

The health of older New Zealanders in relation to housing tenure: analysis of pooled data from three consecutive, annual New Zealand Health Surveys

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There is a considerable body of international literature focusing on the relationship between housing tenure and health. Studies have demonstrated a link between home ownership and lower mortality rates, compared with renting.¹⁻⁴ Tenure has also been associated with physical health measures⁵⁻⁸ – in some cases after controlling for socioeconomic variables⁹⁻¹¹ – and with disability.¹² Some studies report an association between tenure and mental health conditions such as depression or anxiety,^{8,9} but others report no significant associations that remained after controlling for other factors.^{13,14} Suggested reasons for a relationship between tenure and health include housing factors that may influence health, such as poorer housing conditions or the psychosocial benefit from living in one's own home.⁷

Fewer studies focus on tenure and health among older populations. Those that do report that homeowners are generally in better health and have longer disability-free life expectancy than renters, but with some variation by gender or country.¹⁵⁻²¹ Dalstra et al.,¹⁷ for example, analysed data for 60–79-year-olds from ten European countries and found that tenure and health were strongly associated in Great Britain and the Netherlands but not elsewhere, while Herbers and Mulder²² found variable relationships between tenure and subjective wellbeing in 16 European countries. These findings are likely a result of differences between countries in aspects of the housing market

Abstract

Objective: To explore relationships between the housing tenure of older New Zealanders and their health-related behaviours, and physical and mental health.

Methods: Pooled data were analysed for 15,626 older adults (aged 55+) from three consecutive, annual, nationally representative New Zealand Health Surveys to compare owner-occupiers, private renters and public renters.

Results: Most in the sample were owner-occupiers (83.2%), with 12.4% private renters and 4.5% public renters. A higher proportion of renters aged 75+ were female. Māori and Pacific people were more likely to be renters. Renters were more likely to be living alone, on lower annual incomes. Overall measures of physical and mental health showed a health gradient, with public renters in the poorest health and owner-occupiers in the best health.

Conclusions: Rental tenure is associated with poorer health.

Implications for public health: Older renters tend to be economically disadvantaged and in poorer health than owner-occupiers. Over time, the proportion of older renters has been increasing. This will have implications for policy and for services in meeting the diverse care and support needs of older people. Higher rates of renting among Māori and Pacific people and older females means that these groups are particularly vulnerable to any negative impact of renting on health.

Key words: New Zealand, older adults, housing tenure, self-assessed health, health behaviours, survey data

(e.g. availability and quality of housing stock) and public policy (e.g. welfare arrangements).

In New Zealand after World War II, government policies facilitated high rates of home ownership (with the highest level, 83%, attained in 1991 by the cohort born in 1927–31).^{23,24} Until recently, most older people were owner-occupiers and generally mortgage free (an important contributor to older people's living standards).²⁵ Renting was a small, residual market dominated by the private sector (84% of rental stock was owned by private landlords in 2013).²⁶ People

unable to enter or sustain home ownership and unable to access affordable private rental housing were catered for by a comparatively small government-owned public housing stock (which rarely prioritises older people), an even smaller local council housing stock for pensioners, and a very small community housing stock.

Following housing reforms in 1990–91, housing support transformed to a benefit-based welfare system.²⁷ Government capital investments in affordable housing by way of individual deposit and mortgage

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Submitted: July 2018; Revision requested: November 2018; Accepted: December 2018

The authors have stated they have no conflict of interest.

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Aust NZ J Public Health. 2019; 43:182-9; doi: 10.1111/1753-6405.12875

support, capital support to councils and community housing were almost entirely curtailed. Home ownership rates have been declining, including among Māori and Pacific populations who already had lower levels of home ownership.^{26,28,29} New Zealand is currently facing a crisis over affordable housing, in relation to both affordable home ownership and access to affordable rents.

There is limited literature examining relationships between tenure and the health of older New Zealanders, but some evidence suggests that owner-occupiers may be less likely to be frail or in vulnerable health,^{30,31} be in better physical health and have higher levels of wellbeing and quality of life than those who do not own their homes.³²⁻³⁴ Jatrana and Blakely,³⁵ however, reported no significant difference between owners and non-owners aged 65 and older in relative risk of mortality after adjusting for other factors, and Waldegrave and Cameron³⁴ found no difference in mental health scores by tenure. Piersé et al.,³⁶ using data from three waves of the New Zealand Survey of Families, Income and Employment (SoFIE), showed that in pooled data there was a significant association between rental tenure and psychological distress for adults aged 18–80 years; however, in models using the longitudinal nature of the data, changes in psychological distress were only associated with changes in an individual's level of deprivation, and not with changes in housing tenure.

New Zealand's population is ageing while, at the same time, home ownership levels are falling.^{23,26,28,29,37} This will mean an increasing number of older renters, particularly in the private rental sector.³⁸ Similar shifts may also be taking place in many other countries, including Australia and England.³⁹⁻⁴² The potential impacts of this tenure revolution have only recently begun to be recognised in New Zealand, where superannuation policy and the aged care system continue to assume high home ownership among older people and ageing in place is promoted.^{24,43}

This paper presents analysis of New Zealand Health Survey data for older New Zealanders by tenure and considers the implications for population health and health services of an increasing number of older renters.

Our research questions were:

1. How do the demographic characteristics and socioeconomic status of older New Zealanders vary by housing tenure?

2. What is the relationship between housing tenure and: a) health-related behaviours; b) physical health; and c) mental health among older adults living in New Zealand?

Methods

Survey population

This study pooled data from respondents aged 55+ in the 2013/14, 2014/15 and 2015/16 rounds of the New Zealand Health Survey (NZHS). This is a national, population-based survey with a target population comprising 'usually resident' New Zealanders aged 15 and over (excluding specific types of non-private dwellings). Information is collected through face-to-face interviews in people's homes, with a 79–80% final weighted adult response rate for the three included years.⁴⁴⁻⁴⁶ For details about the survey, see the Ministry of Health webpage.⁴⁷

Analyses were based on the responses of NZHS respondents aged 55+ who answered the housing tenure question, totalling 15,626 respondents across the three waves. Respondents were grouped into three age categories: 55–64, 65–74 and 75+ years. While 'older adults' are often defined as those aged 65 and over, we selected respondents aged 55+ for two reasons: to ascertain whether findings were something that had continued from a younger age or whether they were new in older age; and to ensure that older Māori and Pacific populations – who experience lower life expectancy⁴⁸ – were included.

Data were supplied by the Ministry of Health in the form of confidentialised, unit record files (CURFs), administered through Statistics New Zealand.

Variables

The variables analysed in this paper stemmed from the core NZHS questionnaire to allow pooling of comparable data across surveys.⁴⁹⁻⁵¹ This included demographics, health behaviours and risk factors, and various measures of health status. Missing data values tended to be low, at less than 1%.

Ethnicity was analysed as prioritised ethnicity, a method whereby respondents identifying with multiple groups are allocated to a single ethnic group based on their response and a set order of priority: Māori, Pacific, Asian, New Zealand European/Other.⁵²

Housing tenure was grouped into: 1) owner-occupiers; 2) private renters (homes owned

by a private person, trust or business); and 3) public renters (homes owned by a local authority or city council, Housing New Zealand Corporation or other state-owned corporation, enterprise or government department). Owner-occupiers included those holding their home in a family trust – the latter were initially analysed separately but showed similar outcomes to owner-occupiers, so the groups were combined. (Placing one's home in a family trust previously meant it could be excluded from personal assets when applying for an income and asset-tested rest home subsidy; however, this is no longer the case.)

Sampling design and weighting

The NZHS used a stratified, multi-stage, probability-proportional-to-size sampling design, and a method to increase the sample sizes for specific ethnic groups (Māori, Pacific and Asian). Each survey has been weighted to produce a representative sample and unbiased estimates of population values for that survey year. Each survey includes a set of 100 replicate weights used to create the sampling variance of these estimates (for a full description of the sampling design and weighting, see the Ministry of Health Methodology reports).⁴⁴⁻⁴⁶ The three surveys were pooled to give one representative weight used to produce the pooled estimates required and 300 replicate weights used to create the sampling variance of that estimate. These weights were used with most questions, with two exceptions. Firstly, measurements were taken of respondents' height, weight and blood pressure and as there was greater missingness, a separate set of weights and replicate weights were created for analysing these variables and their derived quantities. Secondly, in the 2015/16 survey, half the respondents were asked a new set of questions about alcohol and the other half were asked the old questions. A third set of weights and replicate weights were created to account for the fact that only half the respondents had answered the old questions. Sudaan (release 9.0, 2004)⁵³ was used to calculate the estimates and the sampling variances as well as the statistical modelling.

Statistical analysis

Questions in the survey generally had responses of three types: 1) numerical answers; 2) a choice of two answers; or 3) multiple answers from a list. The first type had responses presented in the text as means

for each tenure group. Tests of differences in means between: a) private and public renters; and b) private renters and owner-occupiers were done using regression for each age group.

Responses to the second two types of question were presented as percentages. Tests for differences in percentages between tenure groups were analysed similarly to type 1 but used logistic regression. The *p*-values calculated from the logistic regression and presented in the text were for differences between the marginal means of each tenure group, i.e. differences between their percentages.

To indicate the quality of the estimates, those with a Relative Sampling Error (RSE) of 30–50% were marked with an asterisk* and should be used with caution, those with an RSE over 50% were marked with a double asterisk** and should be considered unreliable for most practical purposes. Estimates for groups containing fewer than 30 respondents were suppressed (indicated in tables with a dash).

Results

Demographic information

Across the total sample of respondents aged 55+, 83.2% were classed as owner-occupiers or in a home held in a family trust (62.2% and 21.0%, respectively); henceforth combined and referred to as owner-occupiers. A further 12.4% were private renters and 4.5% were public renters.

Demographic data are presented in Table 1. There was little variation in tenure between age groups, although there were slightly more owner-occupiers and fewer private renters in the 65–74 age group. Among the 55–64 and 65–74-year-olds, the gender split was broadly even but there was a higher proportion of women aged 75+, particularly among public and private renters (64% and 66%, respectively).

Māori and Pacific people were more likely to be public renters and, along with Asian people, to be private renters. New Zealand European/Others represented the highest proportion of owner-occupiers. The proportion of New Zealand European/ Others within each tenure group increased with consecutive age groups, with relatively few Māori and even fewer Pacific and Asian people aged 75+ (not shown).

Table 1: Demographic information by housing tenure and age group.

	Housing Tenure						p-value: private and public renters	p-value: private renters and o-occupiers
	Public renters		Private renters		Owner-occupiers			
	Statistic	95%CI	Statistic	95%CI	Statistic	95%CI		
Tenure by age group (row %)								
55–64	4.5	(4.0, 5.1)	14.2	(13.2, 15.2)	81.3	(80.2, 82.4)	0.0000	0.0000
65–74	4.0	(3.6, 4.5)	9.6	(8.6, 10.7)	86.4	(85.3, 87.5)	0.0000	0.0000
75+	4.9	(4.1, 6.0)	12.8	(9.6, 16.9)	82.2	(78.5, 85.4)	0.0000	0.0000
Gender: females (%)								
55–64	54.1	(47.6, 60.4)	51.5	(47.2, 55.7)	51.3	(50.5, 52.0)	0.5376	0.9448
65–74	49.8	(43.7, 55.9)	50.7	(44.8, 56.5)	51.6	(50.9, 52.3)	0.8388	0.7737
75+	64.2	(56.4, 71.3)	65.6	(59.7, 71.1)	54.8	(53.7, 56.0)	0.7849	0.0019
Prioritised ethnicity (col %) (all ages)								
Māori	22.2	(19.3, 25.3)	14.2	(12.4, 16.3)	6.0	(5.8, 6.3)	0.0001	0.0000
Pacific	17.0	(13.6, 21.0)	4.3	(3.2, 5.7)	1.7	(1.5, 2.1)	0.0000	0.0002
Asian	4.5**	(2.6, 7.6)	9.1	(7.1, 11.6)	4.9	(4.3, 5.6)	0.0025	0.0007
NZE/Others ^a	56.4	(51.7, 61.0)	72.4	(68.7, 75.8)	87.4	(86.6, 88.1)	0.0000	0.0000
Total number of people in household								
55–64	2.6	(2.3, 2.8)	2.6	(2.4, 2.7)	2.5	(2.4, 2.5)	0.8493	0.1097
65–74	2.1	(1.8, 2.4)	2.1	(1.9, 2.3)	2.1	(2.0, 2.1)	0.9209	0.6775
75+	1.5	(1.3, 1.7)	1.8	(1.6, 2.0)	1.8	(1.7, 1.8)	0.0262	0.7263
Living alone (%)								
55–64	41.1	(35.3, 47.3)	25.8	(22.8, 29.1)	15.3	(14.2, 16.5)	0.0000	0.0000
65–74	52.0	(45.3, 58.7)	38.6	(33.5, 43.9)	20.6	(19.4, 21.9)	0.0024	0.0000
75+	72.9	(65.7, 79.1)	48.0	(42.1, 54.0)	39.0	(37.0, 41.1)	0.0000	0.0040
Average personal income per year (\$K)^b								
55–64	21.0	(18.3, 23.7)	38.4	(35.6, 41.2)	53.8	(52.1, 55.5)	0.0000	0.0000
65–74	18.9	(17.5, 20.3)	29.1	(26.7, 31.6)	35.8	(34.6, 37.1)	0.0000	0.0000
75+	17.5	(16.6, 18.4)	22.7	(18.6, 26.8)	24.5	(23.6, 25.4)	0.0135	0.3866
Income sources in the last year (%)								
<i>a) Wages, salaries, commissions, bonuses etc. paid by an employer</i>								
55–64	32.9	(27.3, 39.1)	56.7	(52.4, 61.0)	60.8	(58.7, 62.8)	0.0000	0.0942
65–74	10.7*	(7.3, 15.5)	28.3	(22.9, 34.3)	24.8	(23.0, 26.7)	0.0000	0.2580
75+	-	-	-	-	3.8	(3.0, 4.9)	-	-
<i>b) Self-employment/work in own business</i>								
55–64	-	-	14.5	(11.6, 18.1)	28.6	(26.7, 30.6)	-	0.0000
65–74	-	-	11.3*	(7.5, 16.7)	15.9	(14.3, 17.6)	-	0.0739
75+	-	-	-	-	3.8	(3.0, 4.8)	-	-
<i>c) Interest, dividends, rent, other investments</i>								
55–64	-	-	7.8	(5.8, 10.4)	23.8	(22.1, 25.6)	0.0000	0.0000
65–74	-	-	12.7*	(8.8, 17.9)	34.1	(31.8, 36.5)	0.0000	0.0000
75+	-	-	30.4**	(15.3, 51.6)	34.6	(32.0, 37.2)	0.0032	0.6679
<i>d) NZ Superannuation or Veterans Pension (eligibility: 65+)</i>								
65–74	85.9	(79.8, 90.4)	78.5	(73.4, 82.8)	84.7	(82.8, 86.4)	0.0301	0.0130
75+	94.0	(89.1, 96.8)	89.8	(82.2, 94.4)	92.0	(89.8, 93.7)	0.2665	0.4663
<i>e) Other government benefits</i>								
55–64	61.7	(55.8, 67.2)	26.7	(23.4, 30.2)	8.1	(7.1, 9.1)	0.0000	0.0000
65–74	-	-	4.7*	(3.1, 7.1)	2.5	(1.9, 3.2)	-	0.0391
75+	-	-	-	-	3.3*	(2.4, 4.6)	-	-
Work hours								
55–64	33.7	(30.8, 36.6)	38.9	(37.4, 40.4)	39.1	(38.5, 39.8)	0.0026	0.7623
65–74	-	-	35.2	(31.5, 38.8)	31.5	(30.3, 32.7)	0.0313	0.0567
75+	-	-	-	-	21.3	(18.3, 24.3)	0.4638	0.0021

Notes:

a: New Zealand European/Others

b: 14% missing data

Estimates with a RSE of 30–50% are marked * and should be used with caution, those with an RSE over 50% are marked ** and should be considered unreliable for most practical purposes, any estimates containing fewer than 30 respondents are suppressed (-).

Household size was on average about two people (including the respondent), without significant differences except for the 75+ age group, where public renters were more likely to be living in smaller households. Public renters followed by private renters in all age

categories were more likely to be living alone than owner-occupiers; proportions living alone increased with age.

Public renters in all age categories had the lowest average personal income per year, followed by private renters, with owner-

occupiers on the highest personal income (except for the 75+ age group where there was no significant difference between private renters and owner-occupiers). There was a high proportion of missing data on this question (14% missing, most answering 'don't know'). Average annual income dropped with each increasing age group for all tenures, with owner-occupiers experiencing the biggest fall. This meant there were smaller differences in income between tenure groups among those aged 75+. Similar patterns were observed for household income (not shown). The number of older adults employed/self-employed fell across the three age groups, with very few respondents aged 75+ working. Among 65–74-year-olds, however, about one-quarter of owner-occupiers and private renters were paid by an employer while 16% of owner-occupiers and 11%* of private renters were self-employed. Work hours for 65–74-year-olds averaged 35 hours a week for private renters and 32 hours for owner-occupiers.

Table 2: Risk factors and health behaviours by tenure and age group.

	Housing Tenure						p-value: private and public renters	p-value: private renters and o-occupiers
	Public renters		Private renters		Owner-occupiers			
	Statistic	95%CI	Statistic	95%CI	Statistic	95%CI		
Raised Blood Pressure (%)^a								
55–64	42.2	(36.3, 48.4)	33.8	(30.3, 37.5)	32.2	(30.3, 34.1)	0.0199	0.4232
65–74	44.1	(36.4, 52.0)	41.9	(36.4, 47.7)	40.2	(38.2, 42.3)	0.6770	0.5742
75+	49.9	(42.7, 57.1)	47.5	(41.2, 53.8)	46.8	(44.3, 49.2)	0.6325	0.8329
BMI (>30): classified obese (%)^a								
55–64	52.6	(46.4, 58.6)	41.0	(36.9, 45.2)	35.8	(33.9, 37.6)	0.0020	0.0208
65–74	53.7	(46.4, 60.9)	39.6	(33.9, 45.6)	35.7	(33.6, 37.9)	0.0030	0.2119
75+	36.2	(28.7, 44.5)	25.6	(18.9, 33.8)	25.8	(23.6, 28.2)	0.0642	0.9586
Engaged in little/no physical activity (%)								
55–64	25.6	(20.6, 31.3)	17.2	(14.1, 20.9)	12.3	(11.2, 13.6)	0.0064	0.0065
65–74	33.8	(27.3, 41.0)	25.6	(20.5, 31.4)	15.6	(14.1, 17.1)	0.0678	0.0007
75+	54.2	(47.4, 60.8)	40.6	(30.8, 51.2)	31.2	(28.9, 33.6)	0.0382	0.0634
Fruit and vegetable consumption (%)								
a) 2+ servings of fruit /day								
55–64	41.5	(35.8, 47.5)	53.3	(49.1, 57.5)	62.7	(61.0, 64.4)	0.0010	0.0001
65–74	48.1	(41.4, 54.9)	55.8	(49.7, 61.7)	65.5	(63.8, 67.2)	0.0852	0.0025
75+	50.1	(43.3, 56.8)	60.8	(54.2, 67.1)	65.8	(63.5, 68.0)	0.0149	0.1574
b) 3+ servings of vegetables /day								
55–64	51.6	(45.8, 57.4)	62.3	(57.8, 66.5)	74.0	(72.3, 75.7)	0.0038	0.0000
65–74	54.7	(47.9, 61.5)	65.7	(59.9, 71.1)	76.6	(75.0, 78.1)	0.0137	0.0002
75+	52.5	(45.7, 59.3)	68.5	(62.5, 74.0)	71.2	(69.0, 73.3)	0.0002	0.3931
Daily smokers (%)								
55–64	36.2	(30.9, 41.9)	25.2	(21.7, 29.1)	10.0	(9.0, 11.0)	0.0009	0.0000
65–74	20.6	(15.9, 26.2)	17.2	(13.4, 21.8)	6.6	(5.7, 7.6)	0.2960	0.0000
75+	10.6*	(7.2, 15.2)	6.9**	(3.7, 12.4)	2.7	(2.1, 3.6)	0.2094	0.0485
Alcohol consumption (%)								
a) Drink containing alcohol in the last year								
55–64	53.2	(47.7, 58.6)	72.0	(68.0, 75.7)	84.5	(83.1, 85.9)	0.0000	0.0000
65–74	45.1	(38.7, 51.7)	65.0	(59.0, 70.5)	81.3	(79.8, 82.7)	0.0000	0.0000
75+	47.4	(41.2, 53.7)	63.2	(52.9, 72.5)	70.3	(68.3, 72.3)	0.0068	0.1625
b) Drink containing alcohol weekly or more								
55–64	12.5	(9.4, 16.3)	33.9	(29.9, 38.2)	49.3	(47.4, 51.3)	0.0000	0.0000
65–74	17.2*	(12.0, 24.0)	32.4	(28.0, 37.0)	48.9	(46.7, 51.1)	0.0001	0.0000
75+	16.2	(12.0, 21.6)	35.6*	(24.7, 48.2)	39.6	(37.2, 42.1)	0.0021	0.5095
c) Drink containing alcohol 4+ times per week								
55–64	4.7*	(3.1, 7.1)	22.1	(18.6, 26.1)	28.2	(26.4, 30.0)	0.0000	0.0036
65–74	-	-	24.0	(19.8, 28.7)	33.6	(31.6, 35.6)	-	0.0001
75+	-	-	24.8	(19.8, 30.5)	28.9	(26.8, 31.1)	-	0.1757
d) Hazardous drinkers (last year drinkers with AUDIT score of 8 or more)								
55–64	27.3	(20.4, 35.5)	24.2	(19.6, 29.5)	13.8	(12.3, 15.4)	0.5003	0.0001
65–74	-	-	19.3*	(14.1, 25.9)	9.6	(8.3, 11.1)	-	0.0016
75+	-	-	-	-	3.7*	(2.7, 5.1)	-	-
Used illicit/non-prescribed drugs for recreational or non-medical purposes, or to get high in last 12 months (%)								
55–64	13.0	(9.7, 17.2)	6.9	(5.3, 8.9)	3.7	(3.0, 4.5)	0.0040	0.0012
65–74	-	-	-	-	1.2*	(0.9, 1.7)	-	-
75+	-	-	-	-	-	-	-	-

Notes:

a: these variables were re-weighted to account for missingness

Estimates with a RSE of 30–50% are marked * and should be used with caution, those with an RSE over 50% are marked ** and should be considered unreliable for most practical purposes, any estimates containing fewer than 30 respondents are suppressed (-).

Risk factors and health behaviours

Anthropometric measurements taken during the survey interviews included height and weight – combined to produce body weight index (BMI) – and blood pressure (high blood pressure defined as a systolic BP of 140 or more and/or a diastolic BP of 90 or more). Health behaviours were self-reported. Results are shown in Table 2.

Owner-occupiers generally reflected the healthiest behaviours and public renters the poorest, although not all differences were statistically significant in every age group. Notably, public renters were most likely to have a BMI over 30 in the 55–64 and 65–74 age groups and most likely to report little or no physical activity in the oldest age group. Public followed by private renters reported less fruit and vegetable consumption than owner-occupiers at all ages, and most of these differences were significant. There were large differences in daily smoking among 55–64-year-olds (35% of public renters, 25% of private renters and 10% of owner-occupiers) and between private renters and owner-occupiers in the 65–74 years age group (17% compared with 7%).

Public renters followed by private renters were less likely to have had a drink containing alcohol in the last year, to drink weekly or more, or to drink four or more times a week, while owner-occupiers were most likely to consume alcohol (except for among

the 75+ where there were no significant differences between private renters and owner-occupiers). Hazardous drinkers are those scoring eight or more on the Alcohol Use Disorders Identification Test (AUDIT) – a ten-item questionnaire encompassing alcohol consumption, dependence and adverse consequences.⁵⁴ While renters overall were less likely to drink alcohol, among those who *had* reported having an alcoholic drink in the past year, renters aged 55–64 were more likely than owner-occupiers to be classed as hazardous drinkers.

Health status

Self-reported health status

An overall measure of self-reported health was calculated using the Medical Outcomes Study Short Form version 2.0 (SF-12) – an internationally-validated instrument that aggregates scores to produce a physical and mental health summary score⁵⁴ (Figure 1). These both show a health gradient for all three age groups, with public renters in the poorest physical and mental health, followed by private renters, with owner-occupiers in the best overall health.

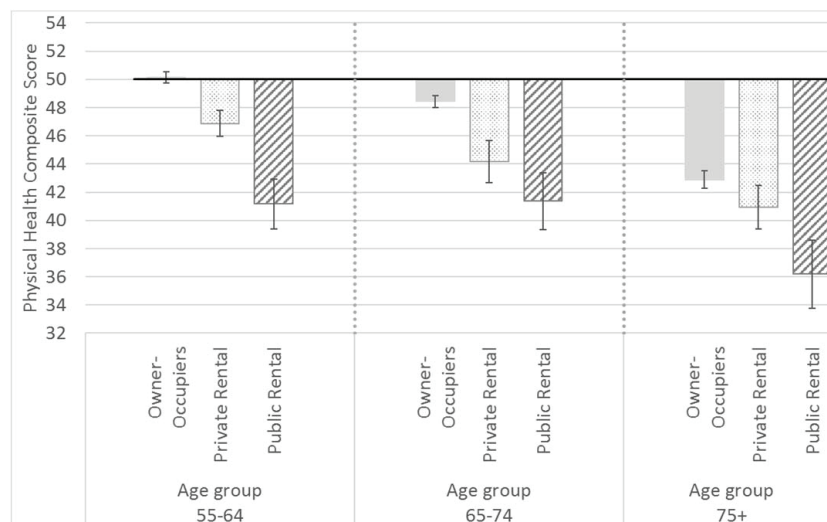
All but one age/tenure group were in worse physical health than the average for the whole population (adults aged 15+), the exception being owner-occupiers aged 55–64 who were in similar physical health to the population average. Owner-occupiers in the younger two age groups had slightly better average mental health than the whole adult population.

Long-term physical health conditions

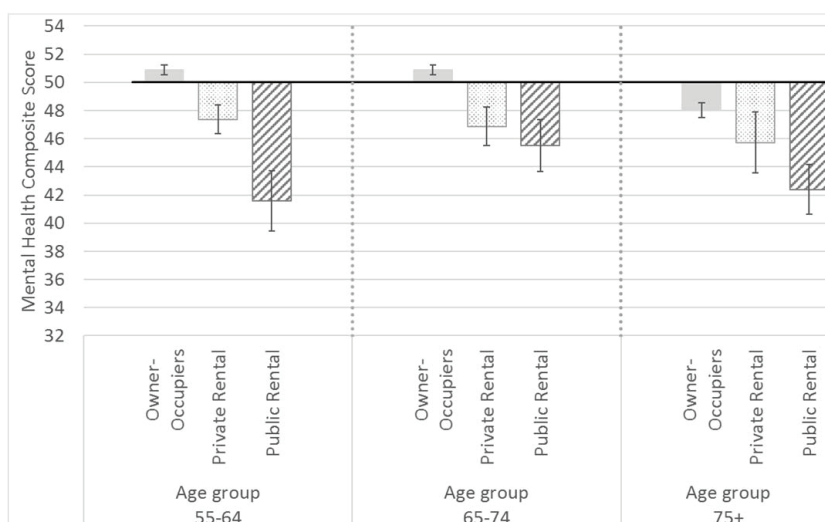
Self-reported physical health generally reflected a gradient from poorest health among public renters to best health among owner-occupiers, with private renters in-between (Table 3). The following results highlight those that were statistically significant (p -value of less than 0.05) and showed a five percentage point difference between groups (likely to be clinically significant). Most notable were the differences between public and private renters in all three age groups for diabetes and asthma; the two younger age groups for heart attack; and for one age group only for high blood pressure, high cholesterol, angina, heart failure, any other heart diseases, arthritis and chronic pain. For example, among 65–74-year-olds, 32% of public renters reported having diabetes, 18% of private renters and 13% of owner-occupiers. At the

Figure 1: (a) SF-12 physical health composite score by age group and housing tenure, (b) SF-12 mental health composite score by age group and housing tenure.

(a)



(b)



Notes:

The line at a composite score of 50 is the population average for all those aged 16+. Bars above the line represent better health and those below the line, poorer health.

Source: First author's analysis of the New Zealand Health Survey data (respondents aged 55+ in the 2013/14, 2014/15 and 2015/16 waves).

same age, 31% of public renters reported having asthma compared with 16% of private renters and owner-occupiers.

Mental health

Although a health gradient was again evident, differences in reported depression and anxiety disorder were only significant for 55–64-year-olds. Both these conditions showed improvement with age. The numbers reporting bipolar disorder were too small to allow analysis.

The Kessler Psychological Distress Scale (K10) is a derived variable where a score greater or equal to 12 indicates high or very high

levels of psychological distress in the past four weeks and a high probability of having an anxiety or depressive disorder.⁵⁴ Public and private renters aged 55–64 and 65–74 were more likely to have a score of 12 or more; small numbers in the oldest age group prevented analysis.

Discussion

Although not all results were statistically significant, a gradient emerged whereby renters reported poorer health than owner-occupiers. Furthermore, the differences seen between public and private renters highlight

Table 3: Self-reported physical and mental health by tenure and age group.

	Housing Tenure						p-value: private and public renters	p-value: private renters and o-occupiers
	Public renters		Private renters		Owner-occupiers			
	%	95%CI	%	95%CI	%	95%CI		
a) High blood pressure								
55–64	49.3	(43.4, 55.2)	42.4	(38.5, 46.4)	38.3	(36.3, 40.4)	0.0625	0.0694
65–74	63.4	(56.6, 69.7)	52.4	(45.7, 59.1)	52.3	(50.3, 54.4)	0.0267	0.9772
75+	64.7	(58.1, 70.8)	62.8	(57.3, 68.0)	61.2	(58.7, 63.7)	0.6049	0.6119
b) High cholesterol levels in your blood								
55–64	49.5	(43.4, 55.5)	40.4	(36.4, 44.5)	38.7	(36.7, 40.6)	0.0140	0.4430
65–74	45.3	(38.3, 52.6)	51.8	(46.0, 57.6)	47.6	(45.4, 49.7)	0.1808	0.1806
75+	46.3	(39.6, 53.1)	46.5	(38.1, 55.1)	43.0	(40.7, 45.3)	0.9650	0.4292
c) Had a heart attack								
55–64	11.3*	(8.3, 15.1)	6.1	(4.6, 8.1)	3.6	(3.0, 4.3)	0.0098	0.0055
65–74	20.4	(15.8, 25.9)	10.9	(8.2, 14.2)	7.8	(6.8, 9.1)	0.0019	0.0649
75+	19.8	(14.6, 26.2)	15.0*	(10.9, 20.3)	14.5	(13.1, 16.1)	0.1874	0.8434
d) Angina								
55–64	11.8*	(8.6, 16.0)	5.3*	(3.7, 7.6)	3.5	(2.9, 4.3)	0.0031	0.0932
65–74	17.3	(13.4, 22.0)	15.1	(11.4, 19.8)	7.9	(6.9, 9.1)	0.4670	0.0014
75+	16.8	(12.6, 22.0)	15.8	(12.6, 19.5)	14.0	(12.6, 15.6)	0.7256	0.3763
e) Heart failure								
55–64	6.3*	(4.3, 9.1)	3.2*	(2.2, 4.5)	1.7	(1.3, 2.3)	0.0125	0.0207
65–74	12.1*	(8.5, 17.1)	6.1*	(4.0, 9.3)	4.1	(3.4, 5.0)	0.0219	0.1662
75+	11.0*	(7.8, 15.3)	9.9*	(7.2, 13.5)	9.5	(8.3, 10.9)	0.6745	0.8204
f) Any other heart disease								
55–64	17.7	(13.5, 22.7)	10.6	(8.0, 14.0)	8.3	(7.4, 9.4)	0.0136	0.1383
65–74	21.9	(16.8, 28.1)	15.3	(11.7, 19.9)	16.0	(14.5, 17.5)	0.0597	0.7671
75+	24.9	(18.9, 32.0)	24.0	(18.8, 30.2)	23.2	(21.2, 25.4)	0.8534	0.7888
g) Had a stroke								
55–64	8.0*	(5.4, 11.8)	3.2*	(2.1, 4.9)	1.3	(1.0, 1.6)	0.0080	0.0064
65–74	9.8*	(6.8, 13.8)	5.0*	(3.2, 7.7)	3.5	(2.9, 4.3)	0.0201	0.1950
75+	14.9*	(10.0, 21.8)	11.4*	(7.7, 16.5)	7.6	(6.3, 9.0)	0.3802	0.0951
h) Diabetes								
55–64	23.1	(18.2, 28.8)	13.9	(11.5, 16.8)	8.7	(7.7, 9.8)	0.0024	0.0004
65–74	32.4	(26.6, 38.8)	17.5	(13.5, 22.4)	12.8	(11.6, 14.2)	0.0001	0.0546
75+	28.1	(22.3, 34.9)	12.4*	(7.7, 19.6)	14.4	(12.8, 16.1)	0.0005	0.5212
i) Asthma								
55–64	31.0	(25.8, 36.6)	21.7	(18.8, 24.8)	14.2	(12.9, 15.7)	0.0023	0.0000
65–74	30.5	(24.9, 36.8)	15.6	(12.4, 19.4)	15.9	(14.5, 17.5)	0.0000	0.8522
75+	21.7	(16.5, 28.1)	13.2	(10.0, 17.1)	13.0	(11.5, 14.6)	0.0144	0.9238
j) Arthritis								
55–64	35.5	(29.8, 41.6)	28.0	(24.6, 31.7)	25.9	(24.3, 27.6)	0.0314	0.2872
65–74	45.5	(39.7, 51.5)	44.1	(38.2, 50.1)	41.7	(39.7, 43.6)	0.7449	0.4460
75+	55.0	(47.6, 62.1)	50.8	(44.9, 56.6)	50.4	(48.3, 52.5)	0.4034	0.9055
k) Chronic pain								
55–64	40.3	(34.8, 46.1)	31.3	(27.5, 35.3)	25.6	(24.0, 27.1)	0.0089	0.0077
65–74	41.4	(35.0, 48.2)	36.4	(30.9, 42.2)	30.5	(28.7, 32.4)	0.2528	0.0494
75+	41.6	(33.6, 50.1)	34.2	(28.3, 40.7)	33.7	(31.5, 36.0)	0.1537	0.8779
l) Depression								
55–64	31.0	(25.7, 36.8)	22.1	(19.2, 25.3)	16.5	(15.2, 17.8)	0.0049	0.0009
65–74	20.8	(16.0, 26.6)	19.8	(14.9, 25.8)	14.5	(13.3, 15.7)	0.7939	0.0622
75+	16.9*	(12.0, 23.2)	15.2	(12.0, 19.0)	10.6	(9.4, 12.1)	0.6085	0.0169
m) Anxiety disorder								
55–64	18.4	(14.1, 23.7)	12.2	(9.9, 14.9)	7.6	(6.7, 8.6)	0.0211	0.0011
65–74	11.9*	(8.3, 16.8)	9.3	(6.9, 12.3)	7.3	(6.4, 8.4)	0.3030	0.1596
75+	9.6*	(6.9, 13.3)	6.5*	(4.4, 9.7)	5.9	(5.0, 7.0)	0.1310	0.6704
n) High or very high levels of psychological distress in the past four weeks (a score of 12 or more on the K10 scale)								
55–64	20.5	(15.8, 26.2)	8.9	(6.8, 11.4)	3.6	(3.1, 4.3)	0.0000	0.0000
65–74	11.3*	(8.0, 15.7)	8.7*	(6.2, 11.9)	3.1	(2.5, 3.8)	0.2566	0.0002
75+	10.7*	(7.4, 15.4)	-	-	3.3	(2.5, 4.3)	-	-

Notes:

For a–j and l–m in the table – respondents were asked ‘Have you ever been told by a doctor that you have...?’. For item k – respondents were asked ‘Do you experience chronic pain?’ (followed by a definition of chronic pain). Item n in the table represents the proportion of respondents scoring 12 or more on the Kessler 10-item Psychological Distress Scale (K10).

Estimates with a RSE of 30–50% are marked * and should be used with caution, those with an RSE over 50% are marked ** and should be considered unreliable for most practical purposes, any estimates containing fewer than 30 respondents are suppressed (-).

the importance of disaggregating the rental population. These differences were apparent among 55–64-year-olds and continued for older age groups. An association between rental tenure and poorer health has been previously demonstrated,^{15,18} but not consistently across countries,^{17,22} suggesting differences in the housing market and public policy can influence any impact of tenure on health.

Renting (particularly publicly) in older age rather than owning was also found to be associated with economic disadvantage – characterised by lower annual incomes and greater likelihood of receiving some government benefits. Renters also have ongoing rental payments, resulting in less disposable income after housing costs than home owners. Tenure may therefore reflect socioeconomic effects on health. However, while income differences between tenure groups reduced with age, a health gradient remained. In addition, some studies have shown that a relationship between tenure and health remains after controlling for income.^{9,11}

That the relationship between tenure and health remains after adjusting for socioeconomic variables has led some to suggest it is explained by owner-occupiers living in better quality housing and/or in health-promoting areas.^{5,8,11,55–57} The impact of housing quality on aspects of health such as respiratory illness and rates of injury is described in the literature,⁵⁸ and rental housing in Aotearoa New Zealand is generally of poorer quality than owner-occupied dwellings.⁵⁹ Improving the condition of rental housing stock in New Zealand, such as by improving insulation and heating, therefore has the potential to improve the health of older renters.⁶⁰ Government grants towards the cost of ceiling and underfloor insulation ended for landlords (but not homeowners) in June 2018 and it will be compulsory for rental homes to have ceiling and underfloor insulation from July 2019, where installation is practical.^{61,62}

A third consideration is the stability, security of residence and control that home ownership provides. In contrast, renters in New Zealand have limited security of tenure and less autonomy over their home environment, such as being able to modify it.⁵⁶

Most physical health conditions and the SF-12 physical health composite score showed a

deterioration with age. In addition, the size of the differences between tenure groups reduced with age, probably reflecting the premature death or move into residential care of those in the poorest health, and the higher proportion of females in the oldest age group, who were presumably in better health than their male counterparts. McMunn et al. also found a decline in wealth and tenure gradients associated with health inequalities in older people in England, partially explained by selective mortality.²¹ In contrast to physical health, SF-12 mental health composite scores showed some improvement in the 65–74-years age group compared with the younger group, and less decline in the oldest age group.

A limitation of this paper is that it is cross-sectional in nature and therefore limits our ability to draw conclusions about causality, including whether the direction is from poorer rental housing to poorer health, or the reverse (people in poorer health are more likely to become renters). Elucidating the mechanisms through which tenure impacts on the health of older people and whether this varies between ethnic groups (and if so, how) will be a key next step in designing the solutions and policies required to meet the needs of the growing population of older renters.

We were also unable to distinguish between those who have recently transitioned between tenures, or between outright owners and those with a mortgage, which may be another important facet of the relationship.^{63,64}

Conclusions and implications for public health

In New Zealand, renting (particularly publicly renting) rather than owning a home in older age was found to be related to economic disadvantage, several unhealthier behaviours and poorer self-reported physical and mental health status. The higher rates of renting among Māori and Pacific people and older females means that these groups are particularly vulnerable to the negative impact of renting on health.

Public renters generally had the lowest socioeconomic status and the poorest physical and mental health, but the fact that private renters reported worse health outcomes on a number of measures than owner-occupiers is perhaps of equal concern,

given that this group comprises a larger and growing proportion of all renters in New Zealand.

Rising numbers of older renters, who are often living alone, on low incomes and in poorer health than owner-occupiers, will have important implications for future health and housing policy. Much of this policy is currently premised on high rates of home ownership and changing patterns of tenure will need to be considered and adapted to. There are also implications for services in terms of the future demand for care, in helping deliver policies that support people to remain healthy and in their homes for longer, and in ensuring that the diverse health, care and support needs of older people living in their homes are met.

Acknowledgements

With thanks to the respondents of the New Zealand Health Survey in 2013/14, 2014/15 and 2015/16 for their participation in the survey. Thanks also to Ruth Fraser for her administrative support for the research team.

Ethical approval

The data for this project came from anonymous national surveys. Access to the data was provided by Statistics New Zealand under conditions designed to keep individual information secure in accordance with the requirements in the Statistics Act 1975.

The Victoria University of Wellington Ethics Committee confirmed ethical review was not required for this project.

Funding

This research is part of a four year programme called 'Life When Renting' (see <http://renting.goodhomes.co.nz>). It is funded through the mission-led New Zealand Ageing Well National Science Challenge (<http://www.ageingwellchallenge.co.nz>).

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