 Cognitive Interview	2012 Survey	2012 Cognitive Interview	2014 Survey	2016 Survey
2006 (n = 6,661)	✓	✓	✓	✓	✓	✓	✓	✓
2009 (n = 1,980)	–	–	✓	✓	✓	✓	✓	✓
2010 (n = 568)	–	–	✓	✓	✓	✓	–	–
2014 (n = 773)	–	–	–	–	–	–	✓	✓
2016 (n = 1,271)	–	–	–	–	–	–	–	✓

Note: At recruitment, participants sampled in 2006 were 55-70 years of age, those sampled in 2009 and 2010 were 50-84 years of age, and those sampled in 2014 and 2016 were 55-65 years of age. The 2010 cohort was recruited for a subproject, known as the New Zealand Longitudinal Study of Ageing (NZSLA) which was not continued after 2012.



Impact of the New Zealand Health, Work and Retirement Study

One of the original aims of the HWR study was to grow the scientific knowledge-base on issues of ageing in New Zealand. The longevity of this study has paid off in terms of cumulative productivity. As illustrated in Figure 0.1, the outputs of the study have been growing steadily, with peer reviewed results and insights published and disseminated through 61 journal articles, 40 conference proceedings and 16 book chapters. In addition, several doctoral and masters students have completed research theses utilising HWR data and supervised by members of the Health and Ageing Research Team. The development of research skills relevant to ageing in these students remain some of our most important achievements as their progress represents meaningful increase in research capacity in the field of ageing in New Zealand.

The study has provided annual reports to funding bodies, as well as reports to Treasury and the Health Promotion Agency. These latter reports provide insights into the economic issues for older persons, their connectedness to health and social resources in a digital age, choices around housing, and the experiences and recovery following the Canterbury earthquakes of 2010-2011.

Reports tailored to provide information relevant to policy issues for older people, such as acceptability of telehealth, the balance of work and care provided by older caregivers, and the impact of housing tenure on wellbeing for older adults, have been disseminated to end users. The project has enabled New Zealand researchers to engage in high profile international collaborations with world leaders in ageing research, placing New Zealand research on a world stage and promoting discussion around issues of ageing for older New Zealanders in these fora.

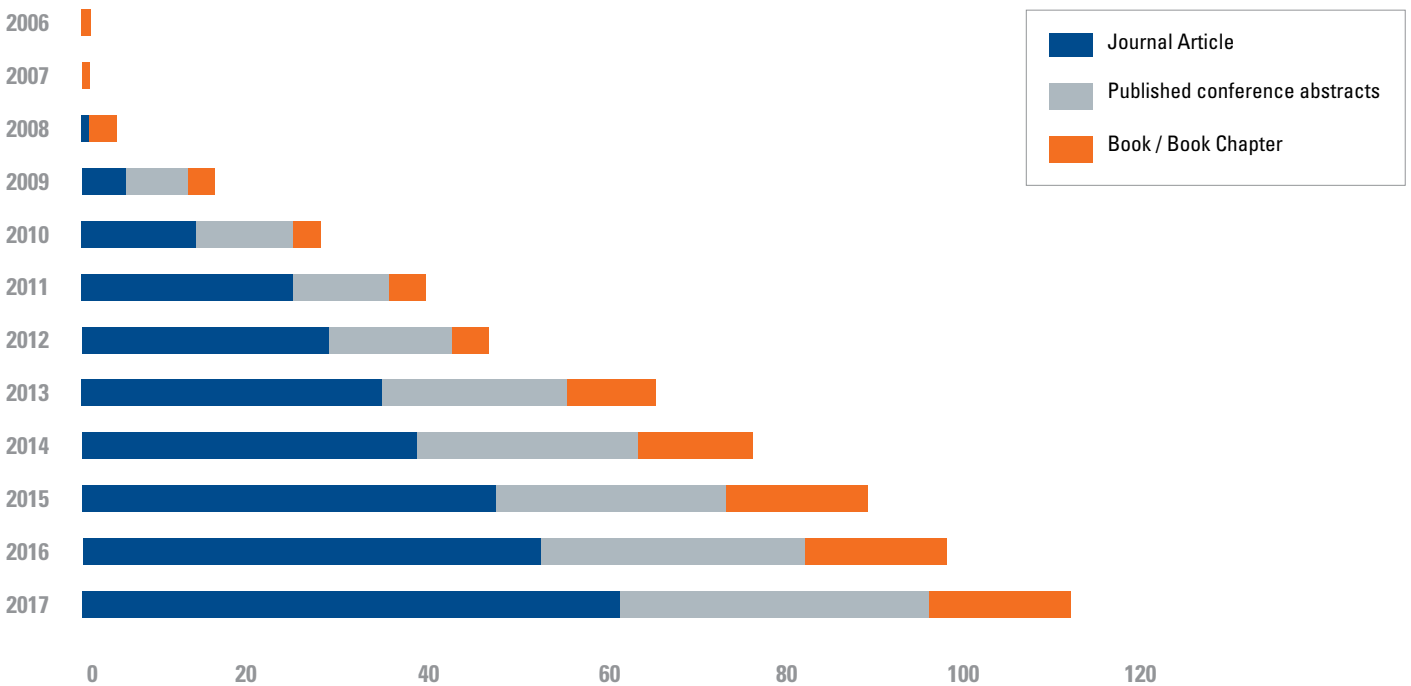


Figure 0.1. Cumulative scientific output of the New Zealand Health, Work and Retirement Study 2006-2017. References listed in Appendix A.



The Current Report

The focus of the current report is to highlight key findings using data from the original HWR cohort recruited in 2006. Each section outlines findings on a key issue over the period spanning 2006-2016. As illustrated in Figure 0.2 by the position of the 2006 cohort within the New Zealand population in 2006 and 2016 (lighter bars), data from this cohort provide a unique opportunity to describe the entry of the 'baby boomer' generation into and through early and middle older ages associated with transitions such as retirement, changes in health behaviours, and caregiving.

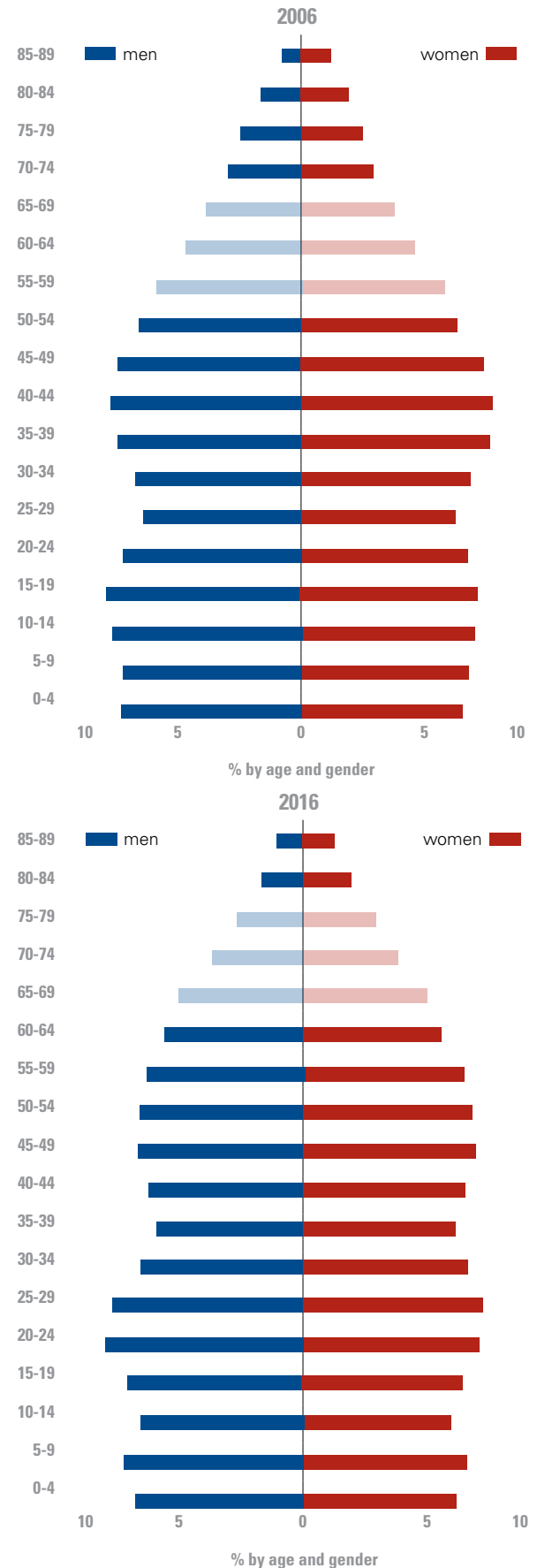


Figure 0.2. New Zealand population distribution by age and gender in 2006 and 2016. Age ranges represented by the 2006 Health, Work and Retirement study cohort appear lighter.

THE 2006 COHORT

The 2006 HWR study cohort comprises people aged 55-70 who were randomly sampled from the New Zealand electoral roll. An oversample of persons indicated on the roll as being of Māori descent was undertaken to ensure adequate representation of this important sub-group in the survey; 6,661 New Zealanders responded to the initial survey and around 46% of these indicated that they were interested in participating in a longitudinal cohort and were re-approached for participation every two years. Figure 0.3 illustrates the number of longitudinal respondents who returned the survey at each wave of the study by gender and Māori descent.

Participants in the 2006 cohort were included in the current report if they provided data on their physical, mental and social health at two or more biennial survey waves. Data from 2,483 participants met these criteria. On average these participants responded to five of the six surveys, with almost half (45.1%) responding at all six surveys 2006-2016.

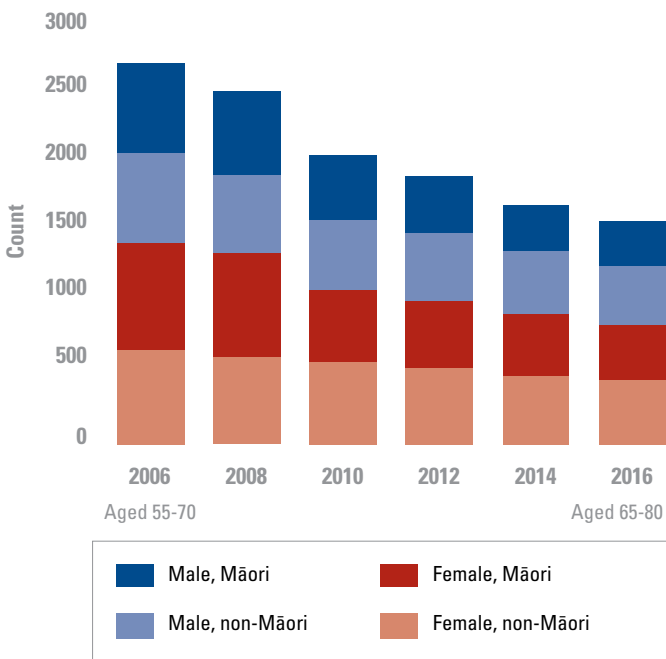


Figure 0.3. Number and composition of the 2006 longitudinal cohort by response year.

In 2006, these participants were aged 55-70, had a mean age of 61 years and 54% were female. When asked what ethnic groups they belonged to, 50.7% responded New Zealand European, 46.5% Māori, and 2.8% other ethnicities. As illustrated in by the breakdown of number of participants by area in Figure 0.4, all districts of New Zealand are represented in this sample of respondents.

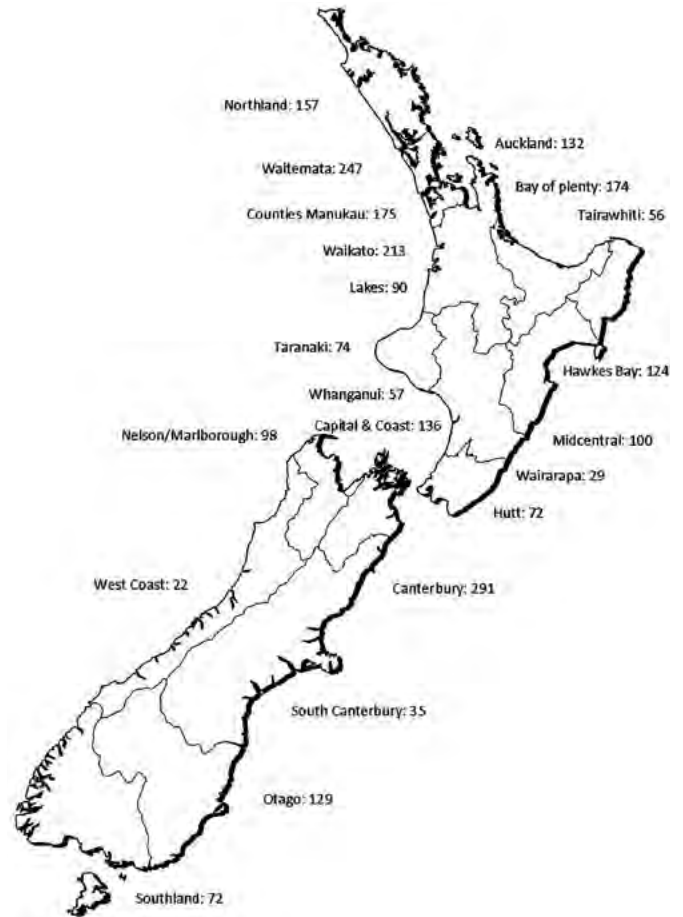


Figure 0.4. Location of 2006 longitudinal cohort by health district at time of recruitment to the Health, Work and Retirement Study.

ANALYTIC APPROACH TO THE REPORT

This report identifies groups of people within the longitudinal sample (using growth mixture modelling⁶) who have similar health trajectories over the 2006-2016 period in terms of their physical, mental and social health. These groups are described in the first chapter, ‘Healthy Ageing’, in terms of their common health trajectories over time and their demographic characteristics.

Each of these groups has a range of different factors influencing their members’ wellbeing. Accordingly, the remaining chapters focus on the experiences of each health profile group in cognitive functioning, economic wellbeing, health behaviours, housing, work status, caregiving and cultural engagement. Chapters two through eight outline the longitudinal trends observed on each key issue, highlight what more can be done with future research using the HWR study, and provide recommendations for how these findings can address the goals of relevant national strategies on ageing.

The analysis strategy adopted for this report addresses common flaws in longitudinal studies of health and ageing. Firstly, it acknowledges that experiences of health vary greatly between older adults. Traditional analysis strategies which are based on describing ‘average’ experiences and health states do not acknowledge this,

but rather provide a summary of overall trends among all older people. This limitation is perhaps exacerbated in longitudinal population surveys, which run a particular risk of under representing groups who face barriers to participation, such as those in poor health, and over representing groups who are more motivated or who face fewer barriers to response.

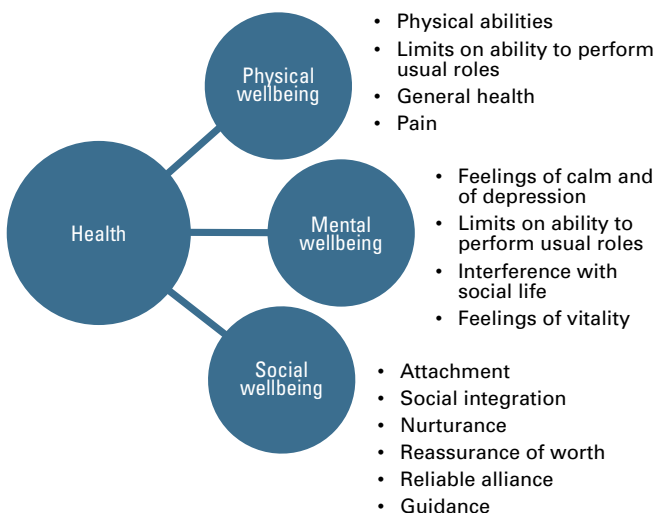
Secondly, this strategy acknowledges that ‘healthy ageing’ is not well represented by physical wellbeing alone. The Constitution of the World Health Organisation⁷ defines health as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”, highlighting health as a physical, mental and social experience. Its reference to health as a state of ‘well-being’ in contrast to an ‘absence of disease or infirmity’ acknowledges that positive health states have value and present a goal for personal and public health care. This multi-dimensional view, emphasising the value of positive health states is particularly pertinent for studies of ageing, in which physical health changes may be considered a normal part of ageing and are not the sole area of concern.

CORE MEASURES

This section provides an overview of the core study measures utilised in the report.

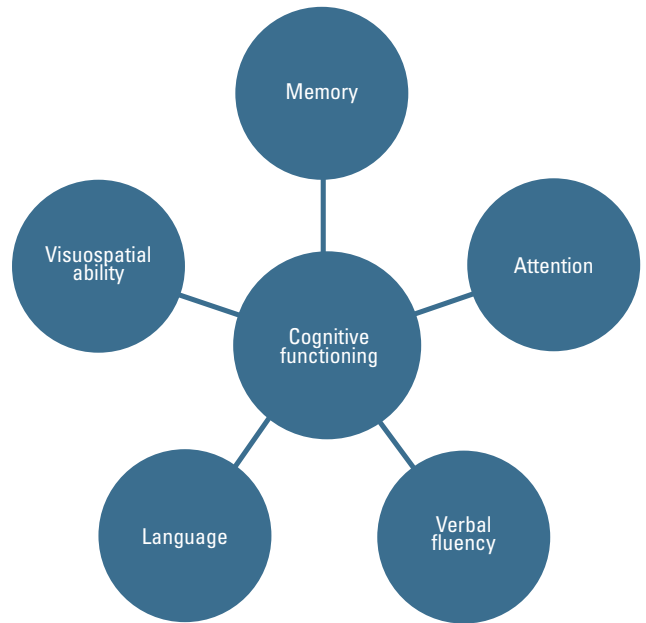
HEALTH: PHYSICAL, MENTAL, SOCIAL

Physical health and mental health are assessed through the Australian and New Zealand form of the SF-12. Normative physical and mental health scores for the New Zealand population, derived from the 2008 General Social Survey, and factor score coefficients derived from the 2006-07 New Zealand Health Survey⁸ are utilised in the report. Social health was measured using the Social Provisions Scale, which assesses important properties of interpersonal relationships.



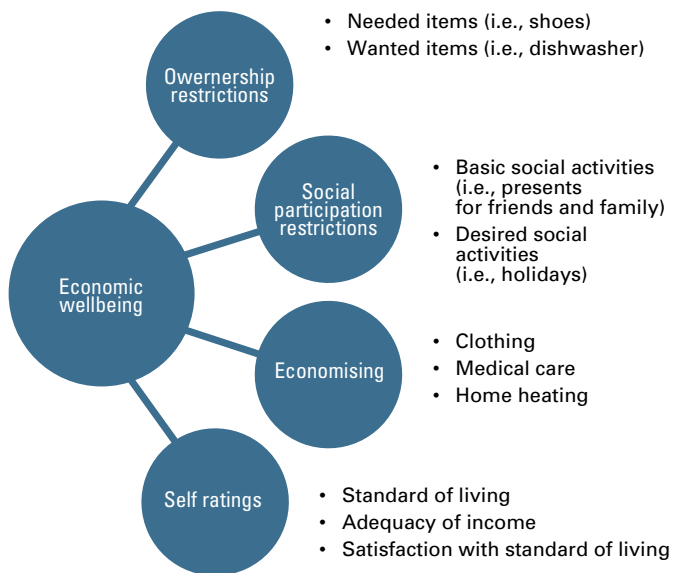
COGNITION

The New Zealand adaptation of Addenbrooke’s Cognitive Examination–Revised (ACE-R) was used to assess cognitive performance during face-to-face interviews with a random selection of HWR participants in 2010. These people were then re-interviewed in 2012. The ACE-R assesses areas of memory, attention and orientation, verbal fluency, language, and visuospatial performance.



ECONOMIC WELLBEING

Economic wellbeing is assessed using the Economic Living Standards Index Short Form⁹ - a measure of economic living standards tailored for use in New Zealand. This 25-item measure asks participants to rate levels of consumption and personal possessions including consumer goods, social participation, economising, and global self-ratings of living standards. Higher scores indicate better living standards which are then classified into seven groups, those experiencing severe hardship, significant hardship, some hardship and those who are fairly comfortable, comfortable, good, or very good standard of living. It is considered particularly useful for assessment of material wealth for older New Zealand adults, who are able to access universal superannuation following retirement and whose income may not be a good reflection of the adequacy of their material wealth.



HOUSING

Participants were asked to report the ownership arrangements of their primary residence (e.g., *home ownership, rental, other tenure arrangements*) and to nominate the type of residence that best describes their primary residence (e.g., *detached house or townhouse; semi-detached house, townhouse, unit; unit, villa or apartment in Retirement Village etc.*). In 2016, participants were asked to rate their level of agreement to several statements in relation to their present home on a scale of 'No, definitely not' (1) to 'Yes definitely' (5), including: *I am worried about finding a suitable place to live; I feel safe at home; My house is difficult for me to maintain; I am able to keep my house warm; My house is easy for me to clean; I am satisfied with my house.*

WORK, RETIREMENT AND JOB SATISFACTION

At each survey, participants nominated whether they were in full-time or part-time paid employment, retired, a homemaker, unemployed, or had an 'other' employment status. If currently in paid employment, they were asked how many hours per week they work and their current occupation. In 2010, participants were additionally asked to report their main occupation between the ages of 30-65. In 2016, when participants were aged 65-80, those who were still in paid work rated their agreement with statements regarding their current job satisfaction (*I feel fairly well satisfied with my present job*), job engagement (*work should only be a small part of one's life*), career satisfaction (*I am satisfied with the progress I have made toward meeting my overall career goals*), job stress (*I find my job to be very stressful*) and work-family conflict (*my job makes it difficult to be the kind of spouse or parent I'd like to be*).

CAREGIVING

Participants were asked whether they provided unpaid care to at least one other person, the number of people they cared for, their relationship to the care recipient, whether they lived with the care recipient, the age of the care recipient, the duration for which they had provided care, and the primary health condition experienced by the care recipient.

HEALTH BEHAVIOURS

Participants reported their current and past use of alcohol and tobacco. Alcohol use is assessed using the Alcohol Use Disorders Identification Test (AUDIT-C). Physical activity has been assessed since 2010 using the Physical Activity Questionnaire (IPAQ-SF), with participants asked to report the frequency with which they engage in mild, moderate and vigorous activity.

MĀORI IDENTITY AND CULTURAL ENGAGEMENT

At each wave, participants are asked which ethnic group or groups they belong to, including Māori. Participants who identify themselves as having Māori ancestry are asked questions regarding knowledge of whakapapa, te reo Māori, and engagement with whānau. From 2012, additional questions about engagement with marae and roles held on marae were included.

QUOTATIONS

The quotations used to bring a human voice to the data are provided by participants in the "ELSI Elder" study of the economic living standards of older people (funded by Ministry of Business, Innovation and Employment, 2009-2012). One hundred and fifty older New Zealanders were interviewed about their experiences and needs as they aged.

Executive Summary

Results from the first 10 years of the HWR indicate that people are more likely to age with good physical, mental and social health if they also have greater economic wellbeing, satisfying and higher status work, home ownership, and housing satisfaction. Older people with poor physical, mental and social health are more likely to be experiencing economic, employment, housing and care problems. They are more likely to be in situations which may worsen poor health and are more likely to have high health-care needs in the future. Attention to the resources and living environments of vulnerable groups of older people will contribute to healthy ageing for all New Zealanders.

- Five distinct ageing profiles were identified based on 10-year trajectories of physical, mental, and social health: *Robust*, *Average Good Health*, *Declining Physical Health*, *Mental and Social Health Limitations*, and *Vulnerable Health*. These health profiles were related to early mortality, cognitive functioning, and health related behaviours. Importantly for policy considerations, the different levels of wellbeing were also related to economic resources, work life, caregiving, and housing ownership and quality.
- Those in *Robust* and *Average Good Health* display advantages in cognitive performance compared to other groups and there is evidence of lower memory and verbal fluency performance for those older adults who are *Vulnerable* or have *Mental and Social Limitations*. We need future follow up to identify who is more at risk of cognitive decline.
- Participants in *Robust* health are by far the best off economically. In contrast, only 17% of participants with a *Vulnerable Health* profile had good economic living standards.
- People with *Vulnerable* long term health are less likely to be in any form of employment. Workers with *Robust* long term well-being are more likely to be in professional occupations and derive greater satisfaction from their work.
- Home ownership is high and stable in this cohort. However, those whose physical, mental and social health is consistently poor across time (those in *Vulnerable* health) are more likely to be renting and are most likely to report problems with safety, keeping warm, house maintenance and cleaning.
- Around 20% of participants provide care at any one time. Caregivers are more likely to be in the *Vulnerable* or *Mental and Social Limitations* groups and this may represent a selection bias into the role rather than the stresses of caregiving.
- Over ten years, around 25% of participants of Māori descent identify only as Māori. Half of those of Māori descent report both Māori and other ethnic identities, while the last quarter changed, sometimes reporting a core Māori identity and sometimes another ethnic identity. These findings reflect the beginning of work to refine understandings of Māori identity for older persons beyond ethnicity or descent, and the relationship of Māori cultural identity to health and wellbeing over time.



Chapter One. Healthy Ageing

KEY MESSAGES

- Five distinct longitudinal health profiles were identified based on 10-year information about physical health, mental health, and social health.
- Two thirds of the participants arrived at older age in very good health.
- Approximately 85% of older adults in the study maintained good mental and social health over the 10-year period.
- Having physical health problems does not exclude good mental and social health.
- Those with poor physical, mental and social health were at greatest risk of early mortality.

BACKGROUND

Three important aspects of wellbeing valued by older people are physical, mental and social health. Physical health includes freedom from illness and disability and the maintenance of good physical functioning. Mental health includes happiness and freedom from chronic experiences of negative mood. Social health is about positive social relationships, engaging with other people, and participating in society.

Achieving good physical, mental and social health will support healthy ageing; however, many people report good quality of life and high levels of wellbeing, while coping with physical, mental and social difficulties. Indeed, not all people arrive at older age in good health and many have experienced lifelong disabilities or health difficulties. Furthermore, older age is often a time of change and social loss, and the inevitable physical changes of older age must be acknowledged.

We have examined the different levels of physical, mental and social health reported by our participants across ten years, to show how initial levels of health affect ageing trajectories. We then consider demographic factors which can affect people's ability to maintain good health in older age.

So I can't sort of stand up straight really. And last year I had a slight stroke in August. A slight one but it set me back a little bit in that respect. . . . But last year I was finding it quite... I was finding it hard to get around. Even feeling nervous walking around by myself, like taking a walk. I felt look a bit tottery - I might be pushed over, and grab my handbag or something. I was feeling a bit nervous about that."

HEALTH 2006-2016

The HWR identified five distinct longitudinal health profiles of older New Zealanders based on changes in their physical, mental, and social health from 2006 to 2016:



Vulnerable Health. 8.7% of participants were categorised as vulnerable because they reported very poor physical and mental health, and low social health.



Mental and Social Health Limitations. 11.8% of participants reported good physical health but poor mental health along with low social health.



Declining Physical Health. 17.5% of participants had good mental health and social health but reported poor physical health, which further declined over time.



Average Good Health. Approximately one third of participants (31.4%) had average physical and mental health, which remained stable over time. Their social health was lower than the average.



Robust Health. Another third of participants (30.6%) were characterized as having **Robust Health** as they reported good physical and mental health and high levels of social health.

Two in every three older New Zealanders in the 2006 cohort reported good health, as evidenced by their membership in the Robust or Average Good Health groups. Furthermore, a substantial proportion of those with physical health limitations have good social health and good mental health, as indicated by their membership of the Declining Physical Health group.



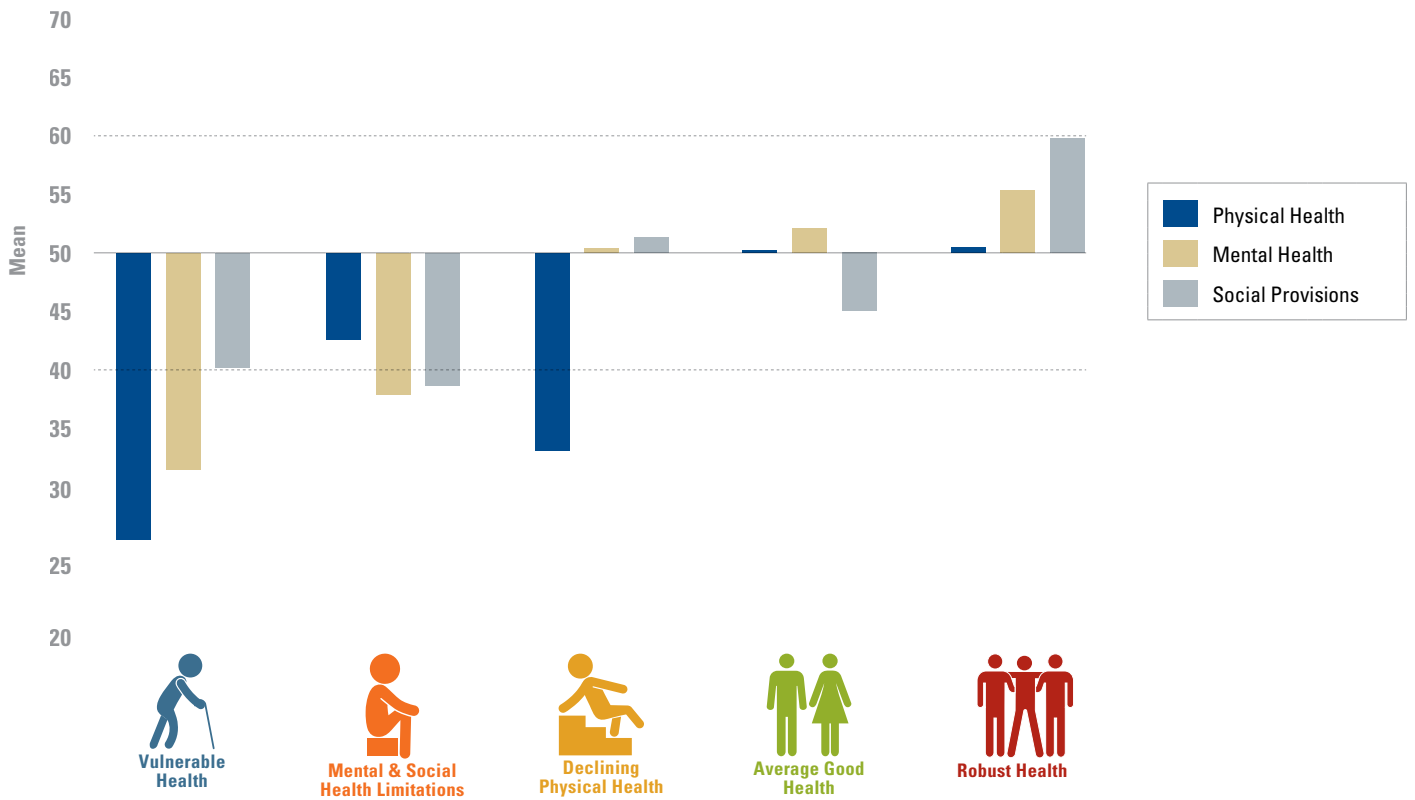
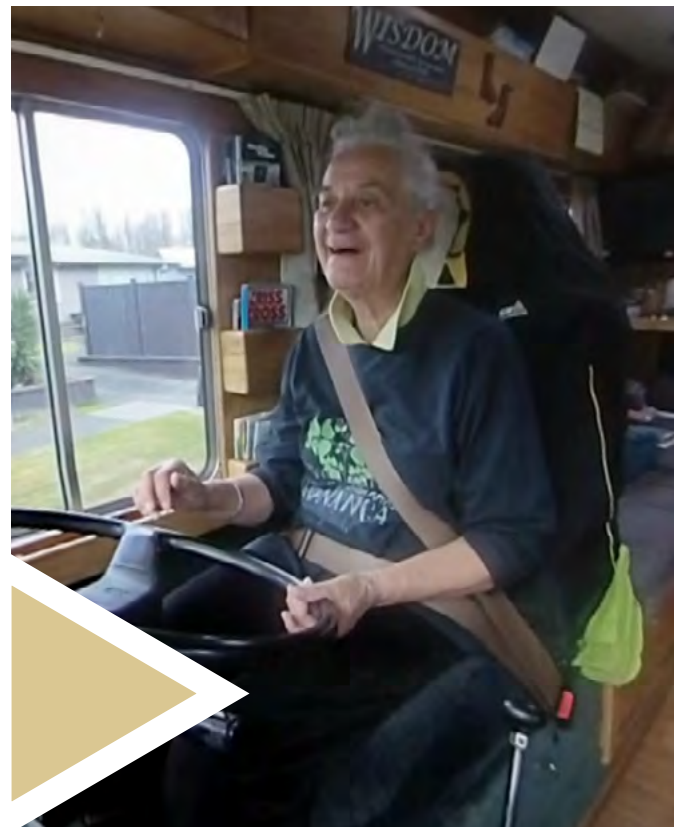


Figure 1.1. Mean physical, mental, and social health reported over 10 years by longitudinal health profile.

Note: A score of 50 in Figure 1.1 indicates average levels of physical, mental, and social health. Dotted lines indicate the lower and upper bounds of a 1 standard deviation interval from the average score, with longer bars indicating greater deviation from the average in both directions.

Figure 1.1 shows how these groups differ from the average score of the whole sample on physical health, mental health and social health scores. For example, the *Robust Health* group maintains above average physical health, while those with *Declining Physical Health* drop from average levels of physical health to below average across the ten years. This group, along with those who are *Vulnerable*, will require more attention and support to maintain physical health as they age.



"Comfortable home, family, friends, people round them, being able to pursue the things that you really like doing like there's music for me and reading, not having to worry about money, I know people who have to worry about their rates and things like that, security's a big thing."

"I like uniting with my children but always restricted as no transport. So mostly I would just stay home. So end up usually never leave the house and just live by myself alone in the house."

HEALTH, AGE, GENDER, AND EDUCATION

To understand which social and demographic factors may promote, or hinder, healthy ageing we examined differences between the longitudinal health profiles in terms of participant’s age, sex, and education. Figure 1.2 presents the demographic characteristics of each group.



Figure 1.2. Demographic characteristics by longitudinal health profile.

Age: There was little variation between the longitudinal health profiles in terms of age. Those in *Robust Health* were slightly younger on average than those in other groups, however they did not differ from those in the *Vulnerable* group who were in the poorest health. There were no differences among the *Average Good Health*, *Mental and Social Limitations*, *Declining Physical Health* or *Vulnerable* profiles in terms of age. These findings suggest that age is not a strong driver of health status among this group of older persons and that other factors may have a greater influence on experiences of health over a ten-year period among this cohort.

Sex: In terms of the overall sample, men were more likely to be in *Average Good Health* (34.9% of men) than were women (28.3% of women). Similarly, women in the sample were more likely to be characterized by *Declining Physical Health* (19.8% of women vs. 14.8% of men) and *Vulnerable* (9.3% of women vs. 8.1% of men). These results suggest that men generally reported better health outcomes over time than women in the HWR cohort.

Education: Those in *Robust Health* had the most formal education, followed by those with *Average Good Health*, *Declining Physical Health*, and *Mental and Social Limitations*. Participants in the *Vulnerable Health* profile had the least formal education. These results suggest that higher lifetime education attainment is associated with better health outcomes in older age.

MORTALITY

Our analyses indicated that those with a *Robust Health* profile were more likely to survive over the 10-year follow-up period, followed by profiles displaying *Average Good Health*, *Mental and Social Limitations*, and *Declining Physical Health* (Figure 1.3). Those with a *Vulnerable Health* profile were at a disproportionately higher risk of mortality over the ten-year period than older adults characterized by any other health profile. This suggests that limitations in physical health, mental health, and social health are not simply additive but represent risk factors with multiplicative effects.

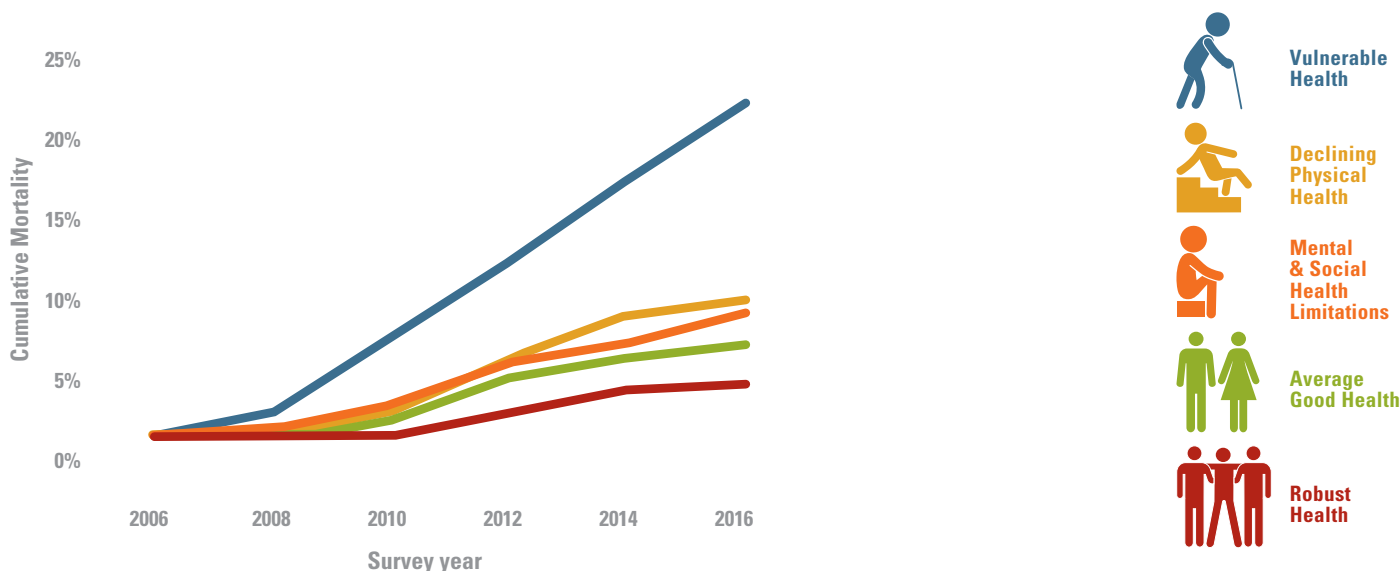


Figure 1.3. Cumulative mortality over time by longitudinal health profile.

FUTURE AVENUES

Current discussions around ageing and health emphasise flexibility and adaptation to life changes as key factors influencing the ability to achieve optimal wellbeing in old age. In recent data collection waves, the HWR study has focussed on environmental influences (such as housing, neighbourhoods, and access to economic resources) on people's ability to access support and participate in the wider community without restrictions.

Ageing is a life-long project. Significant life events and disadvantages accumulated over the life course need to be taken into account when defining and evaluating ageing outcomes. In 2017, the 2006 HWR cohort participated in interviews about their experiences throughout their life course to date, which will assist us to understand the influence of earlier life events on ageing and health.

POLICY RECOMMENDATIONS

The current policy focus in New Zealand on 'positive ageing' is in line with international focus in research and policy on promoting healthy, active and optimal ageing. Although the concept of 'positive ageing' (and associated descriptions of 'successful' or 'active' ageing) has been influential in research and policy making, it has been critiqued for the implications that people who have disabilities or chronic illnesses cannot age well.

The World Health Organisation's Global Report on Ageing and Health¹⁰ has responded to these critiques to develop a policy framework that will influence the future development of global policies for ageing and wellbeing. The report defines healthy ageing as "the process of developing and maintaining the functional ability that enables well-being in older age. Functional ability comprises the health related attributes that enable people to be and to do what they have reason to value. It is made up of the intrinsic capacity of the individual, relevant environmental characteristics and the interactions between the individual and these characteristics." (p. 29). This has at least two important implications for policy to support healthy ageing in New Zealand.

Firstly, the recognition that people arrive at older age with different levels of health and functioning that are the result of a lifetime of structural and physical effects. Those who are already vulnerable to poor health and have low social support will require environmental support to maintain wellbeing and optimum functioning. Those with *Declining Physical Health* may be supported to maintain mental and social health.

Secondly, the WHO report shifts the focus from physical and mental health as sole outcomes, to wellbeing and the importance of the environment in maintaining functional ability. The importance of education to the wellbeing of older people is an example of a significant environmental variable that requires more focussed policy attention. Similarly, opportunities for participation and their relationship to wellbeing will be an important policy focus.

Chapter Two. Cognition

KEY MESSAGES

- The HWR has enabled international benchmarking of cognitive performance of New Zealand older adults.
- Those in *Robust* and *Average Good Health* display advantages in cognitive performance compared to other groups.
- There is evidence of poorer memory and verbal fluency performance for the *Vulnerable* and poorer memory, verbal fluency and language performance for those with *Mental and Social Limitations*.

BACKGROUND

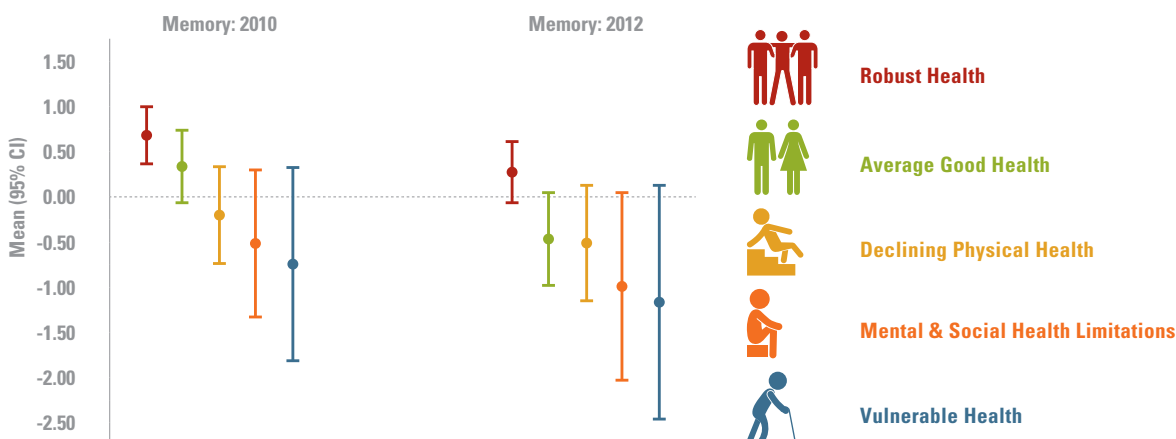
While not considered a normal part of ageing, declines in cognitive functioning are of concern for many older adults and can be an early indicator of dementia. With an increasing ageing population, early identification of persons experiencing or at risk of cognitive decline is a key challenge for New Zealand health care. Understanding the degrees of cognitive functioning and impairment with age in New Zealand has significant policy implications in terms of planning and expenditure. Additionally, it is important to understand which areas of cognitive performance, such as memory, attention and language, may have different relationships with health.

Despite their social and economic importance, there is a lack of data regarding cognitive functioning, dementia and related factors such as health service use and informal caregiving among older adults in New Zealand. This represents a significant gap in the knowledge required for understanding current and future health needs of the population. In response, the HWR conducted face to face cognitive assessments with a random sample of participants in 2010 and again with these same participants in 2012.

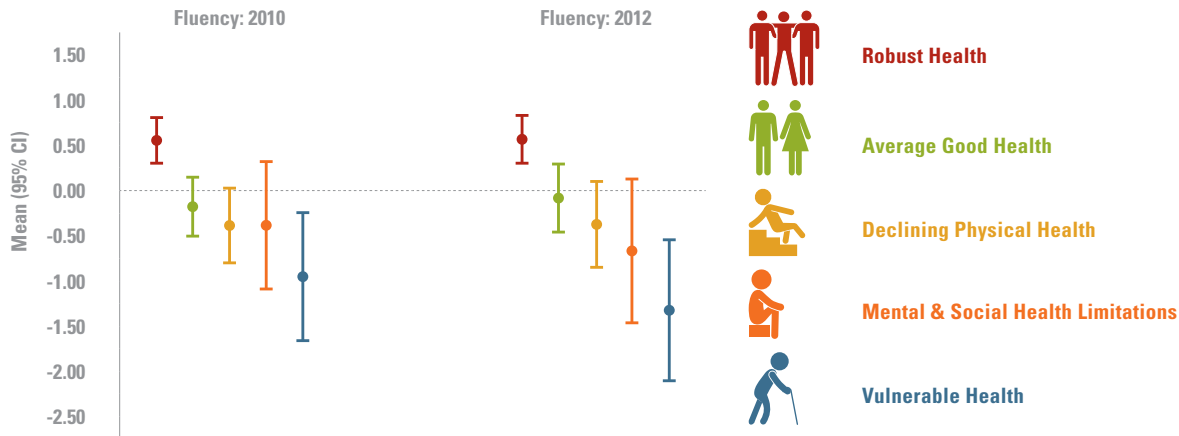
To date, the HWR has been used to develop and disseminate New Zealand normative data for the Addenbrooke's Cognitive Examination - stratified by age, gender, and New Zealand European or Māori ethnicity¹¹ - and to compare cognitive functioning of New Zealanders with older people in the US¹². This section will examine the association of cognitive performance in HWR participants with their longitudinal health profile.

HEALTH AND COGNITIVE PERFORMANCE 2010-2012

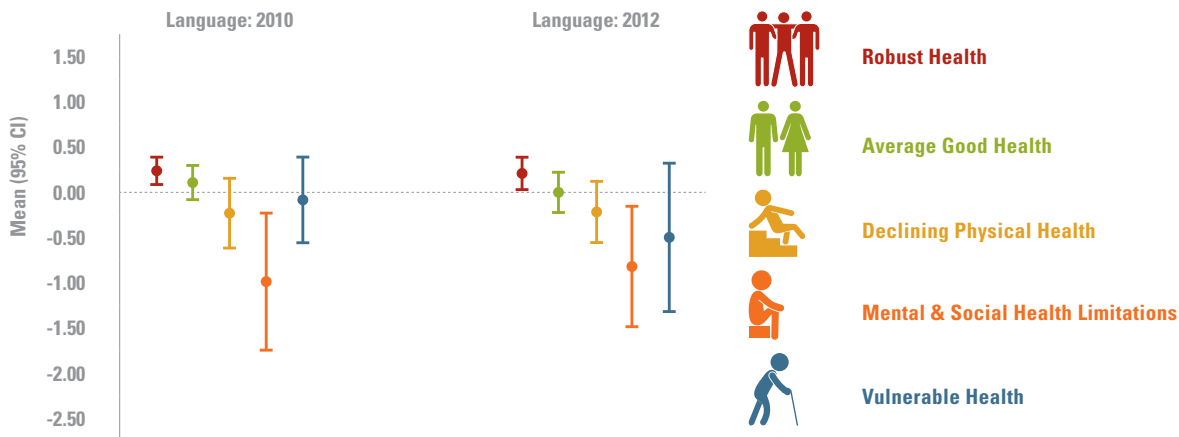
Data were from 612 participants in the current report sample who completed a face-to-face cognitive interview. Performance in each health profile was compared for each cognitive domain for assessments in 2010 and 2012. To facilitate comparison of results across cognitive domains, the figures reported here are centred using a grand mean for each cognitive domain. Grand mean values were derived from all participants aged 58-76 who completed a cognitive interview in 2010 and 2012, with values weighted for the number of times the participant was interviewed (Appendix B). As such, a value of zero represents the mean performance of participants in each domain.



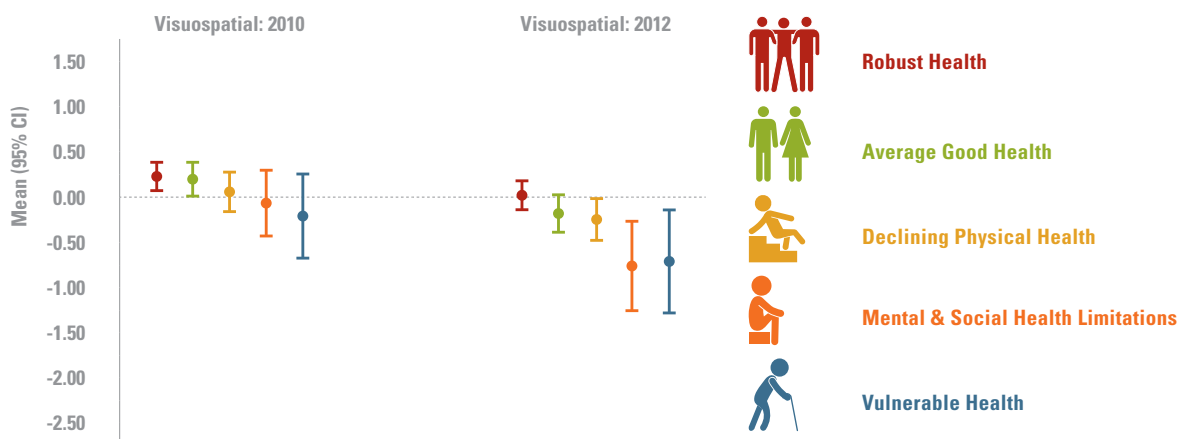
The groups did not differ in performance on attention tasks. Those who were *Vulnerable* and those who had *Mental and Social Limitations* performed worse on memory tasks than those in *Robust Health*. This difference was not apparent at the 2012 assessment.



Those who were in *Robust Health* performed better on assessments of verbal fluency than all other groups. Additionally, by 2012, those in *Vulnerable Health* performed worse than those in *Average Good Health*.



Those with *Mental and Social Limitations* performed worse on assessments of language ability than all other groups. However, in 2012 this group only performed significantly worse than those in *Robust* and *Average Good Health*.



Those who were *Vulnerable* and those who had *Mental and Social Limitations* performed significantly worse on visuospatial performance than those in *Robust Health*.

FUTURE AVENUES

Much more can be learned from continuing to follow-up the cognitive performance in the HWR study as participants age. While the current results demonstrate consistency in the relative performance of the health profile groups over the 2010-2012 period, further assessment is needed to track progress in the long term. The current data, collected during participants' early old-age, will help us to understand the demographic, health and social characteristics of those who experience cognitive decline as the cohort enters advanced ages.

Recent international studies have indicated that loneliness is a risk factor for dementia ten years prior to the emergence of cognitive symptoms and diagnoses, suggesting that loneliness may be a risk factor or early marker of cognitive decline. This connection will be the basis of a study with our international collaborators. In combination with data from the HWR surveys and HWR national data linkage project, the HWR is well placed to extend this research in the New Zealand context.

Finally, the current results indicate that those with poor mental and social health (i.e., those with *Vulnerable* and *Mental and Social Limitations* health profiles) displayed poorer performance in multiple cognitive domains. Follow up assessments with study participants in the future would determine whether poorer cognitive performance preceded the health deficits reported by these groups or emerged following decline in physical, mental and social health.

POLICY RECOMMENDATIONS

It is a goal of the New Zealand Positive Ageing Strategy that older people can age in the community and that they have accessible and equitable access to services. The current findings provide an important layer of information about the disadvantages experienced by people in poorer health, specifically, that they represent a group who are more likely to experience poorer cognitive performance. Allocation of additional resources to engaging these groups with services and interventions, as well as increased awareness of these risks by service providers, will help reduce unnecessary barriers to access.

Additionally, the need to avoid ageist stereotypes and preconceptions is a key issue emerging from the WHO World Report on Ageing and Health¹³, as well as being encapsulated in the Positive Ageing Strategy aim that people of all ages have positive attitudes to ageing and older people. These results encourage us to both consider the heterogeneity of cognitive performance among older people and its association with health, but also illustrate that the older adults generally displayed a high level of cognitive functioning. In conjunction with prior reports from the HWR indicating that older New Zealand adults display better cognitive function than those in the US¹², these findings may be used to combat negative beliefs about cognitive functioning with advanced age, which may pose barriers to engagement and positive regard for older adults in New Zealand.



Chapter Three. Work and Retirement

KEY MESSAGES

- Workforce participation decreases as people age, while part-time employment remains steady.
- People with poorer health are less likely to be in any form of employment.
- Workers with *Robust Health* over ten years are more likely to be in professional occupations and derive greater satisfaction from their work.

BACKGROUND

The participation of older New Zealanders in the workforce has been rapidly increasing over the past three decades. The labour force participation rate for the over 65 age group almost trebled from 1986 to 2006¹⁴. New Zealand public policies, including the removal of compulsory retirement, legislation to discourage age discrimination, and universal superannuation¹⁵, contribute to New Zealand having the second highest employment rate of older workers (aged 55-64) in the OECD¹⁶ and the fourth highest in the 65 to 69 age group. However, work participation rates do decline after age 55, while unemployment rates among older workers are growing in New Zealand. Despite current policy emphasis on the importance of older workers to the economy, and some legislative and organisational provisions, there remain problems of retention of older people in the workforce.

WORK STATUS 2006-2016

Longitudinal trends in work and retirement status among the HWR sample are shown in Figure 3.1. Over 67% of participants were in some form of paid employment in 2006 when participants were aged 55 to 70 years, while 20% were fully retired. Labour force participation in the sample dropped over the 10-year period, with full-time employment down from 43% in 2006 to 14% by 2016, while full-time retirement increased from 21% in 2006 to 61% in 2016 (with participants now aged 65 to 81 years). Part-time employment remained relatively steady across the first five survey waves (range 24% to 20%) and dropping (to 18%) once all participants had reached at least the minimum age for superannuation eligibility¹⁷. The average number of hours worked per week decreased over time in line with the decrease in the proportion of participants in full-time employment.

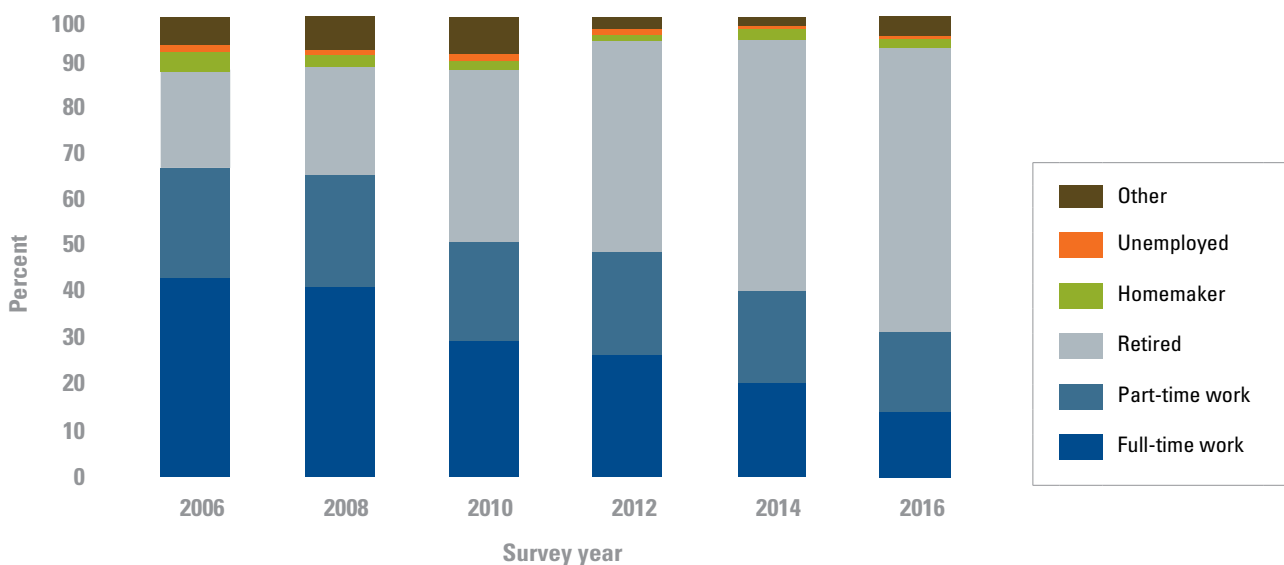


Figure 3.1. Employment status by survey year.

HEALTH AND WORK STATUS 2016

We compared the work and retirement status of participants in 2016 across the five longitudinal health profiles. Figure 3.2 illustrates that employment was significantly lower (both full-time and part-time) in the *Vulnerable* group, and highest in the *Robust* and *Average Good Health* groups.

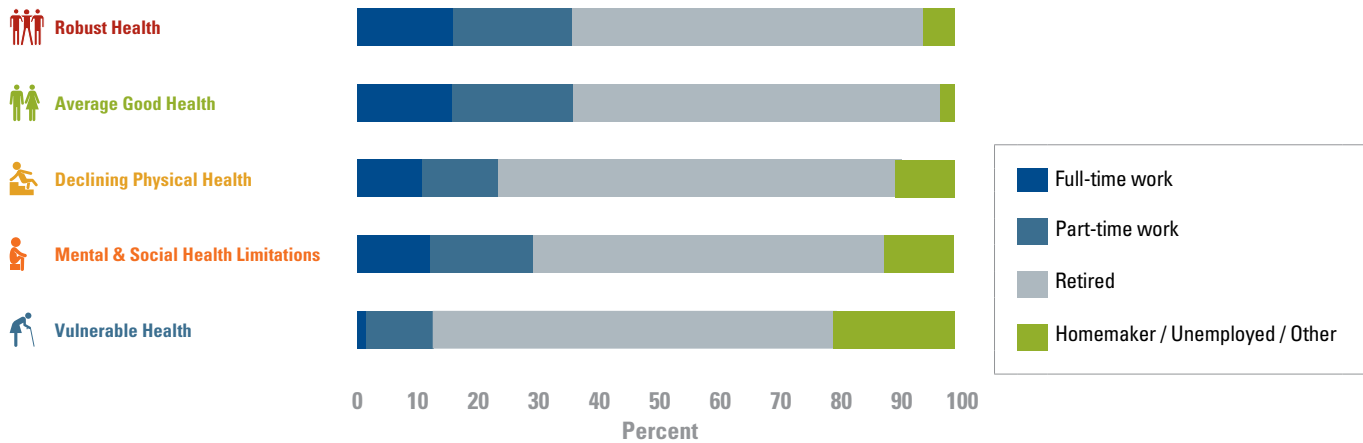


Figure 3.2. Employment Status in 2016 by longitudinal health profile.

Examination of work characteristics for those still in paid employment (Figure 3.3) illustrates that participants with a *Robust Health* profile had the highest levels of career and job satisfaction and the lowest levels of job stress and work family conflict. In contrast, those in the *Vulnerable* group had the highest levels of job involvement, job stress and work-family conflict.

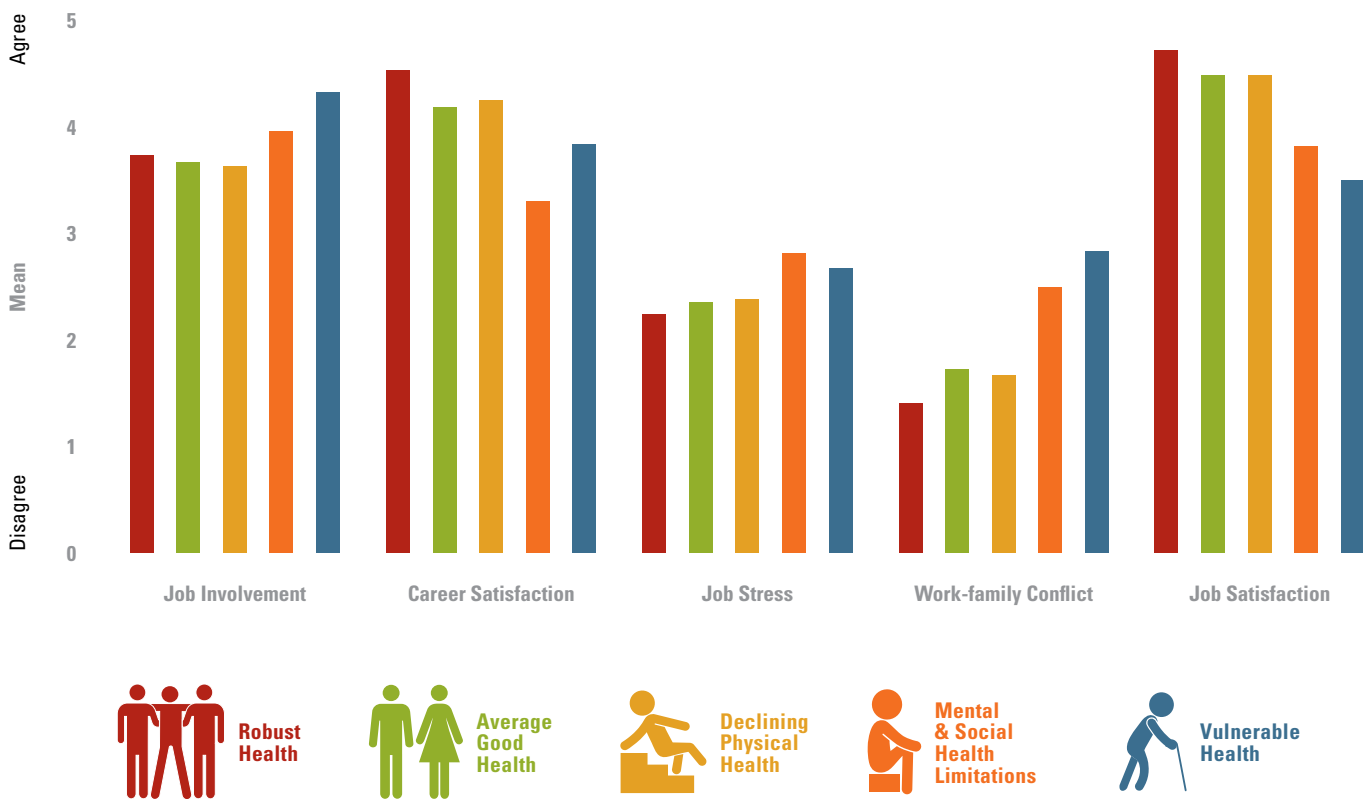


Figure 3.3. Endorsement of work characteristics by longitudinal health profile.

We asked participants in 2010 what their main occupation was between the ages of 30 and 65 years (Figure 3.4). The *Robust* group had the largest proportion of participants in professional occupations (37.5%) and the smallest proportion in the clerical/administrative occupations (14.6%). The *Vulnerable* group had the largest proportion of labourers (16.4%) and the smallest proportion of professionals (5.5%).

These comparisons suggest that despite the high rates of workforce participation for older New Zealanders, employment in paid work is less likely for those who enter old age with poor physical and mental health and low social support (*Vulnerable*). Furthermore, employment is likely to be less satisfying and more stressful for this group. Lifelong participation in higher status and less physical occupations is associated with more *Robust* and healthy profiles.

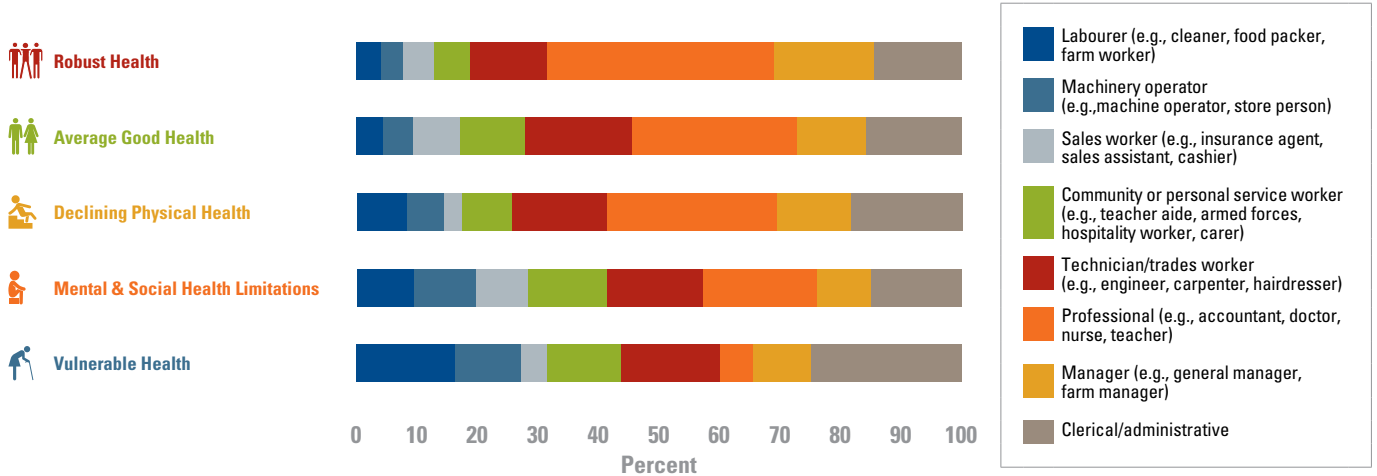


Figure 3.4. Main lifetime occupation by longitudinal health profile.

FUTURE AVENUES

It is important that we understand the gaps between government policies and employer practice and how this can impact on the workforce participation of older New Zealanders. For example, strategies to extend working lives in New Zealand include flexible work arrangements, however, despite apparent widespread availability few older workers report access to flexible work¹⁸⁻¹⁹. To understand these gaps we need to focus on the needs and practices of employers. Furthermore, a focus on older workers themselves has been neglected in research. Better understanding of workers’ needs will result in better public policy. Accordingly, we will focus future research questions on older workers’ attitudes, motivations and work ability, while taking into account the importance of life course and social context factors.

POLICY RECOMMENDATIONS

Enabling and supporting workforce participation by older workers will provide a “triple dividend” for New Zealand: it will benefit the economy by reducing social expenditure for early workforce exit while increasing revenue from taxes; it will benefit business by moderating the impact of demographic change on the labour market; and, it will help older workers through improved wealth and wellbeing. Recognising the contribution of older New Zealanders is critical. New Zealand has the opportunity to develop the full economic potential of older people by creating flexible workplaces, promoting age-friendly infrastructure, introducing active ageing policies, removing barriers to older worker employment and educating employers about the benefits of retaining older workers. The role of employers (e.g., flexible working options, education and training) and the government (e.g. provision of adult retraining support, modelling good practice in the public sector, education and awareness campaigns) is vital.

“In today’s world it’s becoming more important than ever that we value the contributions of our older people, as skilled workers, volunteers, caregivers, mentors, leaders, taxpayers and consumers. The ageing of the ‘baby boom’ generation, together with a low birth rate and longer lifespans, means they’ll become a much greater proportion of our total population – and crucial to New Zealand’s social and economic development and growth.” (2014 Report on the Positive Ageing Strategy¹, p.4).

“More people should be engaged in something like I’m engaged in which is the volunteer literacy tutoring. And there are lots of activities which older people could become involved in. See one of the big things that we’re talking about these days is unpaid work. (...) So that you’ve got this pool of people who, who can do all these things and are pretty smart at all manner of things and they’re vegetating.”



Chapter Four. Economic Wellbeing

KEY MESSAGES

- Greater health was accompanied by greater economic living standards over a ten-year period.
- On average, living standards increased modestly over ten years for all health profiles.
- Increased living standards likely reflect eligibility for New Zealand Superannuation.

BACKGROUND

Economic wellbeing in older age is strongly influenced by lifetime accumulation of assets, engagement in the workforce, and costs associated with health care in older age. In New Zealand, a public safety net exists in the form of public health care and national superannuation schemes for citizens and permanent residents who are aged 65 and over and normally resident in New Zealand. This payment is not means tested, is not affected by receipt of another private superannuation payment and does not require the recipient to be retired. Of New Zealand residents aged 65 and over responding to the 2013 census, 90.1% received New Zealand superannuation or veterans pension and 12.4% drew upon other superannuation, pensions or annuities²⁰.

For persons who have not accumulated assets sufficient to support themselves in retirement, this initiative is designed to buffer the effects of age on economic wellbeing. This section of the report employs a living standards approach to assessing economic wellbeing instead of assessment of income. This approach is considered particularly useful for assessment of material wealth for older New Zealand adults, who are able to access universal superannuation following retirement and whose income may not be a good reflection of the adequacy of their material wealth. We assess the living standards reported by the health profiles across a ten-year period when most respondents (who were on average 61 years of age in 2006) moved into ages associated with retirement and receipt of New Zealand Superannuation.

HEALTH AND ECONOMIC WELLBEING 2006-2016

To assess disparities in economic wellbeing across the longitudinal health profiles, we examined the average economic living standard by each group over time. Figure 4.1 illustrates the living standards reported by members of the five health profiles 2006-2016 surveys. Results illustrate that those in better health also reported greater economic wellbeing and that this disparity remained stable over ten years of follow up.

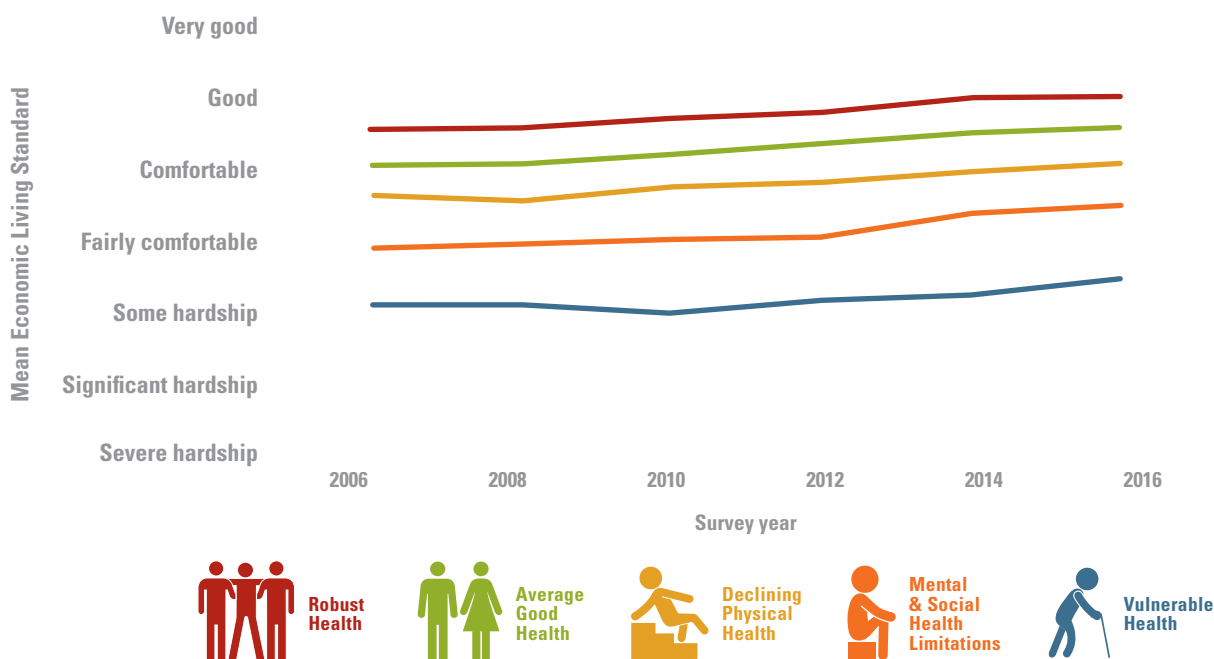


Figure 4.1. Mean economic living standard over time by longitudinal health profile.

In 2006, those in *Robust Health* were the best off economically with 70% reporting good or better living standards. Just over half (53%) of those in *Average Good Health*, 39% of those with *Declining Physical Health*, and 24% of those with *Mental and Social Limitations* reported good or better economic living standards. Only 17% of participants with a *Vulnerable* health profile reported good or better living standards. On average, those in *Vulnerable* health reported some economic hardship.

Economic living standards generally increased over time and this may in part reflect the impact of the receipt of New Zealand Superannuation. While in 2006, around a quarter (27%) of participants were older than 65, by 2010 this had increased to over a half of participants (54%). By 2016 all participants were aged 65 or older and 95% reported drawing a New Zealand Superannuation or veterans pension and this did not vary across the profiles.

FUTURE AVENUES

The current investigation spanning the 2006 to 2016 surveys provides insight into experiences of economic wellbeing associated with different health trajectories. However, future analyses will focus on the impact of major economic milestones on health over time, such as eligibility for superannuation and withdrawing from work. As older persons can now expect to live to ages not generally achieved by prior generations, the HWR may also assess the impact of prolonged period of retirement and health experiences of older age on economic wellbeing. Finally, by continuing to recruit successive cohorts of younger-old, the current results may provide a comparison through which New Zealand can understand the effects of policy changes impacting economic wellbeing of older adults.

POLICY RECOMMENDATIONS

The current findings suggest that economic disparities in living standards exist between older adults with good and poor health profiles, such that those with the poorest long term health are also experiencing highest levels of economic hardship. However, over a ten-year period, these disparities do not increase as participants' transition into ages traditionally associated with retirement, which may be expected to have negative impacts on economic wellbeing, particularly for those in poor economic and health experiences. These results suggest that the social safety net of universal health care and superannuation are buffering vulnerable persons from potentially negative economic impacts of older age.

"I think financial safety is important to the old. I think when you get old you need not so much security as certainty, and you have a pattern of life and it's when there's a problem or being disturbed I think this is what is unsettling for the old."

"Living on the pension you have to be very careful what you spend, therefore when you go do the shopping you've got to write down exactly what you need so you don't over, you just buy what you need, once upon a time you used to fill up your cupboards but now you don't do that because that's money just sitting in the cupboard."



Chapter Five. Health Behaviours

KEY MESSAGES

- Drinking alcohol is much more common among those in *Robust Health* and far less common in those in poor health.
- Reduction in smoking between 2006-2016 was greater for those in *Robust Health* compared to those in *Vulnerable Health* or with *Mental and Social Limitations*.
- Moderate physical activity was more common and stable for those in *Robust Health* compared those with *Declining Physical Health* or those with the poorest health.
- Existing poor health may be compounded by concurrent health behaviours; people in the best health were more likely to be physically active, and to be non-smokers than those in poorer health (who might benefit the most from positive health behaviours).

BACKGROUND

Alcohol use, smoking and physical activity influence health across the lifespan. We know that regular alcohol and tobacco use are strongly associated with early mortality while maintaining regular physical activity supports health and longevity. Despite concerted government efforts to promote physical activity and reduce smoking rates in New Zealand over the last two decades, recent Ministry of Health data suggest that these rates have remained unchanged in those aged 50+²¹.

Furthermore, while the past decade has seen a fall in the rate of hazardous drinking in New Zealanders aged 15-24 the rate in older New Zealanders has increased, leading to concerns that little attention is being paid to the ramifications of alcohol use for the health of older adults. Here, we examined the general rates of alcohol use, smoking and physical activity across ten years of the HWR study in each of the longitudinal health profiles.

HEALTH BEHAVIOURS 2006-2016

The proportion of drinkers varied considerably across the five longitudinal health profiles (see figure 5.1). Almost 90% of participants in *Robust* or *Average Good Health* were drinkers in 2006 and this declined only slightly over time. In comparison, only 70% of those in *Vulnerable Health* were drinkers in 2006 and this proportion fell to just over 50% by 2016.

These trajectories likely reflect the combined influence of socioeconomic status (SES), health and mortality. Drinking is more common in those with higher SES and better health²². Those in *Robust* and *Average Good Health* in this study have higher SES and better health than those in *Vulnerable Health*. Those in *Vulnerable Health* also experience higher rates of mortality, suggesting that the reduction across time in the drinkers in that group may also be due to the death of drinkers in that group.

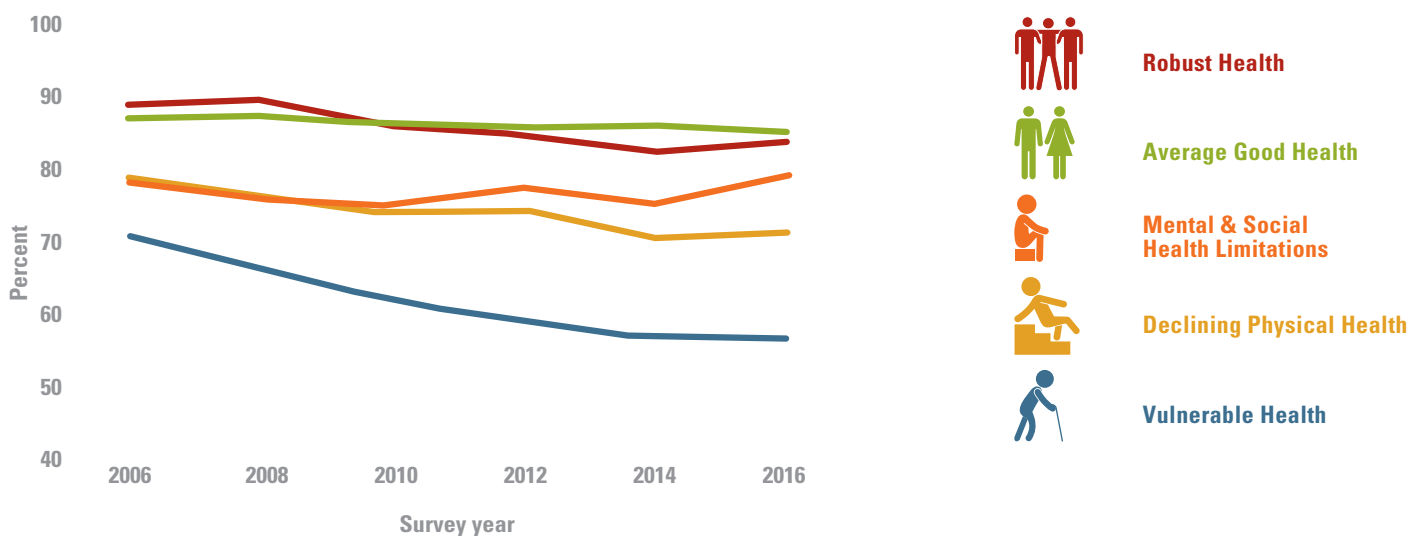


Figure 5.1. Proportion of current drinkers over time by longitudinal health profile.

The rate of smoking was examined from 2010 onwards. When explored across the five longitudinal health profiles (figure 5.2) all profiles showed a marked decline in smoking rates from 2010 to 2016 but these declines were greater for some profiles than for others. In 2010 far more of those in *Vulnerable Health* (40%) identified as smokers compared to those in *Average Good Health* (25%) and *Robust Health* (20%). Rates of smoking dropped more for those in *Robust Health* (75% drop) and *Average Good Health* (69% drop) compared to those in *Vulnerable Health* (52% drop) or for those with *Mental and Social Limitations* (40% drop). This suggests those in poor health may be more likely to experience the ill effects of smoking and be less likely to experience the potential health gains associated with quitting smoking.

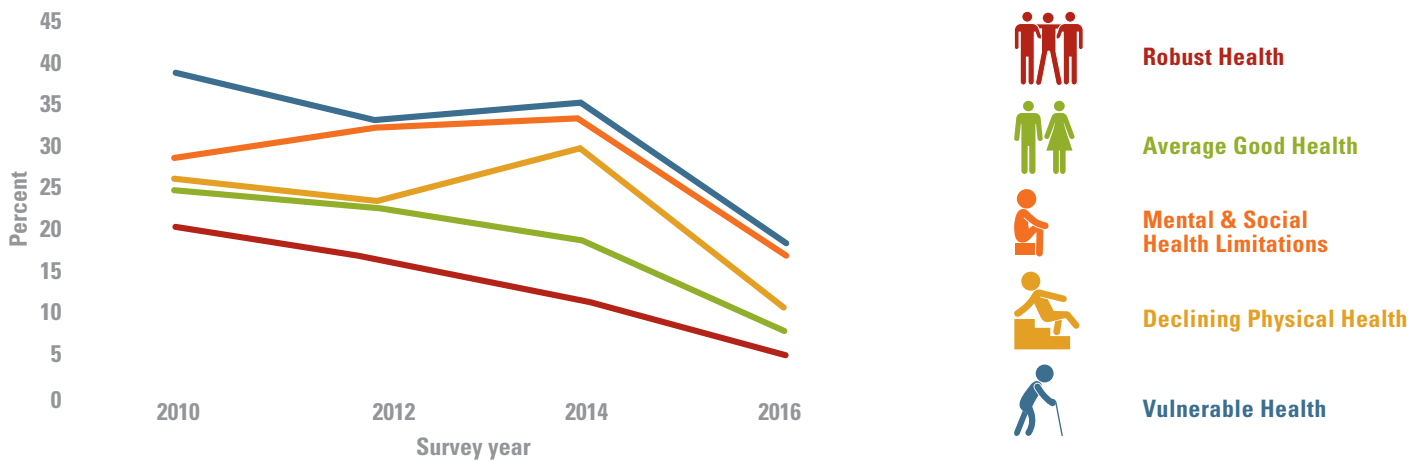


Figure 5.2. Proportion of regular smokers over time by longitudinal health profile.

Moderate physical activity (e.g., brisk walking, gardening) was assessed in 2010, 2012 and 2016. Overall, approximately 50% of older adults were moderately physically active more than once per week; 52% in 2010, 48% in 2012 and 47% in 2016.

Figure 5.3 illustrates how this overall total masks differences in moderate physical activity levels between the five longitudinal health profiles. Approximately 70% of those in *Robust* or *Average Good Health* were moderately active more than one day per week, compared to around 40% of those in *Declining Physical Health* or with *Mental and Social Limitations*, and only 20% of those in *Vulnerable Health*. Contrasting the 2010 and 2016 rates for each profile, those in *Robust* and *Average Good Health* had stable rates of moderate physical activity across time (varying less than 4%) while those in the remaining profiles experienced slight but general declines in moderate physical activity.

Both the initial levels of moderate activity and its maintenance over time across the health profiles indicate that those in *Robust* and *Average Good Health* have moderately active lifestyles that support health and equally that their health enables an active lifestyle. In contrast, those in poorer health may lack such lifestyles and enablement and their rates of moderate physical activity are low and declining over time.

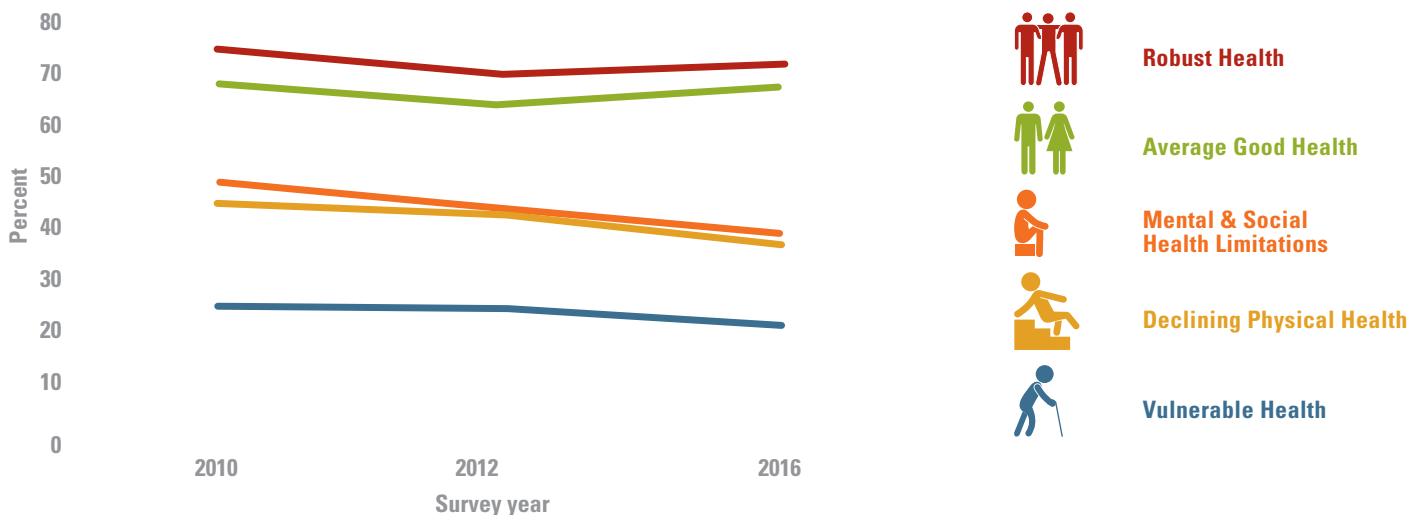


Figure 5.3. Proportion who were moderately physically active more than one day per week over time by longitudinal health profile.

FUTURE AVENUES

The data on health behaviours suggest that an older adult's long term health is reflective of their likelihood of drinking and smoking and their tendency to be physically active. Those in the best health were more likely to be physically active, to drink, and to be non-smokers than those in poorer health. Our previous research has already identified that high SES underpins the apparent relationship between good health and drinking rates²³. However, the trends illustrated in this report suggest that SES may also underpin differences in health behaviours, and changes in positive health behaviours (e.g., more physical activity) and negative health behaviours (e.g., less smoking).

POLICY RECOMMENDATIONS

Findings highlight the compounding effect that poor health states and SES have on the capacity of older adults to undertake and maintain beneficial health behaviours. The influence of health is such that, despite being most in need, older adults already in poor health are less likely to undertake the behaviours that support better health (e.g., physical activity, quitting smoking). Policies targeting health behaviours in older adults must recognise the role that SES likely plays in the initiation and maintenance of such health behaviours, and seek to overcome the environmental and resource barriers that prevent our most vulnerable older adults from benefiting from them.



"Health, health is, is a big issue when you get to my age because you are thinking about all the things that you can do better to keep yourself healthy all the time."

"Well, as long as you take your medication and you knock off smoking, you knock off booze, you knock off fatty food and all that sort of stuff. The usual drill aye. They put you through the mill and you tell them to go and get knotted."

"...now that we're getting older. Trying to do a little bit of exercise, go swimming, walking. Walking round the block. I think exercise is important too, you know."

Chapter Six. Housing

KEY MESSAGES

- Home ownership is high and stable in this cohort.
- People whose physical, mental and social health are consistently poor across time are more likely to be renting.
- Those in *Vulnerable Health* and those with *Mental and Social Limitations* are more likely to be worried about finding a suitable place to live.
- Those with long term poor physical, mental and social health are most likely to report problems with safety, keeping warm, house maintenance and cleaning, and least likely to be satisfied with their housing.

BACKGROUND

Current government 'positive ageing' policy focuses on supporting older people to age in their own homes rather than in care facilities. Increasing pressures on housing availability in New Zealand raises important issues around the provision of suitable housing support to ensure that all older people can age in the community. In this section we examine trends in housing ownership and types of housing inhabited by older people and how their health status is related to the quality and suitability of their housing.

HOME OWNERSHIP 2006-2016

Home ownership was high in 2006 with 75.4% of the cohort owning their home and 12.8% renting. Home ownership was stable over this decade. Of those who owned their own home in 2006, 91.3% remained home owners over the 10-year follow-up period. By 2016, prior home owners were living in a retirement village (2.6%), private rental (2.3%), or other (1.3%) tenure situation and 2.6% did not indicate their subsequent tenure status. Among those who were home owners in 2016, 81.7% owned their homes without a mortgage or in a family trust. Housing tenure and type of residence for those responding to the 2016 survey are reported in Table 6.1.

Table 6.1. Proportion of participants by housing tenure and type of residence in 2016

RESIDENCE TENURE IN 2016	%
Owned with mortgage	11.2
Owned without mortgage	56.0
Owned by family	3.1
Owned by family trust	8.1
Rented	7.5
Private rental	5.3
State, council or kaumātua housing	2.0
Boarder	0.2
Other	0.9
Licence to occupy	2.0
No response to tenure question	11.1
RESIDENCE TYPE IN 2016	%
House or townhouse – stand alone	66.3
House, townhouse joined to others	6.8
Unit, villa or apartment in retirement village	2.7
Movable dwelling (e.g., caravan)	0.3
Other	23.9

"Other than that I stay at home, and I look after my home, and look after my health. I love, just love my home. I love doing it up. I love dusting it, I love cleaning it. I just live for my home and what I live in. That's me."

"...as time went on, we found this place and it suits us down to the ground because it's flat and easy walking distance to the shops if we need to walk. It's all, you know, much more sunshine than the middle of town."

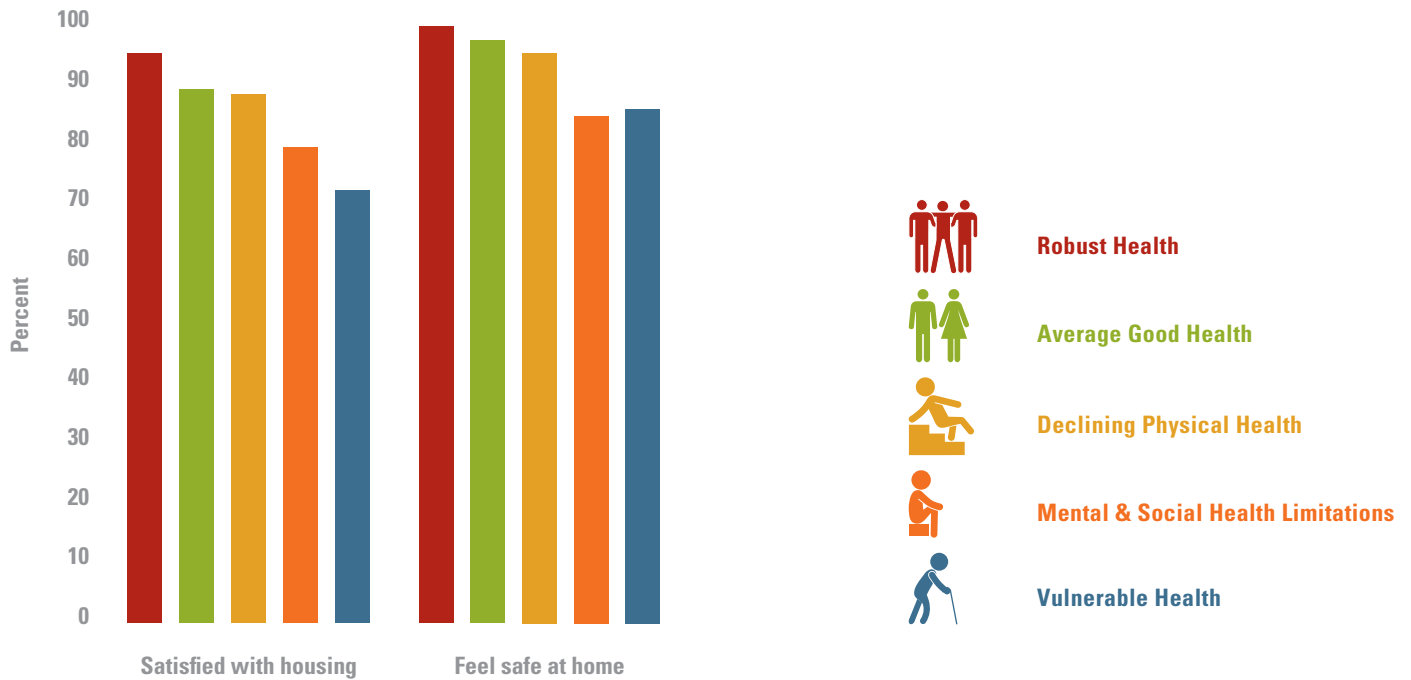


Figure 6.1. Proportion who reported satisfaction with housing and feeling safe at home in 2016 by longitudinal health profile.

HEALTH AND HOUSING SATISFACTION 2016

We compared types of housing tenure and housing satisfaction in 2016 across the longitudinal health profiles. The results of these comparisons are presented in Figures 6.1 and 6.2. In 2006, those with *Vulnerable Health* were the most likely to be renting (27.7%), while those in *Robust* and *Average Good Health* were the least likely to be renting (9.9% and 10.6%, respectively).

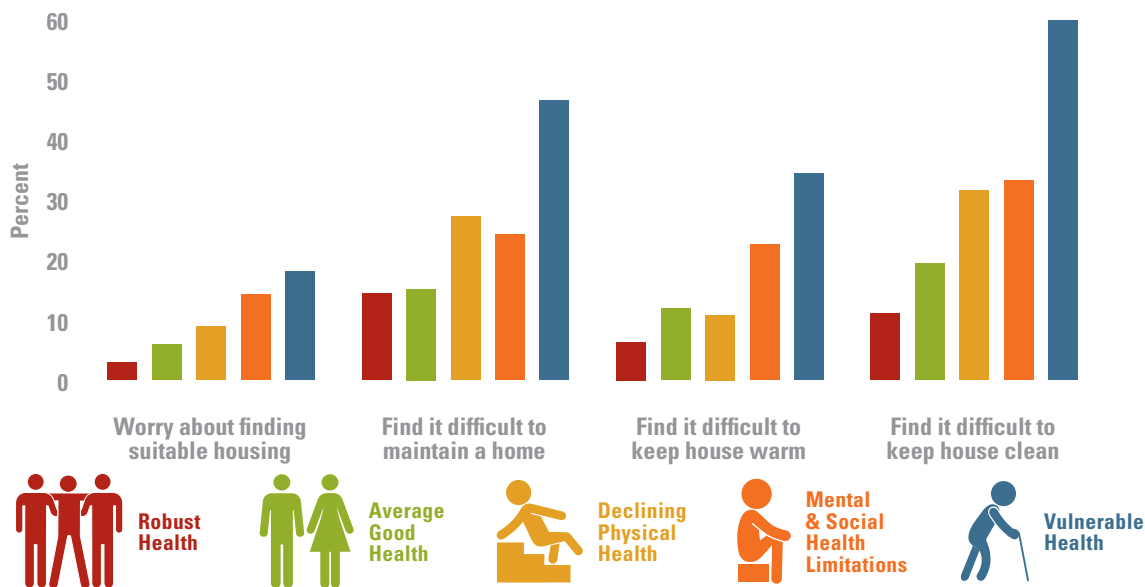


Figure 6.2. Proportion who report worry about finding suitable housing, difficulties maintaining the home, keeping the house warm, or keeping the house clean by longitudinal health profile.

People in the *Vulnerable Health* group are least likely to be satisfied with their housing. People with *Mental and Social Limitations* are also more likely to report difficulties in these areas, while those with *Declining Physical Health* are more likely to report problems with cleaning and maintaining their home.

These comparisons suggest that those people who enter older age with health and social support limitations are more likely to also suffer from difficulties with their housing. Those whose health has shown decline over the last ten years report similar levels of satisfaction with their housing as those who are in ongoing *Robust* health, which suggests that initial good health, which is associated with more secure housing²⁴ buffers those who experience changes in health in older age. Those who have longer term health issues will require more support to be housed well as they age.

FUTURE AVENUES

The data reported here suggest that a person's long term health and social wellbeing is related to the quality of their housing as they age. Recent longitudinal analyses of HWR data have also shown the long term effects of housing on health: the positive impact of home ownership itself and sense of security (over and above economic living standards) on psychological wellbeing for older adults²⁵. The gaps in psychological wellbeing between home owners and tenants became worse over time. This suggests that older people in New Zealand who do not own their homes are at greater risk of mental health decline. Thus, while the analyses in this report highlight the effects of long-term health on housing ownership and quality of housing in older age, it is apparent that poor housing and lack of secure housing will contribute to greater ongoing health declines.

POLICY RECOMMENDATIONS

HWR findings draw attention to the housing difficulties of older people with existing health vulnerabilities (rather than those whose health is presently beginning to decline). There are marked differences in housing tenure, and in the support that housing provides, for those with multiple health vulnerabilities, and those who have particular mental or physical health issues. These more vulnerable groups of older people require targeted support to remain able to live in the community.



Chapter Seven. Caregiving

KEY MESSAGES

- Around 20% of participants provide care at any one time.
- Frailty in old age is the most common reason for providing care.
- Caregivers are more likely to be in poorer health although this may represent a selection bias into the role.

BACKGROUND

With greater numbers of older people in New Zealand with disabilities and/or high dependency ageing at home, comes an increase in the reliance on family caregivers. There are 490,000 individuals in New Zealand who provide unpaid care for someone who is frail, ill or has a disability with 35% of these caregivers aged 55 years and over²⁶. The number of caregivers has increased in New Zealand in line with the ageing population, but the proportion of caregivers in older age groups (55+) has increased at a faster rate than in the general population²⁷. Given that many of these caregivers will be experiencing health issues associated with ageing themselves, this group is of particular research interest.

CAREGIVING 2006-2016

Longitudinal trends in caregiving are shown in Figure 7.1. The percentage of participants who identified as a caregiver was 25.2% in 2006 when participants were aged 55 to 70. Percentages in subsequent years ranged from 16.9% to 20.2%. Most caregivers provided care to one person, although a significant proportion provided care for more than two people (15.5% of carers in 2016). Around half the care recipients lived with their caregivers although in 2016 this percentage dropped, possibly indicating a move to residential care (or death) as care recipients aged. The percentage of caregivers who provided care every day has tended to increase since 2012, possibly reflecting the age of the care recipient at each wave.

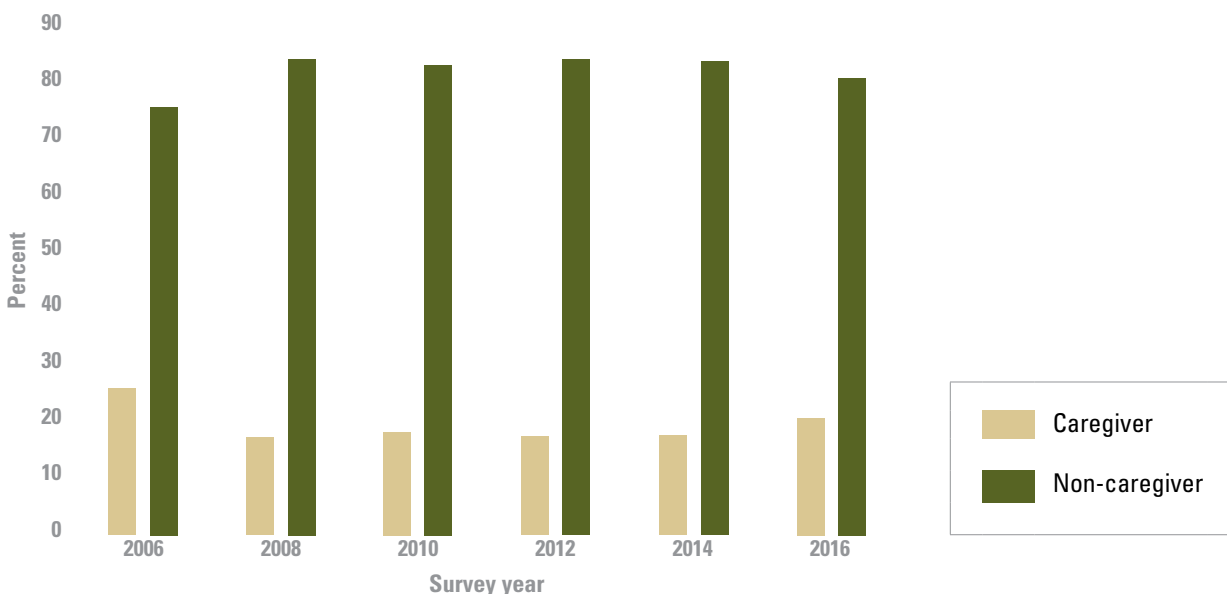
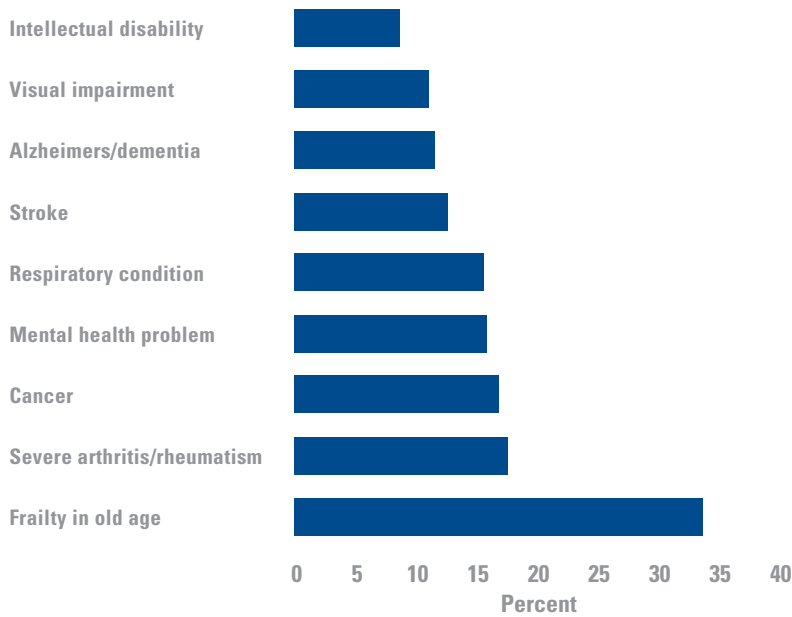


Figure 7.1. Proportion who identified as caregivers over time.

In 2016, participants who provided care reported further information about their caregiving situation and about the care recipient they had cared for the longest (referred to here as the key care recipient). The average age of key care recipients was 69 years (range 1-106 years) and the average number of years spent caring for the key care recipient was 8 years and 10 months (range 1 month to 60 years). Caregivers provided care for an average of 46 hours per week (range 1 to 168 hours). The key care recipient was most likely to be a spouse or partner (44.4%), with 17.6% caring for a parent or parent-in-law, 8.3% for a son or daughter, 5.7% for a sibling, 10% for a friend and 7.4% for another relative or whānau member. Figure 7.2 shows the most common major medical condition or disability reported for the key care recipient. Frailty in old age (33.6%) was the most commonly reported health condition, followed by severe arthritis/rheumatism (17.6%), and cancer (16.9% each). The majority of key care recipients had one major medical condition or disability (51.5%), while 20.9% had 2 conditions, 13.3% had 3 conditions and 8.2% had 4 or more conditions.



“When she [mother] died I resigned from my work to care for my father who has Alzheimer’s Disease. He now lives with my husband & myself. We are his full time carers. While it was our choice we have struggled at times”

“The day she [Mum] was discharged I got a call at work to come get her, she had told the staff I was living at her place and would give up work to look after her. So that’s what I did.”

Figure 7.2. Major medical conditions or disabilities of key care recipient.

HEALTH AND CAREGIVING 2016

We compared caregiving characteristics in 2016 across the groups with these longitudinal profiles and the results of these comparisons may be seen in Figures 7.3 to 7.5. In Figure 7.3 we can see that the majority of caregivers were in the *Robust Health* profile, largely reflecting the size of this group in the cohort overall. However, within the profiles, when compared to non-caregivers, there was a smaller proportion of participants providing care in the *Average Good Health* group. The caregiver group also had proportionally more participants in the *Vulnerable Health* and *Declining Physical Health* profile groups compared to non-caregivers.

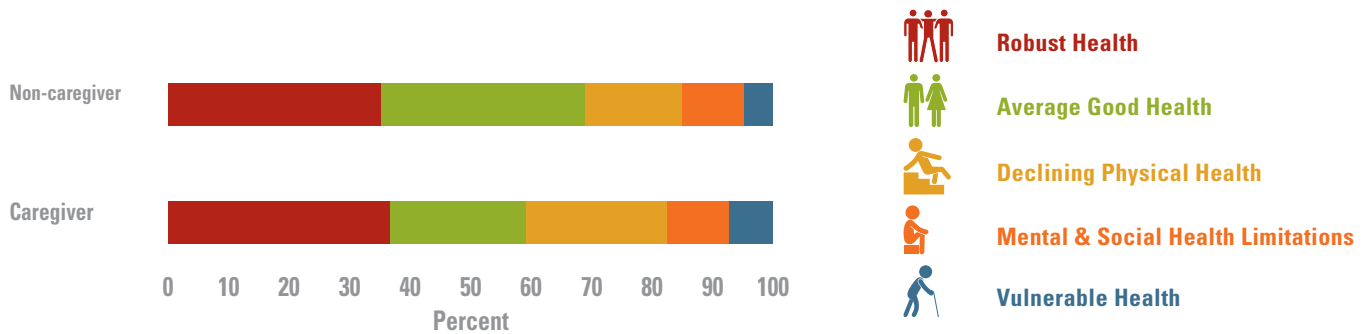


Figure 7.3. Proportion of caregivers and non-caregivers by longitudinal health profile.

When focusing on caregivers, those in the *Vulnerable* and *Mental and Social Limitations* groups reported a greater number of years spent caregiving (Figure 7.4) and provided the highest number of hours of care per week (Figure 7.5).

Although these differences are small, they suggest that caregivers are generally more likely to be in poorer health than non-caregivers. Our analyses suggest that this reflects a “health” selection bias, where those in poorer health, who may have fewer employment opportunities, may be available to “self-select” into the caregiving role²⁸. We have also found that although caregivers may be in poorer health, their health trajectories over time do not differ markedly from those of non-caregivers. This suggests that, although the caregiving role can be stressful and burdensome, caregivers may adapt over time to often demanding circumstances.



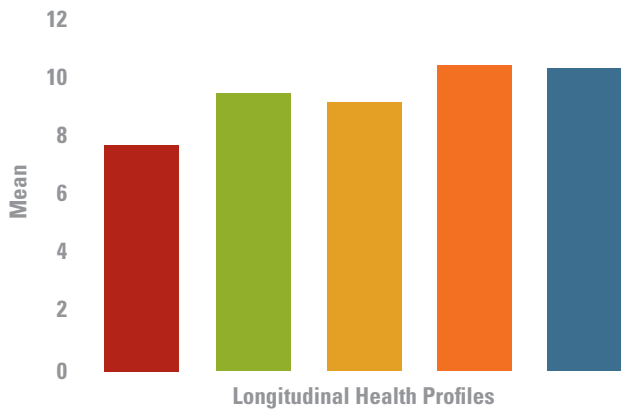


Figure 74. Mean years caregiving by longitudinal health profile.

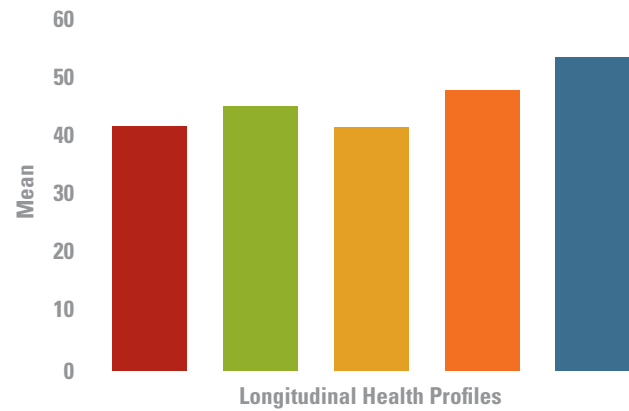


Figure 75. Mean hours per week caregiving by longitudinal health profile.



FUTURE AVENUES

Roth *et al.*²⁹ argue that the “caregiving-is-stressful” assumption may provide an over-simplification of the caregiving experience. They suggest that a more balanced view which takes into account a range of potential experiences and outcomes is required. Certainly, there is evidence for the distress the role of caregiver can entail, however, there is marked heterogeneity in how different groups respond to that distress. It is also necessary to take into consideration the positive aspects of the caregiving role that caregivers often report (i.e. greater sense of purpose in life), and the reciprocity of support between caregivers and care recipients.

POLICY RECOMMENDATIONS

The impact of caregiver burden on health will be, in part, a function of the nature and extent of formal support provided by the state. Where formal support services are put in place for older caregivers, they need to be tailored for the particular needs of the recipients, with ease of access, low cost, and cultural appropriateness high priorities. Appropriate policies for those combining work and care responsibilities should be more readily available (including carers’ leave policies) and employees must be made aware of their existence. With an ageing population, the provision of informal care from family for the frail, disabled, or ill will increase. Promoting the health of caregivers will not simply help individuals but is likely to benefit society as a whole.



Chapter Eight. Māori Cultural Indicators

KEY MESSAGES

- Around 25% of participants of Māori descent identified themselves as having only Māori ethnicity over the ten-year follow-up period.
- Knowledge of whakapapa was high for all Māori participants.
- One quarter rated their te reo Māori ability as being 'good' or better and one third had a role on the marae.

MĀORI IDENTITY 2006-2016

To examine Māori ethnic identity and how it related to cultural engagement, we examined Māori ethnic identification of participants who were of Māori descent using a core-periphery concept of Māori ethnic identification³⁰. Based on self-nominated ethnic identity at each survey wave, we formed three categories of Māori identity in this group:

1. Participants who consistently reported a Māori ethnic identity only (core-stable identity).
2. Participants who sometimes reported Māori ethnicity only, and sometimes both Māori and non-Māori ethnicity (core-occasional identity).
3. Participants who always stated both a non-Māori ethnicity and a Māori ethnicity in their reporting of their ethnic identity (peripheral identity).

Almost a quarter (24%) of participants fell into the core-stable Māori identity group, a quarter (25%) into the core-occasional Māori identity group, and half (51%) into the peripheral Māori identity group.

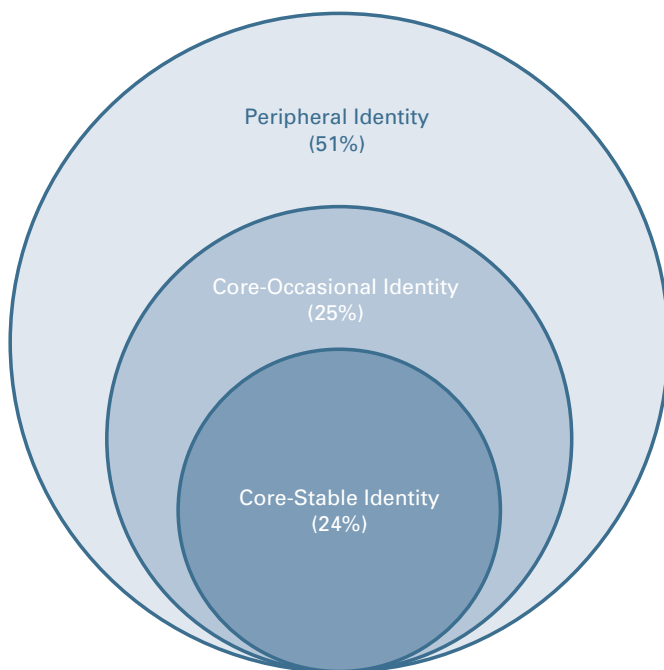


Figure 8.1. Core-periphery concept of Māori ethnic identification.

"This is my home. I was born here. So I thought 'Well I'll come back here, and I'll die here', you know."

IDENTITY AND CULTURAL ENGAGEMENT

There was little difference in knowledge of whakapapa between the three groups, with all showing relatively high recall of three or more generations. The core-occasional Māori identity group reported the highest recall of ancestry from the survey 2010 onwards.

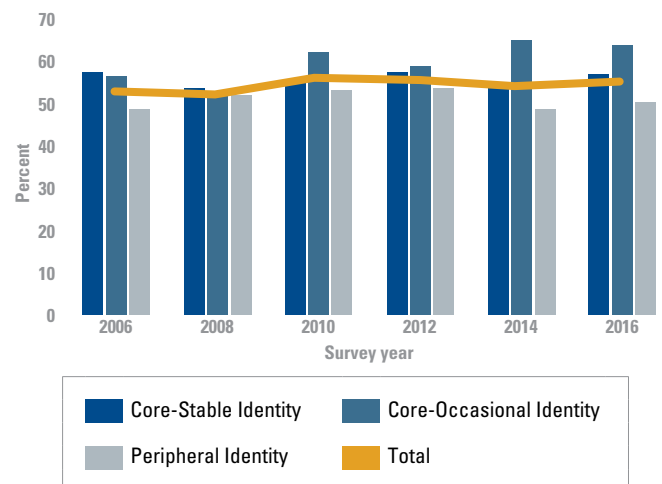


Figure 8.2. Proportion who could name three or more generations of their Māori ancestry over time by identity group.

Not unexpectedly, the core-stable and core-occasional identity groups rated their ability to speak te reo more highly than the peripheral Māori identity group. The proportion of speakers changed little over time between the core and peripheral identity groups, although the numbers rating their te reo Māori as 'good' or better fell slowly over time.

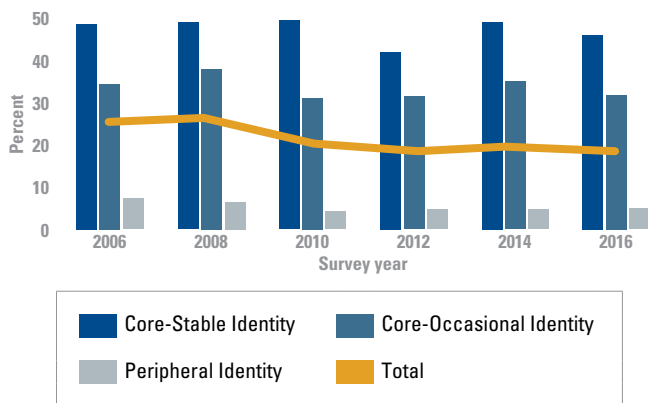


Figure 8.3. Proportion rating their ability to speak te reo Māori good or better over time by identity group.

Whānau engagement for all Māori participants was moderately high, with 61% saying whānau played a large or greater part in their life in 2006. This proportion dropped to half (51%) by 2016. The core Māori identity groups were more involved with whānau (84% and 77% in 2006) and dropped marginally over time (82% and 72% in 2016). The peripheral Māori identity group had the lowest degree of whānau involvement, with 39% saying whānau played a large or greater part in their life in 2006, which dropped to 32% by 2016.

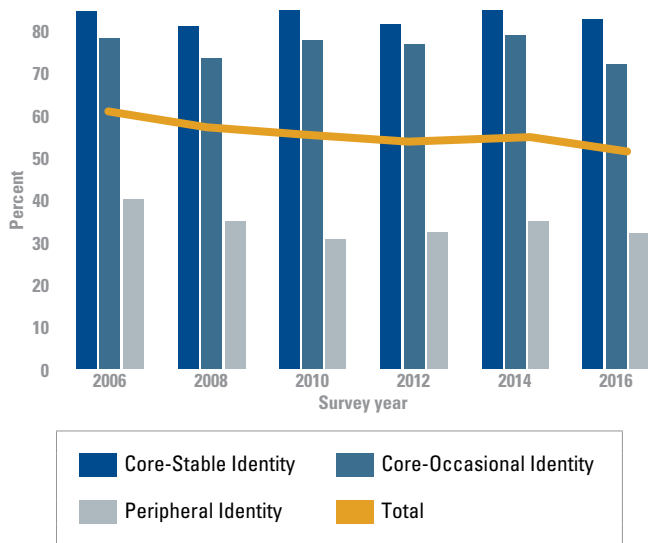


Figure 8.4. Proportion reporting that whānau plays a large part or more in their life over time by Māori identity group.

In terms of marae participation, those in the core Māori identity groups were more likely to have visited a marae a few times or more in the last 12 months compared to the peripheral Māori identity group. However, there was a drop in marae participation for all groups by 2014.

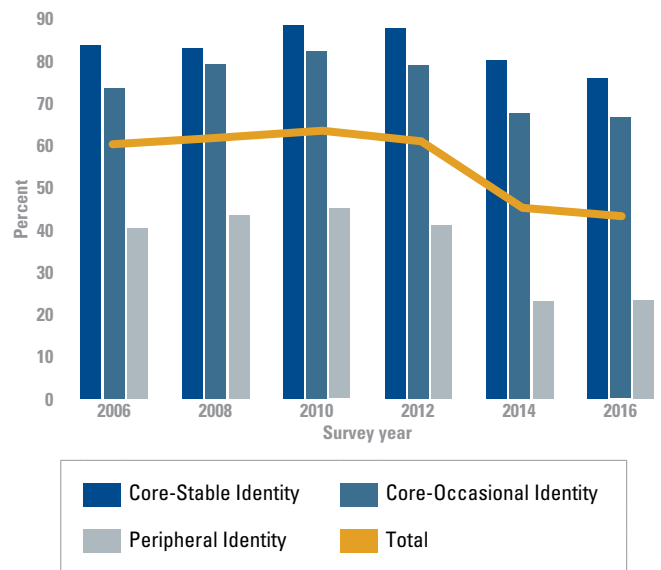


Figure 8.5. Proportion who visited a marae a few times or more in the last 12 months over time by identity group.

For those engaged with marae, a series of questions were asked from 2012 onwards to better understand what roles participants had on the marae: kai karanga, kai/pou kōrero, ringa wera, kai mahi/general help, marae board member, mahi wairua/religious services, representation at hui/runanga, and other (Table 8.1). Most of the participants who reported having a role had two or more marae roles (69%), with kai mahi the most common. A relatively low 14% in 2006, 19%, and 10% in 2014 and 2016 respectively of participants had ‘front of house’ roles such as Kai karanga and Pou Korero, with ‘back of house’ roles (e.g. ringa wera - kitchen) very slightly higher at 16%, 19%, and 12% (2012, 2014, 2016 respectively).

Table 8.1 Number who held roles on marae and proportion by role held 2012-2016.

	2012	2014	2016
Any Role (number)	289	188	162
Two or more roles	69%	74%	70%
Kai mahi/general help	20%	26%	15%
Ringa wera	16%	19%	12%
Marae board or Representation at hui/runanga	14%	20%	13%
Kai karanga or kai/pou kōrero	14%	19%	10%
Mahi wairua/religious services	12%	14%	9%
Marae board member	14%	9%	7%

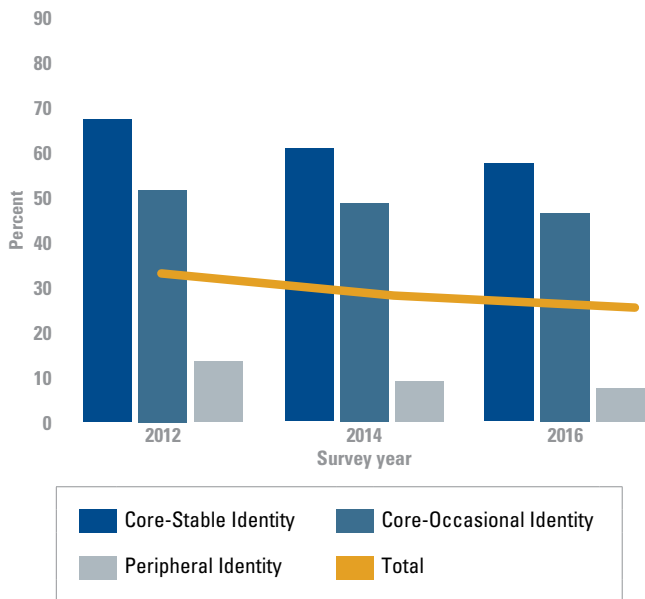


Figure 8.6. Proportion who held a role on the marae over time by identity group.

The core Māori ethnic groups were relatively highly engaged with marae, over two-thirds (67%) of core-stable and 51% of core-occasional Māori identity groups reporting a role on the marae in 2012. In contrast, 14% of those in periphery group had a role. Over time, the proportion with a role on the marae dropped slightly, with the core group dropping from 61% in 2014 to 58% in 2016, the core-occasional group dropping from 48% in 2014 to 46% in 2016, and the peripheral identity group dropping from 9% in 2014 to 8% in 2016. Overall, there was a trend toward lower levels of engagement with marae over time.

FUTURE AVENUES

Additional cultural indicators will be analysed within the core-periphery ethnic identity model. Of particular importance is refining our understanding of Māori identity beyond ethnicity/descent and the relationship of Māori cultural identity to health and wellbeing over time.

Examining in more detail the marae role data and patterns of engagement or support for marae and broader Māori institutions (e.g. runanga) and front/back of house roles, will be a future focus. Information collected in 2016 on the distance to marae for participants and analysing the wellbeing costs and benefits for those engaged with marae and iwi will also be analysed.

“Well the marae of course is always important as an important part of my life. And the local people is, yeah so, so yeah that’s, that part of it is important.”

“I said to my family ‘Oh we might as well go back home. At least we got our whenua there and our whare over there. Which we often come back and now and again to whakatika. Clean up each time.”



Future Directions for the New Zealand Health, Work and Retirement Study

By **continuing to represent the experiences of ageing**, the HWR study facilitates insight into issues of health and ageing and the diverse experiences of ageing in the geographically and culturally unique context of New Zealand. By continuing to assess these trajectories for older adults, the HWR can assess the changing experiences and situations of this cohort while taking into account its situation in the broader context of changes in events and social policy which affect people's lives. Two important additions to the study will enable us to take this broader context into account.

First, the HWR cohort will continue to be refreshed by the **introduction of new groups aged from 55-57 every two years**. This will enable the study to maintain a 'steady state' as we follow new generations across the transition from work to retirement, and continue to represent the ageing New Zealand population.

Second, as we look to the future of our participants, we also look backward as we begin the first of our study of 'early lives'. In 2017, we completed telephone **interviews with over 800 participants about their whole life course** including their economic, educational, work, personal, and housing experiences. These data will be analysed in terms of historical events and policy changes in New Zealand, to gain a better understanding of the impacts of early life on outcomes later in life.

In the future, the study also aims to provide more information on the changes in **cognitive functioning** of adults as they age. This will entail ongoing cognitive testing of a cohort of 1000 who have been assessed in 2010 and 2012 and links with national and international collaborators who bring different explanatory models to these changes.

In recent years we have approached our participants for consent to link the information provided to the study to date with their **national health records**. HWR data are linked at the individual level to national health record data (National Minimum Dataset: Hospital Events, National Non-Admitted Patient Collection, New Zealand Cancer Registry, Pharmaceutical Collection, Mental Health Information Collection, as well as the register of deaths). These data will provide an important complementary source of information about health conditions, hospitalisations, mortality and health expenditure. The HWR study has initiated this data linkage project to address questions such as what impact hospitalisation might have on older New Zealanders' economic independence and quality of life, and the identification of factors linked to health and healthcare utilisation among New Zealanders.



Appendix A – New Zealand Health, Work and Retirement Study scientific output 2006-2016

JOURNAL ARTICLES

- Alpass, F., Towers, A., Stephens, C., Fitzgerald, E., Stevenson, B., & Davey, J. (2007). Independence, Well-being, and Social Participation in an Aging Population. *Annals of the New York Academy of Sciences*, 1114(1), 241-250.
- Breheny, M., & Stephens, C. (2009). 'I sort of pay back in my own little way': managing independence and social connectedness through reciprocity. *Ageing and Society*, 29(8), 1295-1313.
- La Grow, S., Alpass, F., & Stephens, C. (2009). Economic Standing, Health Status and Social Isolation among Visually Impaired Persons Aged 55 to 70 in New Zealand. *Journal of Optometry*, 2(3), 155-158.
- Noone, J. H., Stephens, C., & Alpass, F. M. (2009). Preretirement Planning and Well-Being in Later Life: A Prospective Study. *Research on Aging*, 31(3), 295-317.
- Breheny, M., & Stephens, C. (2010). Ageing in a material world. *New Zealand Journal of Psychology*, 39(2), 41-48.
- Henricksen, A., & Stephens, C. (2010). An Exploration of the Happiness-enhancing Activities Engaged in by Older Adults. *Ageing International*, 35(4), 311-326.
- Noone, J., Alpass, F., & Stephens, C. (2010). Do Men and Women Differ in Their Retirement Planning? Testing a Theoretical Model of Gendered Pathways to Retirement Preparation. *Research on Aging*, 32(6), 715-738.
- Noone, J. H., Stephens, C., & Alpass, F. (2010). The process of Retirement Planning Scale (PRePS): Development and validation. *Psychological Assessment*, 22(3), 520-531.
- Pond, R., Stephens, C., & Alpass, F. (2009). How health affects retirement decisions: three pathways taken by middle-older aged New Zealanders. *Ageing and Society*, 30(3), 527-545.
- Pond, R., Stephens, C., & Alpass, F. (2010). Virtuously watching one's health: Older adults regulation of self in the pursuit of health. *Journal of Health Psychology*, 15(5), 734-743
- Stephens, C., & Flick, U. (2010). Health and Ageing — Challenges for Health Psychology Research. *Journal of Health Psychology*, 15(5), 643-648.
- Stephens, C., Alpass, F., & Towers, A. (2010). Economic hardship among older people in New Zealand: The effects of low living standards on social support, loneliness, and mental health. *New Zealand Journal of Psychology*, 39(2), 49-55.
- Stephens, C., Alpass, F., Baars, M., Towers, A., & Stevenson, B. (2010). SF-36v2 norms for New Zealanders aged 55-69 years. *New Zealand Medical Journal*, 123(1327), 47-57.
- Breheny, M., & Stephens, C. (2011). The Bonds and Burdens of Family Life: Using Narrative Analysis to Understand Difficult Relationships. *Narrative Works*, 1(2), 34-51.
- Dulin, P. L., Stephens, C., Alpass, F., Hill, R. D., & Stevenson, B. (2011). The impact of socio-contextual, physical and lifestyle variables on measures of physical and psychological wellbeing among Māori and non-Māori: the New Zealand Health, Work and Retirement Study. *Ageing and Society*, 31(8), 1406-1424.
- La Grow, S., Alpass, F., Stephens, C., & Towers, A. (2011). Factors affecting perceived quality of life of older persons with self-reported visual disability. *Qual Life Res*, 20(3), 407-413.
- La Grow, S., Yeung, P., Towers, A., Alpass, F., & Stephens, C. (2011). Determinants of the overall quality of life of older persons who have difficulty seeing: The importance of the ability to get around. *Journal of Visual Impairment and Blindness*, 105(10), 720-730.
- Stephens, C., Alpass, F., Towers, A., & Stevenson, B. (2011). The Effects of Types of Social Networks, Perceived Social Support, and Loneliness on the Health of Older People: Accounting for the Social Context. *Journal of Aging and Health*, 23(6), 887-911.
- Stephens, C., Alpass, F., Towers, A., Noone, J., & Stevenson, B. (2011). The effects of socioeconomic inequalities of working life on health: implications for an ageing population. *Kōtuitui: New Zealand Journal of Social Sciences Online*, 6(1-2), 73-85.
- Taylor, J. E., Alpass, F., Stephens, C., & Towers, A. (2011). Driving anxiety and fear in young older adults in New Zealand. *Age Ageing*, 40(1), 62-66.
- Towers, A., Stephens, C., Dulin, P., Kostick, M., Noone, J., & Alpass, F. (2011). Estimating older hazardous and binge drinking prevalence using AUDIT-C and AUDIT-3 thresholds specific to older adults. *Drug Alcohol Depend*, 117(2-3), 211-218.
- Tuohy, R., & Stephens, C. (2011). Exploring older adults' personal and social vulnerability in a disaster. *International Journal of Emergency Management*, 8(1), 60-73.
- Yeung, P., La Grow, S., Towers, A., Alpass, F., & Stephens, C. (2011). The centrality of O&M in rehabilitation programs designed to enhance quality of life: A structural equation modelling. *International Journal of Orientation and Mobility*, 4(1), 10.
- Breheny, M., & Stephens, C. (2012). Negotiating a moral identity in the context of later life care. *J Aging Stud*, 26(4), 438-447.
- Breheny, M. (2012). "we've had our lives, we've had our lives": A poetic representation of ageing. *Creative Approaches to Research*, 5(2), 156-170.
- Dulin, P. L., Gavala, J., Stephens, C., Kostick, M., & McDonald, J. (2012). Volunteering predicts happiness among older Māori and non-Māori in the New Zealand health, work, and retirement longitudinal study. *Ageing Ment Health*, 16(5), 617-624.

- La Grow, S., Neville, S., Alpass, F., & Rodgers, V. (2012). Loneliness and self-reported health among older persons in New Zealand. *Australas J Ageing, 31*(2), 121-123.
- Alpass, F., Pond, R., Stephens, C., Stevenson, B., Keeling, S., & Towers, A. (2013). The Influence of Ethnicity and Gender on Caregiver Health in Older New Zealanders. *The Journals of Gerontology: Series B, 68*(5), 783-793.
- Breheny, M., Stephens, C., & Spilsbury, L. (2013). Involvement without interference: How grandparents negotiate intergenerational expectations in relationships with grandchildren. *Journal of Family Studies, 19*(2), 174-184.
- Breheny, M., Stephens, C., Alpass, F., Stevenson, B., Carter, K., & Yeung, P. (2013). Development and Validation of a Measure of Living Standards for Older People. *Social Indicators Research, 114*(3), 1035-1048.
- Henricksen, A., & Stephens, C. (2013). The Happiness-Enhancing Activities and Positive Practices Inventory (HAPPI): Development and Validation. *Journal of Happiness Studies, 14*(1), 81-98.
- La Grow, S., Yeung, P., Towers, A., Alpass, F., & Stephens, C. (2013). The Impact of Mobility on Quality of Life Among Older Persons. *Journal of Aging and Health, 25*(5), 723-736.
- Alpass, F. (2014). Editorial: Reconciling work and eldercare. *Vulnerable Groups & Inclusion, 5*(1), 25262.
- Lotoala, F., Breheny, M., Alpass, F., & Henricksen, A. (2014). Health and wellbeing of older Pacific Peoples in New Zealand. *The New Zealand medical journal, 127*(1407), 27-39. Retrieved from <http://europepmc.org/abstract/MED/25530329>
- Mansvelt, J., Breheny, M., & Stephens, C. (2013). Pursuing security: economic resources and the ontological security of older New Zealanders. *Ageing and Society, 34*(10), 1666-1687.
- Stephens, C., Noone, J., & Alpass, F. (2014). Upstream and downstream correlates of older people's engagement in social networks: what are their effects on health over time? *Int J Aging Hum Dev, 78*(2), 149-169.
- Callow, L., Alpass, F., Leatham, J., & Stephens, C. (2015). Normative data for older New Zealanders on the Addenbrooke's Cognitive Examination-Revised. *New Zealand Journal of Psychology, 44*(3), 29-41.
- Gibson, R., Gander, P., Alpass, F., & Stephens, C. (2015). Effect of caregiving status on the sleep of older New Zealanders. *Australasian Journal on Ageing, 34*(3), 155-159.
- Herbert, S., & Stephens, C. (2015). Alcohol Use and Older Māori in Aotearoa. *Journal of Ethnicity in Substance Abuse, 14*(3), 251-269.
- La Grow, S. J., Towers, A., Yeung, P., Alpass, F., & Stephens, C. (2015). The Relationship between Loneliness and Perceived Quality of Life among Older Persons with Visual Impairments. *Journal of Visual Impairment & Blindness, 109*(6), 487-499.
- Yeung, PHY., Cooper, L., & Dale, M. (2015). Prevalence and Associated Factors of Elder Abuse in a Community-Dwelling Population of Aotearoa New Zealand: A Cross-Sectional Study. *Aotearoa New Zealand Social Work Review, 27*(3), 29-29
- Stephens, C., Breheny, M., & Mansvelt, J. (2015a). Healthy ageing from the perspective of older people: A capability approach to resilience. *Psychology & Health, 30*(6), 715-731.
- Stephens, C., Breheny, M., & Mansvelt, J. (2015b). Volunteering as reciprocity: Beneficial and harmful effects of social policies to encourage contribution in older age. *J Aging Stud, 33*(Supplement C), 22-27.
- Stephens, C., Spicer, J., Budge, C., Stevenson, B., & Alpass, F. (2014). Accounting for differences in cognitive health between older adults in New Zealand and the USA. *International Psychogeriatrics, 27*(4), 591-600.
- Towers, A., Yeung, P., Stevenson, B., Stephens, C., & Alpass, F. (2015). Quality of life in indigenous and non-indigenous older adults: assessing the CASP-12 factor structure and identifying a brief CASP-3. *Quality of Life Research, 24*(1), 193-203.
- Yeung, P., Towers, A., La Grow, S., Philipp, M., Alpass, F., & Stephens, C. (2015). Mobility, satisfaction with functional capacity and perceived quality of life (PQOL) in older persons with self-reported visual impairment: the pathway between ability to get around and PQOL. *Disability and Rehabilitation, 37*(2), 113-120.
- Breheny, M., Stephens, C., Henricksen, A., Stevenson, B., Carter, K., & Alpass, F. (2016). Measuring living standards of older people using Sen's Capability Approach: development and validation of the LSCAPE-24 (Living Standards Capabilities for Elders) and LSCAPE-6. *Ageing and Society, 36*(2), 307-332.
- Butcher, E., & Breheny, M. (2016). Dependence on place: A source of autonomy in later life for older Māori. *J Aging Stud, 37*(Supplement C), 48-58.
- Stephens, C. (2017). From success to capability for healthy ageing: shifting the lens to include all older people. *Critical Public Health, 27*(4), 490-498.
- Szabo, A., Stephens, C., Allen, J., & Alpass, F. (2016). Construct Validation of Wenger's Support Network Typology. *The Journals of Gerontology: Series B, gbw126-gbw126*.
- Towers, A., Philipp, M., Dulin, P., & Allen, J. (2016). The "Health Benefits" of Moderate Drinking in Older Adults may be Better Explained by Socioeconomic Status. *J Gerontol B Psychol Sci Soc Sci*.
- Yeung, P., & Breheny, M. (2016). Using the capability approach to understand the determinants of subjective well-being among community-dwelling older people in New Zealand. *Age Ageing, 45*(2), 292-298.
- Szabo, A., Allen, J., Alpass, F., & Stephens, C. (2017). Longitudinal Trajectories of Quality of Life and Depression by Housing Tenure Status. *J Gerontol B Psychol Sci Soc Sci*.

- Fekete, M., Szabo, A., Stephens, C., & Alpass, F. (2017). Older New Zealanders in caregiving roles: Psychological functioning of caregivers of people living with dementia. *Dementia (London)*.
- Li, J., Herr, R. M., Allen, J., Stephens, C., & Alpass, F. (2017). Validating the short measure of the Effort-Reward Imbalance Questionnaire in older workers in the context of New Zealand. *J Occup Health, 59*(6), 495-505.
- Alpass, F., Keeling, S., Allen, J., Stevenson, B., & Stephens, C. (2017). Reconciling Work and Caregiving Responsibilities among Older Workers in New Zealand. *J Cross Cult Gerontol. 32*, 323-337.
- Hempel, M. E., Taylor, J. E., Connolly, M. J., Alpass, F. M., & Stephens, C. V. (2017). Scared behind the wheel: what impact does driving anxiety have on the health and well-being of young older adults? *International Psychogeriatrics, 29*(6), 1027-1034.
- Herbert, S., Forster, M., McCreanor, T., & Stephens, C. (2017). The social context of alcohol use among Māori in Aotearoa/New Zealand: Reflections of life experiences of alcohol use by older Māori. *International Journal of Indigenous Health, 12*(1), 57-74.
- Herbert, S., Stephens, C., & Forster, M. (2017). Socially based trajectories of alcohol use among indigenous Māori in Aotearoa/New Zealand. *Critical Public Health, 1*-10.
- Alpass, F., Szabo, A., Allen, J., & Stephens, C. (2017). Health effects of informal caring in New Zealand: longitudinal findings from the Health, Work and Retirement study. *International Journal of Care and Caring, 1*(3), 309-329.
- Szabo, A., Allen, J., Alpass, F., & Stephens, C. (2017). Loneliness, socio-economic status and quality of life in old age: the moderating role of housing tenure. *Ageing & Society*.
- ## PUBLISHED ABSTRACTS
- Alpass, F., Stephens, C., Noone, J., & Towers, A. (2008). *Health differences among retirees and workers: Findings from the New Zealand Health, Work and Retirement Study*. Paper presented at the Gerontological Society of America 61st Annual Scientific Meeting November 21–25, 2008 National Harbor, MD, The Gerontologist, 48(Special_Issue_III), 98.
- Renner, K., & Stephens, C. (2008). *Gendered differences in pathways to retirement planning and wellbeing in later life*. Paper presented at the 37th Annual Meeting of Australasian Social Psychologists, Wellington, New Zealand, Australian Journal of Psychology, 60(S1), 42-43.
- Breheeny, M., & Stephens, C. (2008). *"I sort of pay back in my own little way": Independence and reciprocity in the family life of older adults*. Paper presented at the 37th Annual Meeting of Australasian Social Psychologists, Wellington, New Zealand, Australian Journal of Psychology, 60(S1), 14.
- Stephens, C., Breheeny, M., & Pond, R. (2008). *The embodied self and social life: Examples from ageing research*. Paper presented at the 37th Annual Meeting of Australasian Social Psychologists, Wellington, New Zealand, Australian Journal of Psychology, 60(S1), 46.
- Towers, A., Alpass, F., Noone, J., & Stephens, C. (2008). *The health of older caregivers: Findings from the New Zealand health work and retirement study*. Paper presented at the 41st National Conference, Australian Association of Gerontology, 18–21 November 2008, Esplanade Hotel, Fremantle, Australasian Journal on Ageing, 27(S1), A34.
- Alpass, F., Stephens, C., Noone, J., & Towers, A. (2009). *Social network types and implications for health among ageing New Zealanders*. Paper presented at the 19th IAGG World Congress of Gerontology and Geriatrics, Paris, France, JNHA - The Journal of Nutrition, Health and Aging, 13(1), S673.
- Alpass, F., Stephens, C., & Noone, J. (2009). *Culture-bound inertia: Identifying barriers to exercise faced by older indigenous populations*. Paper presented at the 19th IAGG World Congress of Gerontology and Geriatrics, Paris, France, JNHA - The Journal of Nutrition, Health and Aging, 13(1), S251.
- Alpass, F., Noone, J., & Stephens, C. (2009). *The development and validation of a comprehensive and theory driven measure of retirement planning*. Paper presented at the 19th IAGG World Congress of Gerontology and Geriatrics, Paris, France, JNHA - The Journal of Nutrition, Health and Aging, 13(1), S538.
- Alpass, F., Stephens, C., Towers, A., & Noone, J. (2009a). *The health effects of reason for retirement on older New Zealand workers*. Paper presented at the The 20th IAGG World Congress in Seoul, 2013 JNHA - The Journal of Nutrition, Health and Aging, 13(1), 195-196.

- Alpass, F., Towers, A., Stephens, C., & Noone, J. (2009). *Identifying barriers to exercise faced by older indigenous populations*. Paper presented at the 19th International Association of Gerontology and Geriatrics (IAGG) World Congress of Gerontology and Geriatrics, Paris, France, *The Journal of Nutrition, Health and Ageing* 13(S1), S251.
- Stephens, C., Alpass, F., Towers, A., Stevenson, B., Dulin, P., Waldegrave, C., & King, P. (2009). *The New Zealand Longitudinal Study of Aging: A population based prospective exploration of health and well being*. Paper presented at the 42nd National Conference of the Australian Association of Gerontology, 25-27 November 2009, National Convention Centre, Canberra, ACT, Australia, *Australasian Journal on Ageing*, 28(S2), A78.
- Alpass, F., Stephens, C., Towers, A., & Noone, J. (2009b). *Workforce participation for 65-70 year-olds: Findings from the New Zealand Health Work and Retirement Study*. Paper presented at the 42nd National Conference of the Australian Association of Gerontology, 25-27 November 2009, National Convention Centre, Canberra, ACT, Australia, *Australasian Journal on Ageing*, 28(S2), A41 - A42.
- Alpass, F., Stephens, C., Towers, A., & Noone, J. (2010). *Work quality of life and intended retirement age*. Paper presented at the The Gerontological Society of America 63rd Annual Scientific Meeting "Transitions of Care Across the Aging Continuum", *The Gerontologist*, 50(suppl_1), 124.
- Alpass, F., Stephens, C., Pond, R., & Towers, A. (2010). *Gender, ethnicity and the impact of caregiving on the health of older New Zealanders*. Paper presented at the The Gerontological Society of America 63rd Annual Scientific Meeting "Transitions of Care Across the Aging Continuum", *The Gerontologist*, 50(suppl_1), 186.
- Bhullar, N., Towers, A., Stephens, C., & Alpass, F. (2010a). *Longitudinal investigation of objective and subjective indicators of socioeconomic status in the elderly*. Paper presented at the Proceedings of the 27th International Congress of Applied Psychology, Melbourne, Australia, Australian Psychological Society, 864.
- Bhullar, N., Towers, A., Stephens, C., & Alpass, F. (2010b). *Activity restriction as a mediator of the relationship between ageing-related physical decline and mental health: A report from the New Zealand longitudinal study of aging*. Paper presented at the Proceedings of the 27th International Congress of Applied Psychology, Melbourne, Australia, Australian Psychological Society, 721.
- Alpass, F. (2012). *Purpose in life in relation to physical and mental well-being*. Paper presented at the Australian Association of Gerontology, 45th National Conference, 20-23 November 2012, Brisbane, Australia, *Australasian Journal on Ageing*, 31(S1), 1-2.
- Howe, A., Hill, K., Jeon, Y., & Alpass, F. (2012). *Engaging with the Asia-Oceania region*. Paper presented at the Australian Association of Gerontology, 45th National Conference, 20-23 November 2012, Brisbane, Australia, *Australasian Journal on Ageing*, 31(S2), 27.
- Alpass, F., Stephens, C., & Flett, R. (2012). *Patient-Provider Communications and their Impact on Elder Health*. Paper presented at the The Gerontological Society of America 65th Annual Scientific Meeting "Charting New Frontiers in Aging" November 14-18, 2012, San Diego, CA, *The Gerontologist*, 52(S1), 178.
- Philipp, M., & Towers, A. (2013). *Economic living standard indices mediate the apparent health benefits of alcohol consumption among older adults*. Paper presented at the Australasian Professional Society on Alcohol and other Drugs Conference 2013, Brisbane, QLD, *Drug and Alcohol Review*, 32(S1), 58.
- Alpass, F., Stephens, C., & Stevenson, B. (2013a). *Transitions in and out of caregiving: impacts on health and wealth*. Paper presented at the 66th Annual Scientific Meeting "Optimal Aging Through Research" of the Gerontological Society of America, November 20-24, 2013, New Orleans, LA, *The Gerontologist*, 53(S1), 542-543.
- Stephens, C., Breheny, M., Dulin, P., & Alpass, F. (2013). *Giving and receiving: understanding volunteering and wellbeing for older people in terms of reciprocity*. Paper presented at the 66th Annual Scientific Meeting "Optimal Aging Through Research" of the Gerontological Society of America, November 20-24, 2013, New Orleans, LA, *The Gerontologist*, 53(S1), 186-187.
- Alpass, F., Stephens, C., & Stevenson, B. (2013b). *Reconciling work and Elder care: Impacts on health*. Paper presented at the 20th IAGG World Congress of Gerontology and Geriatrics, Seoul, Korea, *Journal of Nutrition, Health & Aging*, 17(S1), S392.
- Breheny, M., Stephens, C., Alpass, F., Stevenson, B., Carter, K., & Yeung, P. (2013). *Development and validation of a measure of living standards for older people*. Paper presented at the 20th IAGG World Congress of Gerontology and Geriatrics, Seoul, Korea, *Journal of Nutrition, Health & Aging*, 17(S1), S456.
- Stephens, C., Horrell, B., Alpass, F., & Breheny, M. (2013). *Capability and carers' wellbeing: using internet forums for research with informal caregivers*. Paper presented at the 20th IAGG World Congress of Gerontology and Geriatrics, Seoul, Korea, *Journal of Nutrition, Health & Aging*, 17(S1), S370.
- Breheny, M., Stephens, C., & Mansvelt, J. (2013). *The importance of contributing to the community to maintaining a positive identity in later life*. Paper presented at the 27th Conference of the European Health Psychology Society, Bordeaux, France, 16th - 20th July 2013, *Psychology & Health*, 28(sup1), 73.

- Stephens, C., Alpass, F., & Stevenson, B. (2014). *Measuring quality of life among a cohort of older people in New Zealand*. Paper presented at the The Gerontological Society of America 67th Annual Scientific Meeting "Making Connections: From Cells to Societies", November 5–9, 2014, Washington, DC, *The Gerontologist*, 54(Suppl_2), 632.
- Alpass, F., Stephens, C., & Stevenson, B. (2014). *National health data-linkage in a New Zealand longitudinal ageing cohort*. Paper presented at the The Gerontological Society of America 67th Annual Scientific Meeting "Making Connections: From Cells to Societies", November 5–9, 2014, Washington, DC, *The Gerontologist*, 54(Suppl_2), 632.
- Alpass, F., Callow, L., Stephens, C., & Stevenson, B. (2014). *Change in cognitive function: findings from 2 waves of the New Zealand longitudinal study of ageing*. Paper presented at the The Gerontological Society of America 67th Annual Scientific Meeting "Making Connections: From Cells to Societies", November 5–9, 2014, Washington, DC, *The Gerontologist*, 54(Suppl_2), 74.
- Stephens, C., Budge, C., Alpass, F., & Stevenson, B. (2014). *The social networks, digital media use and barriers to participation of older people in rural New Zealand: Differences across regions*. Paper presented at the The Gerontological Society of America 67th Annual Scientific Meeting "Making Connections: From Cells to Societies", November 5–9, 2014, Washington, DC, *The Gerontologist*, 54(Suppl_2), 445.
- Tan, G., Newcomb, D., Towers, A., & Sheridan, J. (2015). *Cocktail time? Drug interactions between prescribed pharmaceutical medicines and alcohol in an older adult population*. Paper presented at the Australasian Professional Society on Alcohol and other Drugs, *Drug and Alcohol Review*, 34(S1), 62.
- Stephens, C., Szabo, A., Allen, J., & Alpass, F. (2016). *The effects of home ownership on the wellbeing and health of older New Zealanders*. Paper presented at the Gerontological Society of America (GSA) 2016 Annual Scientific Meeting, New Orleans, LA, *The Gerontologist*, 56(Suppl_3), 635-635.
- Alpass, F., Allen, J., & Stephens, C. (2016). *Factors influencing the decision to relocate to a retirement village*. Paper presented at the Gerontological Society of America (GSA) 2016 Annual Scientific Meeting, New Orleans, LA, *The Gerontologist*, 56(Suppl_3), 635.
- Stephens, C. (2016). *Ageing in place: how can policy and practice support the health benefits of aging at home?* Paper presented at the Gerontological Society of America (GSA) 2016 Annual Scientific Meeting, New Orleans, LA, *The Gerontologist*, 56(Suppl_3), 634-635.
- Sheridan, J., Towers, A., Minicuci, N., Kowal, P., & Newcomb, D. (2016). *How much is too much? Measurement of alcohol consumption in longitudinal studies of ageing*. Paper presented at the Australasian Professional Society on Alcohol and other Drugs, *Drug and Alcohol Review*, 35(S1), 67-68.
- Towers, A., Minicuci, N., Rocco, I., Sheridan, J., Kowal, K., & Newcomb, D. (2017). *The Impact of Forced Exit From Work on Problematic Drinking in Older Europeans*. Paper presented at the 21st International Association of Gerontology and Geriatrics (IAGG) World Congress, San Francisco, CA, *Innovation in Aging*, 1(S1), 67-68.
- Hyde, M., & Towers, A. (2017). *Cross-National Patterns of Older Adults Drinking: Results From an International Investigation*. Paper presented at the 21st International Association of Gerontology and Geriatrics (IAGG) World Congress, San Francisco, CA, *Innovation in Aging*, 1(S1),
- Alpass, F., Szabo, A., Allen, J., & Stephens, C. (2017). *Informal Caregiving and health: longitudinal findings from the Health, Work and Retirement Study*. Paper presented at the 21st International Association of Gerontology and Geriatrics (IAGG) World Congress, San Francisco, CA, *Innovation in Aging*, 1(S1), 579.
- Szabo, A., Allen, J., Alpass, F., & Stephens, C. (2017). *Does physical functioning decline after retirement? A longitudinal investigation from 2006 to 2016*. Paper presented at the 21st International Association of Gerontology and Geriatrics (IAGG) World Congress, San Francisco, CA, *Innovation in Aging*, 1(S1), 579.
- Allen, J., Towers, A., Alpass, F., & Stephens, C. (2017). *Considerations of response bias and value in linking an existing longitudinal cohort study with national health record data*. Paper presented at the International Population Data Linkage Conference, August 2016, Swansea, Wales, *International Journal of Population Data Science*, 1(1), 195.

Appendix B - Weighted Grand Mean for ACE-R Domain Scores

	N	Grand Mean	Weighted N	Weighted grand mean
Memory	1425	23.45	775	23.44
Attention	1429	17.80	777	17.80
Fluency	1431	11.31	778	11.31
Language	1425	24.90	774	24.88
Visuospatial	1430	15.12	777	15.11

Note: estimates are based on case observations from persons aged 58-76 who participated in the 2010-2012 cognitive interview waves. In the calculation of the grand mean values (presented here and used for centering cognitive domain scores in Chapter Two, Cognition) cases are weighted for the number of observations from the same participants across the two interview phases.



Endnotes

- 1 Office for Senior Citizens (2015). 2014 Report on the Positive Ageing Strategy. Wellington, New Zealand: Office for Senior Citizens.
- 2 Accessed from the New Zealand Electoral Commission, 18th January, 2017: <http://www.elections.org.nz/researchstatistics/enrolmentstatistics-electorate>. Calculations based on estimated population statistics as at 30 June 2016 (Provisional) using 2013 census data and enrolment statistics as at 31 December 2016.
- 3 Gorman E, Grant M, Scobie G, Towers A (2012). Health and Retirement of Older New Zealanders. New Zealand Treasury Working Paper 12/02; Wellington, New Zealand. ISBN: 978-0-478-39646-1.
- 4 Towers, A., Sheridan, J., Newcombe, D. (December, 2017). The drinking patterns of older New Zealanders: National and international comparisons. Wellington: Health Promotion Agency: <https://www.hpa.org.nz/researchlibrary/research-publications>
- 5 Towers, A.J., Stevenson, B., Breheny, M., & Allen, J. (2016). Health, work and retirement longitudinal study. In N. Pachana (Ed.) *Encyclopedia of Geropsychology*. (pp. 1025 - 1033). Singapore: Springer Singapore.
- 6 A combination of fit criteria determined the number of profiles underlying the data including the bootstrap likelihood ratio test and the Bayesian information criterion. Entropy and probability of class membership were examined to assess the extent to which a model provides distinct classes with a recommended threshold of 0.80.
- 7 Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946.
- 8 Frieling MA, Davis WR, Chiang G (2013). The SF-36v2 and SF-12v2 health surveys in New Zealand: norms, scoring coefficients and cross-country comparisons. *Australian and New Zealand Journal of Public Health*. 37(1):24-31.
- 9 Jensen J, Spittal M, Krishnan V (2005). ELSI Short Form: User Manual for a Direct Measure of Living Standards.
- 10 World Health Organization (2015). *World Report on Ageing and Health*, ISBN 978 92 4 156504. Luxembourg.
- 11 Callow, L., Alpass, F., Leathem, J., & Stephens, C. (2015). Normative data for older New Zealanders on the Addenbrooke's Cognitive Examination-Revised. *New Zealand Journal of Psychology*. 44(3), 29-41.
- 12 Stephens, C., Spicer, J., Budge, C., Stevenson, B., & Alpass, F. (2014). Accounting for differences in cognitive health between older adults in New Zealand and the USA. *International Psychogeriatrics*, 27(04), 591-600.
- 13 World Health Organization (2015). *World Report on Ageing and Health*, ISBN 978 92 4 156504. Luxembourg.
- 14 Jackson, N., Cochrane, B., McMillan, R. (2013). Workforce participation of older workers as an element of New Zealand's Retirement Income Framework: A Review of Existing Knowledge and Data. New Zealand: National Institute of Demographic and Economic data.
- 15 Davey, J. A. (2015). Impact on the labour market of the aspirations and preferences of older workers: A policy paper. Palmerston North, New Zealand: Massey University.
- 16 OECD (2016). *OECD Older Workers Scoreboard 2016*, 35 OECD Countries. Retrieved on 13th November 2017, from www.oecd.org/els/employment/olderworkers.
- 17 The "other" group includes those who reported they were "unable to work due to a health or disability issue". The percentage of the total sample in this category ranged from 4.8% (n = 126) in 2008 to 3.5% (n = 37) in 2016.
- 18 Koopman-Boyden, P., Cameron, M. P., Davey, J., Richardson, M. (2014). Making active ageing a reality: Maximising participation and contribution by older people. Waikato University: http://www.waikato.ac.nz/_data/assets/pdf_file/0019/242317/Making-Active-Ageing-AReality.pdf.
- 19 Stephens, C., Alpass, F., Stevenson, B. (2014). *Inclusion, contribution and connection: A study of the ageing in Aotearoa*. Summary Report. Palmerston North, NZ: Massey University.
- 20 Statistics New Zealand (2015). 2013 Census QuickStats about people aged 65 and over. Available from www.stats.govt.nz.
- 21 Ministry of Health. (2017). Tier 1 statistics 2015/16: New Zealand Health Survey: Ministry of Health; 2017 [Available from: <http://www.health.govt.nz/publication/tier-1-statistics-2015-16-new-zealandhealth-survey>].
- 22 World Health Organization (2015). *World Report on Ageing and Health*, ISBN 978 92 4 156504. Luxembourg.
- 23 Towers, A., Philipp, M., Dulin, P., & Allen, J. (2016). The "Health Benefits" of Moderate Drinking in Older Adults may be Better Explained by Socioeconomic Status. *Journal of Gerontology: Social Sciences*. DOI:10.1093/geronb/gbw152.
- 24 Szabo, A., Allen, J., Alpass, F., & Stephens, C. (2017). Longitudinal trajectories of quality of life and depression by housing tenure status in the New Zealand Health, Work and Retirement study. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*. DOI:10.1093/geronb/gbx028.
- 25 Statistics New Zealand. (2017). 2013 Census: Unpaid activities (total responses) by age group and sex, for the census usually resident population count aged 15 years and over, 2006 and 2013 Censuses Data extracted on 27 Mar 2017 20:19 UTC (GMT) from StatsNZ.
- 26 Department of Labour. (2011). *Review of flexible working arrangements in New Zealand workplaces - survey findings*. Wellington, New Zealand: Department of Labour.
- 27 Alpass, F., Keeling, S., Allen, J., Stevenson, B., & Stephens, C. (2017a). Reconciling work and care in the New Zealand context. *Journal of Cross-Cultural Gerontology*, 1-15.
- 28 Alpass, F., Szabo, A., Allen, J., & Stephens, C. (2017b). Health effects of informal caring in New Zealand: longitudinal findings from the Health, Work and Retirement study. *International Journal of Care and Caring*, 1(3), 323-337.
- 29 Roth, D. L., Fredman, L., & Haley, W. E. (2015). Informal caregiving and its impact on health: A reappraisal from population-based studies. *The Gerontologist*, 55(2), 309-319.
- 30 Kukutai, T. H. (2010). *The thin brown line: Reindigenizing inequality in Aotearoa New Zealand*. (Doctor of Philosophy), Stanford University.



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