New Zealand Population Review, 47, 262–304

Exploring the Factors Affecting Māori Home Ownership

Ngā Kaihanga, Ngā Noho, Ngā Tangata – Te Tūhurahura i ngā Āhuatanga Ka Pā ki Tā te Māori Hoko Whare

JAY WHITEHEAD[*]
GRACE WALKER[†]

Abstract

Considering there are significant positive associations between home ownership and well-being, the significant declines in Māori home ownership are a topic of concern. This paper seeks to shed light on the pathways for transitioning Māori from a nation of renters to homeowners. Using longitudinal data of the Māori cohort from the Christchurch Health and Development Study (CHDS), the research revealed that a small number of variables increase the likelihood of home ownership by age 35. These related to future aspirations, economic stability, partner relationship and mental health. In response to suggestions that there is a relationship between a close connection to the Māori world and housing tenure, we investigated associations between a range of cultural variables and Māori home ownership. However, no association was found.

Keywords: Māori housing, home ownership, well-being, cohort study, Māori economy

[*] Jay Whitehead is of Ngāti Māmoe and Ngāi Tahu descent. He is an economist and director of Matatihi, a Ōtautahi based economic research agency. Nō Ngāti Māmoe me Ngāi Tahu a Jay Whitehead He kaimātai ōhanga ia. Ko ia hoki te whakataka o Matatihi, he umanga rangahau ōhanga kei Ōtautahi.
Email/Īmēra: jay@agribusinessgroup.com

[†] Grace Walker is of Ngāti Kahungunu and Ngāruahine descent. She is PhD student at the University of Canterbury and an assistant research fellow at the University of Otago, Christchurch, working for the Christchurch Health and Development Study (CHDS). Nō Ngāti Kahungunu me Ngāruahine a Grace Walker. He ākonga tohu kairangi ia i Te Whare Wānanga o Waitaha, he pūkenga rangahau āwhina hoki i Te Whare Wānanga o Ōtāgo, Ōtautahi, e mahi ana mō te Christchurch Health and Development Study (CHDS).
Email/Īmēra: grace.walker@otago.ac.nz

Whakarāpopotonga

I runga i te whakaaro ka kitea he pāhonotanga takatika nunui i waenga i te pupuri whare hei rangatira me te toiora, he take āwangawanga te hekenga nui o te tokomaha o ngāi Māori e pupuri whare ana hei rangatira. Ko tā te tuhinga nei he whakamārama i ngā ara me whai hei nuku i a ngāi Māori hei iwi rēti whare ki tētahi iwi e noho ana hei rangatira i ō rātou anō whare. Mā te whakamahi i ngā rauranga wā roa o te aropā Māori nō te Christchurch Health and Development Study (CHDS), i whakaatu mai te rangahau mā ētahi taurangi ruarua nei e whakanui te tūponotanga ka whai whare te tangata hei rangatira i tōna taenga ki te 35 tau te pakeke. E pā ana ēnei ki ngā whakangākau mō anamata, te pūmautanga taha ōhanga, te āhua o te hono ki te hoa rangatira, me te hauora hinengaro. Hei uruparenga ki ngā huatau o tētahi pānga i waenga i te hononga kaha ki te ao Māori me te whai whare noho, ka mātai mātou i ngā pāhonotanga i waenga i te whānuitanga o ngā taurangi ahurea me te whai whare hei rangatira. Heoi, kīhai i kitea tētahi pāhonotanga.

Ngā Kupumatua: whare noho mō te Māori, whai whare hei rangatira, toiora, rangahau aropā, ōhanga Māori

The 1936 Census recorded that 70.5 per cent of Māori dwellings were owned by occupants, mainly in rural areas. While it is difficult to compare these home ownership rates as concepts have changed,[1] census data show a decline in Māori home ownership rates from the 1990s (Statistics New Zealand, 2016). In 1991, 57.4 per cent of people with Māori ethnicity lived in an owner-occupied dwelling (Goodyear, 2017) and by 2018, this was 47.2 per cent. The positive associations between home ownership and socio-economic and health outcomes are well established (Saville-Smith, 2018; Waldegrave & Urbanová, 2016). However, there is only limited research on the impacts of housing tenure on Māori, much of it being over a decade old. Despite these limitations, research in New Zealand has demonstrated clear associations between housing tenure and mental health (Carter et al., 2005) and sudden infant death syndrome (Schluter et al., 1997).

Home ownership may also protect against unemployment, decrease crime rates, reduce welfare dependency and offer a greater chance for low-income families to create asset wealth (Waldegrave & Urbanová, 2016). The relationship between housing tenure and many

independent variables like health, crime and education is becoming more accepted as being significantly associated. Labour market outcomes are less clear, and more caution is required when describing the relationship between tenure and employment because the studies are less consistent. Nevertheless, it is fair to note that most studies continue to show lower unemployment rates among homeowners. This trend should be expected, considering employment provides an income to buy a home and service a mortgage.

In general, Māori measure more poorly against socio-economic measures than the general population (Ministry of Health, 2018). This trend is reflected in Māori well-being related to housing conditions. Māori are more likely to report experiences with inadequate and unhealthy housing conditions. While there are well-documented associations between home ownership and socio-economic and health outcomes, and a significant coinciding decrease in Māori home ownership, there has been little research investigating the associations between Māori home ownership and socio-economic variables (Saville-Smith, 2018; Stats NZ, 2020a; Su & Wu, 2020).

These associations are explored in this paper, along with another critical variable. It has been suggested in the literature (e.g. Waldegrave et al., 2006) and across the wider New Zealand society,[2] that Māori culture or involvement in te ao Māori may adversely affect home ownership. The mechanisms underlying Māori housing tenure are complex and unclear, and we are unaware of any studies that explain these mechanisms. Few quantitative investigations have attempted to ascertain how differences in socio-economic status and cultural identity account for the ethnic differences in housing tenure. This paper provides a step towards clarifying potential mechanisms.

In attempting to explain the primary associations affecting Māori home ownership, three key groups of variables have been identified: health variables, socio-economic variables and cultural variables. Māori have expressed a strong desire to own houses but are not realising this goal (Forster, 2008). The pathways to home ownership are complex and require detailed data to explore. Large

national data sets are useful for describing outcomes. Still, they are less capable of exploring the multiple inter-connected associations across health, socio-economic and cultural domains affecting home ownership. Longitudinal data sets provide a more nuanced understanding of an individual's home ownership pathway; however, they tend to be focused on a small group of individuals. For this study, national-level aggregated data sets such as the New Zealand General Social Survey (NZGSS) were used to describe outcomes for Māori; however, the primary analysis was based on a longitudinal cohort study to provide more detailed insights into the complex associations between multiple variables and home ownership.

The Christchurch Health and Development Study is a longitudinal study of a birth cohort of 1265 children born in Ōtautahi/Christchurch over a 4-month period during 1977. The cohort has been studied from birth to adulthood over 23 occasions to the age of 35 (Fergusson & Horwood, 2001, 2013). The CHDS provides the basis for statistical analysis to explain the relationship between Māori home tenure and the three primary sets of variables: adult economic functioning, childhood economic functioning and individual characteristics/psychosocial pathways. While the data are limited both geographically and in size, they allow for a deep exploration of Māori home ownership variables in a way that has not previously been undertaken. And although not generalisable across New Zealand, the results from this analysis provide a robust starting point for discussions on pathways to home ownership for Māori, which has not previously been available.

The present study had three primary objectives:

1. to document the associations between Māori cultural identity and overall levels of home ownership
2. to examine the extent to which ethnic disparities in home ownership could be explained by socio-economic factors, including maternal and paternal education, family socio-economic status and family living standards, and

3. to investigate the association between housing tenure and hauora outcomes in Māori.

The paper beings with a literature review describing downward trends in Māori home ownership and the adverse consequences of these trends for Māori. Next, there is a description of the methods employed in this study, including use of the CHDS's data. This is followed by the results section, which addresses the role of socio-economic characteristics and cultural connectedness in Māori home ownership. Finally, the discussion outlines the implications of the findings for research on pathways to improving Māori home ownership, and the limitations of the study.

Literature review

Multiple studies have documented a clear association between house ownership and socio-economic well-being (Arcus & Nana, 2005; Fund, 2004; Milligan et al., 2006; Roskruge et al., 2011). This association is driven by multiple factors, including long-term security and the potential for intergenerational wealth transfer, and an increased potential for future home ownership (James, 2007). A large-scale literature review on housing tenure suggests significant associations between home ownership and health, employment, crime, welfare, wealth, and education (Waldegrave & Urbanová, 2016). Improved mental and physical health, protection against unemployment, lower crime rates, less welfare dependency, greater wealth generation potential, and higher educational attainment for children are all positively associated with home ownership.

While studies show that owning a home is associated with positive outcomes, rental tenure does not inevitably cause negative outcomes. Public rental accommodation and other forms of social housing are capable of generating positive outcomes (Baker et al., 2006; Phibbs & Young, 2005). Outcomes are contingent of a variety of factors including:

- the physical condition of the rental property
- protection and security afforded to the tenants, and
- the degree to which renting is viewed as the norm within a society.

Concerning the last point, the prevailing norm in New Zealand society is towards owner occupation. This is true of all sectors of the population, including Māori and Pacific peoples, and low-income earners (James, 2007; Koloto & Associates, 2007; Waldegrave & Urbanová, 2016)

Māori home ownership

In 1926, 74 per cent of Māori owned a home compared with 61 per cent of Pākehā (Flynn et al., 2010). By 1945, ownership rates had equalised at approximately 55 per cent for both groups (Flynn et al., 2010). However, since this time, Māori home ownership rates have declined faster than European/Pākehā's (Flynn et al., 2010). The rapid shift of Māori from rural areas to urban areas in the 1950s and 1960s contributed to a significant decrease in Māori home ownership; however, several other factors have also been cited as possible explanations (Flynn et al., 2010):

- urbanisation
- exposure to high-cost urban areas region
- the younger age structure of the Māori population
- larger households
- lower levels of employment and income
- intergenerational experience of owning a home
- educational achievement
- the wish to reside near whānau. (p. 53)

Changes in measurement criteria mean that direct comparisons cannot be drawn between 1926 data and the more recent 2013 census data (Table 1). We present the data here to demonstrate general patterns in ownership rather than to illustrate trends accurately. However, home ownership data from 2013, and between

Table 1: Difference in individual home ownership rates and percentage change 200 –2013

Ethnic Group	2001	2013	% change 2001–2013
European	59.7	56.8	–4.9
Māori	31.7	28.2	–11.2
Total people who stated an ethnicity	54.9	50.2	–8.4

Source: Goodyear (2017).

2001 and 2013, indicate a potentially significant decline in Māori home ownership rates.[3] Results from the 2013 Census showed that Māori renters (Table 2) were more likely than the total population to be renting from Housing New Zealand Corporation (HNZC; now Kāinga Ora) and were slightly less likely to be renting from a private landlord, business or trust. As discussed above, the ownership structure of a rental property does not directly cause adverse outcomes; however, it reflects more negative socio-economic circumstances for the occupants, including discrimination and stigmatisation in the private rental market.

The large decrease in Māori home ownership rates is not reflective of Māori aspirations. The majority of Māori 15 years and over aspire to own a home; however, they face significant barriers in doing so (Te Puni Kōkiri, 2016). The Te Hoe Nuku Roa (THNR) study

Table 2: Sector of landlord – Māori and New Zealand population in households in rented occupied private dwellings 2013 Census

Type of landlord	Māori	New Zealand Population
Private person, trust or business	76.6%	83.1%
Local authority or city council	1.0%	1.4%
Housing New Zealand Corporation	20.7%	14.2%
Other state-owned corporation or state-owned enterprise or government department or ministry	1.7%	1.3%

Source: Statistics New Zealand (2016).

of Māori housing experiences and emerging trends included a longitudinal study of Māori households (Waldegrave et al., 2006). The study was based on a small sample of 70 households in six

locations throughout Aotearoa (Waldegrave et al., 2006). Some key findings around Māori home tenure from the Te Hoe Nuku Roa study include:

- Of the 55 per cent of the THNR sample who were renting, 51 per cent aspired to own a home of their own.
- Where affordability is higher, aspirations to own a home are greater than in more expensive places such Manukau and Lower Hutt.
- In most areas, the mode for importance of owning a home is "Extremely important".
- Where house prices are relatively low, the importance attached to owning a home is greater.
- Conversely, the importance of owning a home is rated lower in the urban/metropolitan sites than in the rural or regional sites.
- When assessing satisfaction, 50 per cent were satisfied and 36 per cent were very satisfied with their accommodation.

Considering the findings from THNR, there is evidence to suggest that the declines in Māori home ownership are not a reflection of Māori aspirations. Instead, significant barriers exist which are impeding the ability of Māori to purchase homes.

Impacts of housing tenure on Māori

Multiple studies have been conducted globally on associations between housing tenure and socio-economic and health outcomes. Each country has a unique housing situation, particularly around the role home ownership plays in society. It may, therefore, not be appropriate to generalise international findings to the New Zealand situation. A small body of literature has been produced exploring the impacts of housing tenure on Māori. This literature provides an in-depth look at the New Zealand situation; however, much of it is over a decade old and may not apply to the current situation.

Research on housing tenure and the relationship between tenure and health among mothers of a birth cohort of Pacific children provides some insights into the New Zealand situation. Significant associations have been found between home ownership and mental health, with homeowners having better mental health than their renting counterparts (Carter et al., 2005). It has also been shown that adjusting for likely social, economic and environmental confounding factors, residing in a state house rented from the government increased the risk of sudden infant death by a factor of 1.73 compared with infants with parents owning their house (Schluter et al., 1997). It should be noted that although both these studies show an association between housing and health, we cannot infer causation from them.

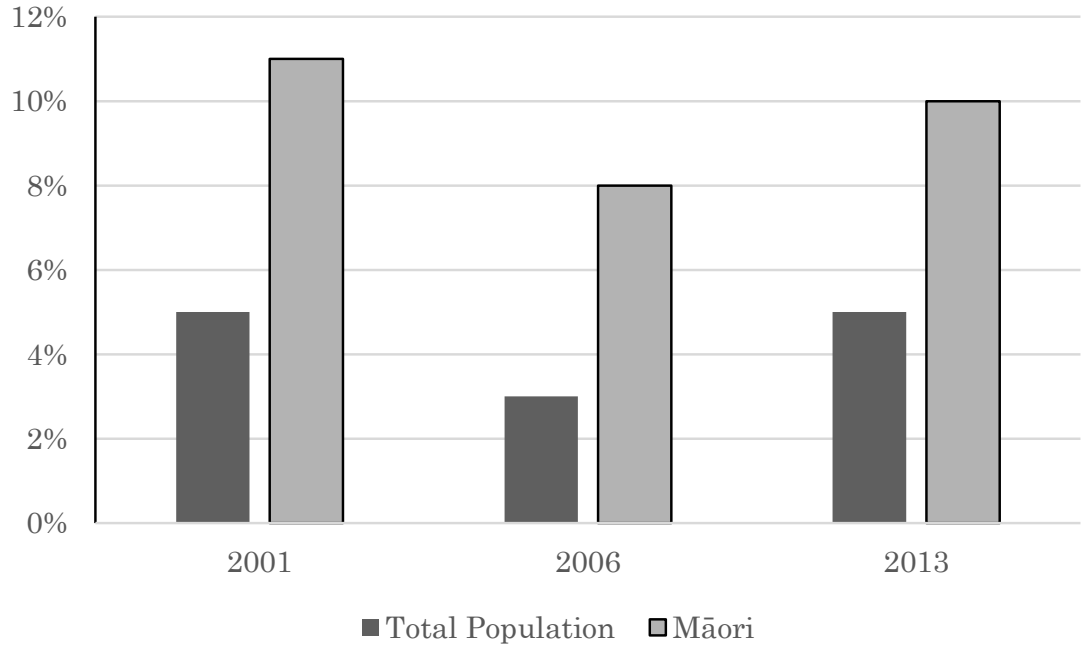
While little research has been done specifically addressing the relationship between housing tenure and Māori socio-economic outcomes, it has been established that owning a house has positive socio-economic and health outcomes (Waldegrave & Urbanová, 2016). Additionally, drawing on New Zealand census data, Māori are relatively less likely to own their own home. The New Zealand General Social Survey (NZGSS) provides a large set of data containing various measures relating to inequality, the distribution of resources and standard of living (SOL).[4] Studies on housing tenure and the NZGSS provide an imperative for a deeper investigation into the impact of housing tenure on Māori.

Statistics New Zealand (2015) showed that certain population subgroups reported higher proportions of housing issues: those in one-parent families with children, people of prime work age, and Māori and Pacific peoples. Also, these groups were more likely to be renting. Renters are more likely than owner-occupiers to report that their home is cold (Joynt et al., 2016). It has also been shown that rental housing is typically in worse condition than owner-occupied housing and has a greater incidence of components in poor or serious condition (Buckett et al., 2010; Saville-Smith, 2018; Whiteet al., 2017).

The NZGSS is a multidimensional, biennial survey on New Zealand's social and economic outcomes of people aged 15 years and over who are usual residents in private dwellings (excluding offshore islands). A central measure of socio-economic well-being is income. In 2001, the ratio of the median Māori income to the median income of the total population was 80 per cent; in 2006, it increased to 86 per cent, before reverting to 79 per cent in 2013 (Stats NZ, 2020b). Census data show unemployment following a similar trend. Figure 1 illustrates Māori unemployment being consistently and significantly higher than the general population's from 2001 to 2013, even when dividing by age groups (Stats NZ, 2020b).

These general themes of Māori measuring more poorly against socio-economic measures continue when looking at well-being measures related to housing. Table 3 synthesises some of the key measures of well-being relating to housing and comparing Māori with the total population.

Figure 1: Māori unemployment compared with that of the general population



Source: Data extracted 5 October 2018 from Stats NZ.

These general themes of Māori measuring more poorly against socio-economic measures continue when looking at well-being measures related to housing. Table 3 synthesises some of the key measures of well-being relating to housing and comparing Māori with the total population.

Table 3 focuses on those people who provided the most negative response against each measure. On all measures, Māori provide more negative responses. Some of these housing-related measures of well-being have significant health implications. For example, in 2013, Māori were 2.2 times more likely to report a major problem with dampness or mould, and 32 per cent stated that their house is always or often colder than they would like. Self-rated perceptions of health have also continued to decline, from 15.4 per cent of Māori respondents reporting fair/poor levels of health in 2001 to 19 per cent reporting these levels in 2013.

Combining relevant literature and statistics, it has been argued that:

1. Owning a house is associated with significantly poorer socio-economic and health outcomes.
2. Māori home ownership has declined significantly over the past century.
3. The majority of Māori aspire to own their own homes; however, they face several barriers including high housing cost, difficulty obtaining finance and accessing services and information, as well as discrimination.
4. Māori measure worse than the total population of New Zealand against multiple measures of well-being related to housing.

Table 3 NZGSS measures of poor well-being, Māori compared with total population

	2008–2009		2010–2011		2012–2013		2014–2015	
Well-being measures	**Total Population**	**Māori**	**Total Population**	**Māori**	**Total Population**	**Māori**	**Total Population**	**Māori**
Overall life satisfaction (lowest rating, 0–6)			6.1	7.8	5.9	9.6	17.4*	22.2*
Adequacy of income to meet everyday needs (not enough money)	14.5	25.3	15.6	23.3	15.3	24.7	12.2	20.6
Self-rated general health status (fair/poor)	12.5	15.4	12	16.4	13.3	17	13.6	19
Major problem with house	51.2	62.4	35.6	46.1	35.5	49		
Condition of house or flat (Immediate/extensive repairs and maintenance needed)							7.1	13
House or flat colder than would like (Yes – always or often)							21.2	32.8
Problem with dampness or mould (major problem)							6.2	13.9

Note: *Scale of measurement changed in 2014.

However, there has been little research that seeks to document specific associations between Māori housing tenure and socio-economic and health outcomes. Quantitative research on these associations would help to establish a pathway for targeted and effective policy interventions. We have drawn together information that suggests that the current situation is of concern, and more nuanced research is needed to explore Māori housing tenure.

The role of Māori culture in housing tenure is also of significant interest. Of concern is the suggestion expressed most explicitly by Waldegrave et al. (2006):

> The inverse relationship that is found to exist between Māori cultural identity scores and housing outcomes within the THNR study invites discussion about the implications surrounding involvement in Te Ao Māori – the Māori world. (p. 61).

Waldegrave et al. (2006) did not control for any socio-economic factors in the analysis; instead, they simply created a Māori cultural identity score and compared this with home ownership rates for Māori. The suggestion that involvement in Te Ao Māori may have a significant impact on home ownership is controversial, and as suggested by Waldegrave et al. (2006), requires further investigation. Home ownership rates for Māori in Tāmaki Makaurau/Auckland are significantly lower than those of other ethnicities (Joynt et al., 2016). It has been argued by Flynn et al., (2010) that the difference in home ownership rates between Māori and other ethnicities can be explained by high living costs in areas such as Tāmaki Makaurau. However, Flynn et al. (2010) also suggest that when age, income and location are controlled for, there are still fewer Māori than other ethnicities owning houses. The mechanisms underlying Māori house tenure remain unclear, yet probably involve a combination of historical, socio-economic and cultural factors that are not adequately catered for under current policy and finance structures.

Despite extensive debate about the origins of Māori home ownership disadvantage, there has been little attempt to ascertain

the extent to which differences in socio-economic status and cultural identity account for the ethnic differences in housing tenure.

Methods

The data for this study were gathered from the Christchurch Health and Development Study (CHDS). The CHDS is a longitudinal study of a birth cohort of 1265 children (635 males, 630 females) born in Ōtautahi/Christchurch, New Zealand over 4 months during 1977. The cohort has been studied from birth to adulthood over 23 occasions to the age of 35 (Fergusson & Horwood, 2013). At ages 21 and 25, the cohort members self-reported their ethnic identity and whether they were of Māori descent based on questions used in the 1996 New Zealand Census of Population and Dwellings.[5] For this report, cohort members who identified their ethnicity as Māori or who reported being of Māori descent at either age were classified as Māori (16.3 per cent of the cohort). All other cohort members were classified as non-Māori (83.7 per cent of the cohort). The present analysis explores patterns of home ownership at age 35 within the Māori cohort and is based on the sample of n =157 Māori participants assessed at this age.

Participants – Māori cohort

A range of measures were selected from the database of the study to explore the factors associated with home ownership within the Māori cohort. These factors spanned the following domains.

Outcome measure – Homeowner status

At age 35, the participants were questioned about their home ownership. Of the Māori cohort, 35.7 per cent identified as owning their own house or flat/apartment. These Māori cohort members were classified as homeowners (n = 56), whereas the remaining Māori cohort were classified as renters (n = 101).[6]

Independent measures

The potential explanatory variables have been divided into the following domains: childhood socio-economic functioning, individual characteristics, intervening mental health and well-being pathways, adult economic functioning, current household composition, and Māori cultural affiliation.

Childhood socio-economic functioning

Parental formal education qualification: The education of both parents was assessed at the time of the child's birth using a 3-point scale that reflects the parents' highest level of formal education qualification. (See Table 4.)

Family socio-economic status: Family socio-economic status at the time of the cohort member's birth was classified using the Elley and Irving (1976) Scale of Socioeconomic Status (SES) for New Zealand. For the purposes of the present analysis, this scale was reversed such that a higher score indicates a higher socio-economic status. The SES scores were classified into six levels ranging from 1 = unskilled to 6 = professional based on paternal occupation. (See Table 5.)

Table 4: Measure of highest formal education qualification of parents

Highest formal education qualification	Mother	Father
1 = no formal education qualification	65.5%	62.1%
2 = secondary (high school) qualification	28.7%	32.4%
3 = tertiary (college) qualification	62.1%	5.5%

Table 5: Skill level of paternal occupation at the time of the cohort member's birth

Skill level of paternal occupation	Percentage
1 = unskilled	20.4%
2 = semi-skilled	16.6%
3 = technical/skilled	35.0%
4 = clerical	18.5%
5 = managerial	5.7%
6 = professional	3.8%

Averaged standard of living (1 to 10 years): The family standard of living was assessed based on interviewer ratings of family living standards obtained every year from age 1 to 10 years. Interviewer ratings were made on a five-point scale which ranged from obviously affluent to obviously poor. For this analysis, the ratings were averaged over the 10-year study period to obtain an overall assessment of family living standards during childhood. The mean averaged standard of living was 3.06, with a standard deviation (SD) of 4.1.

Averaged family income (1 to 10 years): At each year, estimates of the families' gross income were obtained from parental reports. Each year's income estimates were recorded into decile categories, and the resulting measures were then averaged over the 10-year period to produce a measure of the families' averaged income into decile rank. The averaged family income for this was 45.4K (SD = 20.9).

Parents are homeowners: At the time of the cohort members interview at age 15 years, parents were asked if their accommodation was owned (including with a mortgage) or not owned (e.g. rental). Seventy-one per cent of parents owned their accommodation and 29 per cent did not.

Individual characteristics

Gender: At the time of the cohort member birth, parents reported the child's gender.

Sixth Form Certificate: At age 18, the cohort members reported whether they had attained a Sixth Form Certificate. School Certificate was a national series of examinations available to all students that was usually undertaken in the third year of high school (age 15–16 years).

Parents educational aspirations (16 years): When cohort members were aged 16 years, their parents were questioned about their expectations of their child's future educational attainment, in terms of attainment of high school qualifications and enrolment in various types of tertiary education. This information was used to construct a parent-report measure of the young person's highest anticipated level of educational achievement in which higher scores indicated higher aspirations. (See Table 6.)

Intervening mental health and well-being pathways (ages 21–35)

Major depression: At ages 25, 30 and 35 years, cohort members were assessed using relevant components derived from the Comprehensive International Diagnostic Interview (CIDI) (World Health Organization, 1993) to assess DSM-IV symptom criteria for major depression since the previous assessment. Participants who met the criteria for major depression at any time during each assessment period (ages 21–25 years, 25–30 years, and 30–35 years) were classified as having major depression during that period.

Table 6: Parents' educational aspirations for their child, aged 15

Educational aspiration	Percentage
0 = no expectations	34.5%
1 = low expectations	28.3%
2 = some expectations	13.8%
3 = high expectations	23.4%

Anxiety disorder: At ages 25, 30 and 35 years, cohort members were assessed using relevant components derived from the CIDI (World Health Organization, 1993) to assess DSM-IV symptom criteria anxiety disorders (including generalised anxiety disorder, panic

disorder, panic disorder with agoraphobia, agoraphobia without panic disorder, social phobia and specific phobia) since the previous assessment. Participants who met the criteria for any anxiety disorder at any time during each assessment period (ages 21–25 years, 25–30 years, and 30–35 years) were classified as having an anxiety disorder during that period.

Substance dependence (alcohol and illicit drugs): At ages 25, 30 and 35 years, cohort members were interviewed concerning their use of alcohol, cannabis and other illicit drugs and problems related to alcohol use and illicit drug use since the previous assessment using components of the CIDI (World Health Organization, 1993) to assess DSM-IV (APA, 1994) symptom criteria for an alcohol use disorder (alcohol abuse or dependence) and cannabis or other illicit drug use disorder (substance abuse and dependence). For the present study, this information was used to classify participants as to whether they met DSM criteria for alcohol dependence or cannabis or other illicit drug dependence during any assessment period.

Welfare dependency: Cohort members were questioned about any times when they had received a government income-tested benefit of Job Seeker Support, Sole-Parent Support or a Supported Living Allowance (formally known as the Unemployment, Domestic Purposes and Sickness/Invalid benefits, respectively) for the interview periods of 21–25 years, 25–30 years and 30–35 years. Responses were dichotomised into those who had and those who had not received a welfare benefit during the interview periods.

Unemployment: Cohort members were questioned about any times when they were unemployed and seeking work for the interview periods from 21–25 years, 25–30 years and 30–35 years. Responses were dichotomised into those who had been unemployed for 12 months or longer and seeking employment, and those who had not during those time periods.

Adult economic functioning

Equivalised net household annual income: At age 35, cohort members were questioned about their net (after tax) weekly income from all sources and (if applicable) that of their partner. From this information, estimates of total net weekly household income were obtained. Incomes reported in currencies other than New Zealand dollars were converted into New Zealand dollars using Purchasing Power Parities (Organisation for Economic Co-operation and Development, 2007, 2012). Incomes were annualised by multiplying the weekly income by 52 weeks. Incomes were also truncated to a maximum of $150,000 to avoid the influence of outliers. These estimated incomes were then equivalised for household size and composition using the method described by Jensen (1988). The Jensen method provides a set of weights which are used to adjust for the effects of family size and composition. The mean equivalised net household annual income for the Māori cohort was $140.0K (SD $27.3K).

Income poverty: The annual equivalised net household incomes, described above, were classified to produce a dichotomous measure of income poverty. Income poverty was defined as income below the low-income threshold of 60 per cent of the median household income before housing costs. This threshold is widely used to define income poverty (Perry, 2014). At age 35 (2012), the threshold was $19.9K (Perry, 2014). The cohort members were then classified into those whose household income was at or below the income poverty threshold and those whose income was not. Of the Māori cohort, 15.6 per cent were classified as having experienced income poverty.

Savings and investments: At age 35, cohort members were questioned about whether they had any savings or investments. Savings/investments included money in: savings or trading banks; superannuation schemes; stocks, shares or debentures; rental properties or other real estate; secured loans; investment or finance companies; building societies or friendly societies; accounts held by

lawyers or accountants; or any other investments. Those who had investments were asked for the total realisable value of their investments. Investments reported in currencies other than New Zealand dollars were converted into New Zealand dollars using Purchasing Power Parities (OECD, 2007, 2012). The Māori cohort's mean savings and investments were $64.2K (SD $136.1).

Working in full-time employment: At age 35, cohort members were questioned about whether they worked in full-time employment, which was defined as working in paid employment for 30+ hours per week. The cohort members were classified into those who worked in full-time employment and those who were not working in full-time employment at age 35. Of the Māori cohort, 63.7 per cent were employed full-time.

Occupational status: The socio-economic status of cohort members was assessed at age 35 using the New Zealand Socioeconomic Index (NZSEI) 2006 classification of occupations (Milne et al., 2013). This index classifies occupations on a scale ranging from 10 to 90, with higher scores implying higher occupational status. The classification of occupational status was derived from the participant report of their current or most recent occupation. The Māori cohort's mean occupational status was 42.3 (SD 16.1)

Highest level of educational attainment by age 35: At the 35-year assessment, cohort members were classified into a 5-point scale reflecting their highest level of academic attainment by age 35.

Table 7: Highest level of educational attainment of Māori cohort by age 35

Academic qualification	Percentage
0 = no formal qualification	8.9%
1 = attained high school or basic level tertiary qualification (NZQF Level 4 or below)	63.7%
2 = attained tertiary qualification) below degree level (NZQF Level 5 or 6)	11.5%
3 = attained bachelor's degree	13.4%
4 = attained higher degree (Masters, PhD or medical degree)	2.5%

Current household composition (age 35)

Long-term relationship: At the 35-year assessment, cohort members were asked to indicate whether they were currently involved in a relationship with an intimate partner and were questioned about the duration they had been with their partner. A long-term relationship was defined as being in a relationship for three years or more. The cohort members were classified into those who were and those who were not in a long-term relationship. Of the Māori cohort, 66.9 per cent were classified as being in a long-term relationship.

Number of dependent children: At the 35-year assessment, cohort members were asked to report the number of dependent children they had in their care. The number of dependent children ranged from 0 to 8, with a mean of 1.3 children (SD 1.4).

Crowding index: At the 35-year assessment, cohort members were asked to report the number of occupants who lived in their residence and were questioned about the total number of rooms in their residence. The crowding index was calculated as the total number of occupants divided by the total number of rooms. Rooms were defined as kitchen, dining and living rooms, and bedrooms but excluded bathrooms and toilets. The scores ranged from 0.2 to 2, with a mean of 0.6 (SD 0.3).

Māori cultural affiliation

Any participant who identified their ethnicity as Māori or being of Māori descent during the 21-year and 25-year interviews was asked a range of questions relating to Māori culture. These questions broadly reflected the domains of knowledge, perception and engagement and connection.

Knowledge: The participants were asked six questions relating to: a) their knowledge about their iwi, b) their knowledge about their marae, c) their ability to speak te reo Māori, d) their knowledge about kawa/protocol around a tangi or unveiling, e) how well they understand what is said in Māori language or TV programmes, and f) overall, how satisfied they are with their Māori knowledge. (See Appendix B for the full questions and scoring options.)

The scores for the questions were summed together to create an overall Māori knowledge score. For Māori participants, the mean was 4.01 with a range from one to six (SD 1.47).

Perceptions. The Māori participants were asked 11 questions relating to their perceptions about: a) their cultural affiliation or identification, b) how comfortable they feel in Māori social surroundings, c) how comfortable they feel in Pākehā/European social surroundings, d) whether they felt they had been treated unfairly on the basis of their ethnicity (in six different settings), e) whether they had felt emotionally upset as a result of how they were treated on the basis of your ethnicity in the last 12 months, and f) how important is it to them to be recognised as Māori. (See Appendix C for the full questions and scoring options.)

The scores for the questions were summed together to create an overall Māori perception score, with higher scores indicating more positive perceptions towards Māori affiliation and treatment based on their ethnicity. For the Māori participants, the mean was 9.04 with a range from 2–11 (SD = 2.72).

Engagement and connection. The Māori participants were asked 28 questions relating to engagement and connection with Māori culture

and whānau. The questions asked: a) and b) how often they had attended a marae/local marae in the past 12 months, c) whether they had received any education in Māori culture, including language, songs, cultural practices or genealogy, from any of 10 different sources, d) whether they were currently a member of any Māori group, Māori organisation or Māori sports team, e) and f) whether they had belonged to a kapa haka group in the past three years, or had ever belonged to a kapa haka group, g) whether they had ever attended a tangi or unveiling, h)–j) how many times per week they listened to Māori language radio or TV programmes or English language Māori radio or TV programmes, and how many times they read English language Māori magazines or articles on Māori issues, k) how many times they had met with members of their extended whānau over the last 12 month, and l) had they met with extended whānau at eight named places or events. (See Appendix D for the full questions and scoring options.)

The scores for these questions were summed together to create an overall Māori engagement and connection score. For the Māori participants, the mean was 10.23 with a range from 0–26 (SD = 6.39).

Results

Factors associated with homeowner status

Table 8 presents the Māori cohort classified into homeowners ($n = 56$) and renters ($n = 101$). For each group, the table shows the profile on measures of adult economic functioning (at age 35), childhood family background (ranging from birth to age 15) and individual characteristics/psychosocial pathways (ranging from 16 to age 35). Each comparison has been tested for statistical significance using either the *t*-test for comparison of means or the chi-squared test of independence to compare percentages. Examination of Table 8 shows the following

Home ownership status was strongly associated with measures of adult economic functioning. Māori homeowners had

significantly ($p < 0.05$) higher family income and savings, were less likely to be classified as being in income poverty, and were more likely to be working in full-time paid employment and have higher status occupations. They were also more likely to be living in a stable long-term relationship. There was a weaker and non-significant association with higher educational attainment and no association with family size.

Homeownership status was also related to a range of measures of childhood family economic functioning, with marginally significant tendencies for homeowners to be less likely to have been raised in families of low occupational status ($p = 0.09$), with below-average income ($p = 0.05$) or living standards ($p = 0.06$). Homeowners were also more likely to have had parents who owned their own home ($p = 0.08$).

For all measures, except gender and history of depression, there were significant ($p < 0.05$) associations between measures of individual characteristics/psychosocial pathways and homeowner status. Homeowners were more likely to have attained high school qualifications, to come from families with higher educational aspirations, to have better mental health and lower rates of substance dependence as young adults, and to experience more stable employment and have less need of government assistance in adulthood.

Logistic regression predicting homeowner status

The overall impression from Table 8 is that the pathway to home ownership by age 35 reflected a combination of processes relating to economic advantage over the life course, higher educational attainment and expectations, and lower exposure to disadvantageous psychosocial features in adulthood. This section develops a multivariable model to identify the factors in Table 8 that most strongly discriminated homeowners from renters.

A series of logistic regression models were fitted to the data to predict home ownership in the Māori cohort from the measures in Table 8. Due to the relatively small sample size and the large number of potential predictors, modelling was conducted using a staged hierarchical approach in which the measures of childhood family economic circumstances were entered first into the model, followed by the measures of individual characteristics and psychosocial pathways, with the measures of adult economic functioning entered last. At each stage, the model was progressively refined to retain only those factors having a statistically significant or marginally significant impact in the model. The final fitted model is shown in Table 9. The fitted models at various stages are reported in Appendix A.

Five variables were included in the final model. The findings show that the factors most strongly discriminating Māori homeowners from renters were having parents with high educational aspirations for their children, avoidance of welfare dependence, avoidance of substance dependence, formation of a stable long-term relationship, and having a higher adult household income.

To illustrate the discriminating power of the model, the fitted model coefficients in Table 9 were used to construct a prediction score for each individual. The resulting score ranks participants from those with the most disadvantageous set of characteristics to those with the most advantageous characteristics in terms of home ownership.

Table 8: Profile of adult economic functioning (age 35), childhood economic functioning (birth to 15 years) and individual characteristics / psychosocial pathways (ages 16 to 35 years) by homeowner status

Measure	Renters *n* = 101	Homeowners *n* = 56	*P* [1]
Adult Economic Functioning			
Current economic circumstances (Age 35)			
Mean (SD) equivalised net household annual income (NZ$000)	33.0 (20.6)	52.6 (33.1)	< 0.001
Mean (SD) savings and investments (NZ$000)	36.2 (101.1)	112.6 (172.0)	< 0.001
% Living in income poverty	21.2	5.5	0.01
% Working in full-time employment (30+ hours per week)	57.4	75.0	0.03
Mean (SD) occupational status (NZSEI)	39.3 (15.6)	47.0 (16.0)	<0.005
% Attained tertiary educational qualification (level 5 or higher)	24.8	32.1	0.32
Current household composition (Age 35)			
% Long-term relationship (3+ years)	43.6	82.1	< 0.001
Mean (SD) number of dependent children	1.3 (1.6)	1.4 (1.1)	0.63
Mean (SD) crowding (index people/room)	0.7 (0.3)	0.6 (0.2)	0.20
Childhood Economic Functioning			
Childhood family socio-demographic background			
% Mother lacked formal education qualifications	66.3	64.3	0.85
% Father lacked formal educational qualifications	65.6	55.8	0.49
% Family of semi-skilled or unskilled socio-economic status	41.6	28.6	0.09
Childhood family economic functioning			
% Family had below-average living standards (0–10 years)	48.0	32.1	0.06
% Family had below-average income (0–10 years)	44.6	26.2	0.05
% Parents were homeowners (age 15)	65.9	79.6	0.08

Continued on next page

Measure	Renters $n = 101$	Homeowners $n = 56$	P^1
Individual Characteristics / Psychosocial Pathways			
Individual factors/educational aspirations			
% Male	49.5	44.6	0.56
% Attained Sixth Form Certificate	48.5	67.9	0.02
% Parents educational aspirations of cohort member at age 16	17.6	33.3	0.03
Intervening mental health and well-being pathways (Ages 21–35)			
% Major depression	51.5	42.9	0.30
% Anxiety disorder	48.5	26.8	0.01
% Substance dependence between the ages 21–35 (alcohol or illicit drugs)	35.6	14.3	< 0.005
% Welfare dependent between the ages of 21–35	73.3	33.9	< 0.001
% Unemployed (12 months or longer)	32.6	10.9	0.003

Note: 1. χ^2 test for percentages (independence); *t*-test for means

Table 9: Final fitted model predicting home ownership status at age 35

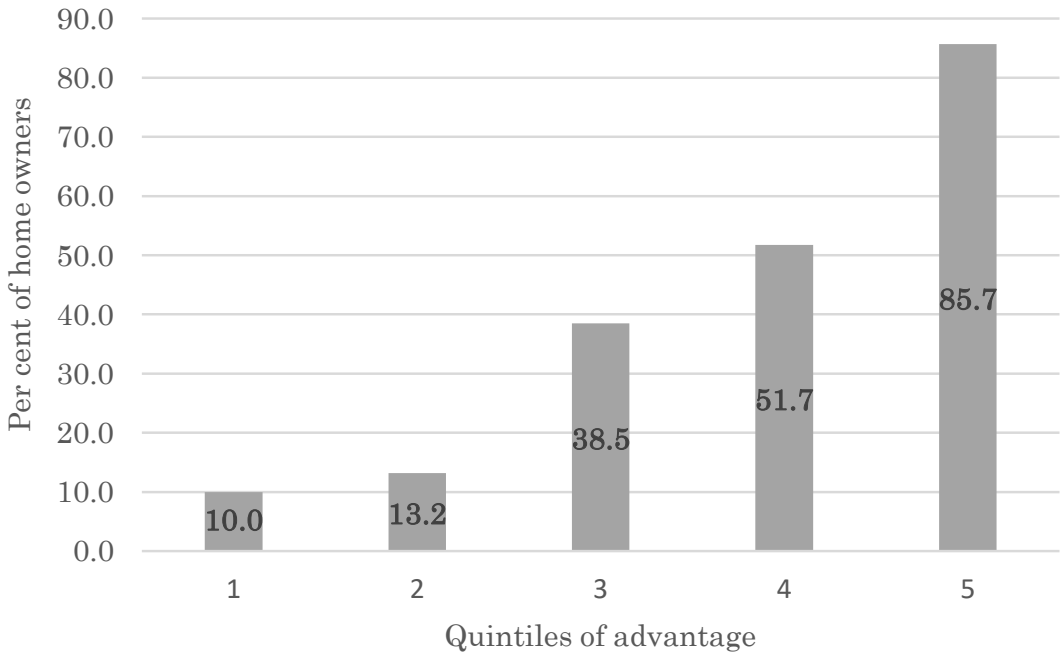
Measure	B (SE)	*p*
Parents educational aspirations of cohort member at age 16	0.32 (0.18)	0.083
Substance dependence between the ages 21–35 (alcohol or illicit drugs)	–1.50 (0.56)	0.007
Welfare dependent between the ages of 21–35	–0.99 (0.43)	0.023
Long-term relationship (3+ years)	1.59 (0.48)	0.001
Equivalised net household annual income	0.03 (0.01)	0.006

Figure 2 below shows the sample classified into quintiles based on the prediction score from the most disadvantaged (quintile 1) to the most advantaged (quintile 5); the figure reports the proportion of homeowners in each group. The figure shows high variability in the observed rate of home ownership across the five groups, with those in the most advantaged group having rates of home ownership more than eight times higher than those in the least advantaged group.

The role of cultural knowledge and participation

The above analysis suggests a strong discrimination in the likelihood of home ownership by age 35 based on a relatively small number of measures reflecting family expectations, individual mental health and socio-economic well-being. However, this analysis does not take into account the possible role of cultural factors in home ownership.

Figure 2: Rates (%) of home ownership in the Māori cohort by quintiles of prediction score



Note: Based on prediction scores ranging from most disadvantaged (quintile 1) to most advantaged (quintile 5).

This issue is explored in Table 10, which compares homeowners and renters on a range of cultural affiliation measures derived from the questions administered at age 21 and 25. The questions have been dichotomised and grouped under headings reflecting participants' knowledge of te reo Māori and whakapapa, engagement with aspects of Māori culture, and their perceptions regarding their identity, cultural settings and discrimination. Each comparison has been tested for statistical significance using the chi-squared test of independence. (For detailed information about how each item was scored, please contact the lead author.)

Examination of Table 10 suggests few differences between renters and homeowners. However, there are some indications that renters had stronger links to their cultural heritage as a group. In particular, renters were more likely to know their iwi than homeowners (88.8 percent versus 71.4 per cent), reported higher exposure to education in Māori culture at preschool (35.7 per cent versus 19.6 per cent) and secondary school (81.7 per cent vs 67.9 per cent), and were more likely to feel positive about their Māori cultural affiliation (91.8 per cent versus 80.4 per cent).

Table 10: Comparison of renters and homeowners on measures of Māori cultural knowledge, engagement and perceptions

Measure	Renters *(%)* *n* = 101	Home-owners (%) *n* = 56	*p*
Knowledge			
Iwi known	88.8	71.4	<0.01
Marae known	41.8	37.5	0.6
Can speak a form of te reo Māori	94.9	94.6	0.9
Understand kawa/protocol of tangi/unveiling	65.3	57.1	0.3
Understand what is said in Māori language TV or radio	50.0	44.6	0.5
Satisfied with their knowledge of things Māori	74.5	78.6	0.5
Engagement			
Attended a marae in the past year	49.0	44.6	0.6
Attended their marae or local urban marae (past year)	36.7	26.8	0.2
Received education in Māori culture from the following			
• their parents	36.7	30.4	0.4
• their relatives	51.0	42.9	0.3
• a marae	54.1	48.2	0.5
• at preschool	35.7	19.6	0.04
• at primary school	72.5	66.1	0.4
• at secondary school	81.6	67.9	0.05
• at a polytech, university, teachers' college (or similar)	28.6	26.8	0.8
• at work	16.3	19.6	0.6
• as part of a community or sports group	28.6	30.4	0.8
• from other sources	32.7	21.4	0.1
Are members of a Māori group, organisation or sports team	14.3	21.4	0.2
Belonged to a kapa haka group in the past 3 years	15.3	14.3	0.9
Ever belonged to a kapa hake group	43.9	41.1	0.7
Have attended a tangi or unveiling	71.4	60.1	0.2
Listen to Māori language radio or TV programmes	34.7	35.7	0.9

Measure	Renters (%) $n = 101$	Home-owners (%) $n = 56$	p
Listen to English language Māori radio or TV programmes	58.2	51.8	0.4
Read English language Māori magazines or articles on Māori issues	44.9	41.1	0.6
Met with extended family in the past year	75.5	78.6	0.7
Met with extended family members at the following events			
• annual hui	18.4	25.0	0.3
• kohunga/kura	5.1	12.5	0.1
• wedding	16.3	25.0	0.2
• tangi/unveiling	36.7	35.7	0.9
• sports	17.4	25.0	0.3
• kapa haka	6.1	14.3	0.09
• wānanga	6.1	12.5	0.2
• other	62.3	67.9	0.5
<u>Perception</u>			
Positive cultural affiliation	91.8	80.4	0.04
Comfortable in Māori social surroundings	99.9	100	0.4
Comfortable in Pākehā /European social surroundings	100	89.2	0.8
Believed to be treated unfairly based on their ethnicity:			
• in an educational establishment	1.2	0.0	0.5
• when getting a job	4.7	4.3	0.9
• when getting medical care	2.4	2.1	0.9
• by the Police or in the Courts	8.2	2.1	0.2
• on the street or in a public setting	9.4	6.4	0.5
• other settings	4.7	4.3	0.9
Felt emotionally upset as a result of how they were treated on the basis of their ethnicity	7.1	8.5	0.8
Felt it was important to be recognised as Māori	55.1	44.6	0.2

Discussion

Over the past century, there have been dramatic changes in Māori home ownership, with recent trends towards rapid declines. Access to safe, secure and good quality housing is an important determinant of good health (Howden-Chapman & Tobias, 2000). Additionally, other socio-economic indicators such as education and access to local services can be adversely affected by household crowding and poor dwelling conditions (James, 2007). Despite multiple studies describing how Māori are disadvantaged when measured against socio-economic and health outcomes (e.g. Carter et al., 2005; Forster, 2008; Joynt et al., 2016; Schluter et al., 1997; Waldegrave et al., 2006), research explaining the associations between socio-economic functioning, health and Māori home ownership is limited. Additionally, the relationship between involvement with te ao Māori and home tenure has been raised but not adequality addressed; for example, Waldegrave et al. (2006) stated that:

> The notion that participation in Te Ao Māori comes at a cost and may influence factors related to housing outcomes requires further investigation and study. (p. 61)

The present study used data gathered throughout a 35-year longitudinal study to examine cultural connectedness, socio-economic functioning, health status and home tenure. The study has several advantages including collection of longitudinal data on home tenure, assessment of variations in ethnic identification, and prospective measurement of exposure to family socio-economic disadvantage in childhood. The study leads to the following findings and conclusions.

Consistent with previous findings (Joynt et al., 2016), home ownership was significantly associated with aspects of adult economic functioning. These include advantageous types of employment, higher income and savings, stable relationship, and lack of income poverty. Further analyses also indicated that home ownership was associated with some aspects of childhood economic functioning, including being raised in families with more prosperous

living standards and higher incomes and by parents who owned their own home. Final analyses of individual characteristics and psychosocial pathways also showed significant associations with home ownership. Homeowners were more likely to have attained high school qualifications, to come from families with higher educational aspirations, to have better mental health and lower rates of substance dependence as young adults, and to experience more stable employment and have less need of government assistance in adulthood. The findings reveal that there are clear links between socio-economic and health circumstances with home ownership.

Based on these findings, a multivariable model was developed to identify which of these factors most strongly discriminate Māori homeowners from renters. Based on these analyses, five factors were identified as being able to best predict an individual's pathway to home ownership, although only one directly related to their income. Parental aspirations for their child's education and stable long-term relationships were both shown to be important determinants in home ownership, as were lower rates of substance dependence and less need for government assistance in adulthood.

This model's coefficients were then used to rank participants into quintiles ranging from those with the most disadvantageous set of characteristics to those with the most advantageous set of characteristics in terms of home ownership. Although there were rates of home ownership in each quintile, there was high variability in the observed rates of home ownership in each group, with those in the most advantaged group having rates of home ownership eight times higher than those in the least advantaged group. Based on these findings, it could be suggested there is an advantageous cumulative effect of the factors in the model that increases the likelihood of home ownership amongst Māori.

The next stage of the analysis considered the effect that cultural identification has on home ownership. This further analysis sought to investigate the suggestion that stronger Māori cultural identification may affect home tenure (Waldegrave et al., 2006). As

revealed in previous studies (Marie et al., 2008a), those reporting Māori ethnic identity were exposed to far greater socio-economic disadvantage in childhood than those of non-Māori identity. Marie et al. (2008a) showed that concerning Māori educational achievement, when differences between cultural identity groups and family socio-economic status in childhood were statistically adjusted for, these adjustments were insufficient to explain the links between educational achievement and cultural identity. Similarly, the study reported here found little association between stronger Māori cultural connectedness and home ownership.

However, a few instances were found where, as a group, renters had stronger links to their cultural heritage. Renters were more likely to know their iwi than homeowners, reported higher exposure to education in Māori culture at preschool and high school, and were more likely to feel positive about their Māori cultural identification. However, it should be noted that despite identifying an association between housing tenure and cultural heritage, no causation or direction of causality can be inferred with the CHDS data. The current study's findings were unable to demonstrate any clear relationships between stronger cultural identification and home ownership. This is possibly due to the limitations of the sample size and the collection of data relating to culture. The findings collectively suggest that the origins of home ownership for Māori enrolled in the CHDS birth cohort were primarily explained by their exposure to family expectations, individual mental health and socio-economic well-being rather than by factors relating to cultural identity. These findings challenge the view that the origins of declining home ownership rates for Māori can be explained by cultural processes specific to Māori. Rather, they suggest that socio-economic conditions in childhood and later in adult life are the most significant predictors of home ownership.

While this research has produced novel findings and filled an important gap in the research on Māori home ownership, it is important that the caveats and limitations that apply to this research

are clearly stated. The research's primary limitation is that the findings apply to a particular birth cohort of a particular region of New Zealand in 1977. It would be premature and misleading to suggest that the findings presented here would correspond to birth cohorts from different years or different regions, considering there are large socio-economic and cultural differences across regions in New Zealand. Market reforms in the 1980s that deregulated the labour market had significant impacts on different regions' prosperity and economic viability (Kelsey, 1995). Additionally, iwi across New Zealand differ greatly in cultural practices, educational initiatives and their overall role in the lives of Māori in their rohe. Regional and age difference could, therefore, influence the results presented here, particularly regarding economic and cultural associations.

Despite these limitations, the present study's findings provide unique insights into a highly salient and important issue that has not been extensively researched. Of particular concern was addressing the suggestion that Māori cultural connectedness could adversely affect home ownership (Waldegrave et al., 2006). The research has shown that the significant factors associated with home ownership transcend cultural boundaries. Addressing the challenge of declining Māori home ownership rates will require addressing wider socio-economic issues among Māori.

A final limitation of the study relates to the measurement of cultural identity. Few data sets provide enough nuance to assess relationships between cultural connectedness and other variables. A common approach is to use the ability to speak te reo Māori as the primary defining component of cultural connectedness. While the CHDS measures of culture may not be as advanced as other measures proposed in the literature, they go far beyond defining culture along the boundaries of language alone. Additionally, other research utilising the CHDS cohort has confirmed the potential to use the cultural measures for research into significant associations between Māori cultural connectedness and other factors (Marie et al., 2008a,

2008b, 2009). The CHDS allows for unique insights into relationships between culture and a wide range of socio-economic variables. Despite the limitations of using this data to explain Māori home ownership, the research insights provide a new foundation from which broader research into factors influencing Māori home ownership can be undertaken.

Conclusion

The study presented here suggests that cultural factors in the CHDS cohort have little association with home ownership. Rather, we show that a small number of socio-economic variables can predict home ownership for Māori. While it is stressed that the findings reported here are not representative of Māori across New Zealand, the results fill a gap in understanding pathways to Māori home ownership and demonstrate the value of undertaking more research in this area. Home ownership comes with a range of socio-economic benefits, including lower crime rates, better education, less welfare dependency, improved health and a greater chance for low-income families to create asset wealth. Māori home ownership continues to decline along with a wide range of socio-economic variables.

This study showed that a small number of socio-economic variables are of significant importance for home ownership. While income was found to be a key variable, as would be expected, non-economic variables such as parents' aspirations for the children's education, and relationship status also demonstrated significance in predicting home ownership. The research was unable to demonstrate any clear relationships between stronger cultural identification and home ownership. The findings collectively suggest that the origins of home ownership for Māori enrolled in this birth cohort were primarily explained by their exposure to family expectations, individual mental health and socio-economic well-being rather than by factors relating to cultural identity. Therefore, the reported research challenges the view that deeper involvement in te ao Māori may have a significant

adverse effect on home ownership. At the same time, we cannot state that it has a positive effect on home ownership. Reversing trends in declining Māori home ownership will likely require addressing socio-economic factors across education, finance and health. Our research suggests that by improving performance on a relatively small number of variables, significant improvements in Māori home ownership could be possible.

Notes

1 From the 1960s to the 1980s, the Statistics Department defined a dwelling as Māori if the head of the household was 'half or more Māori ancestry' or was 'less than half Māori ancestry' but the majority of the inhabitants were of 'half or more Māori ancestry.

2 https://www.kiwiblog.co.nz/2016/06/maori_home_ownership_rates.html

3 For individual home ownership rates and percentage change, with age standardisation, refer to Goodyear (2017).

4 http://archive.stats.govt.nz/browse_for_stats/people_and_communities/well-being/nzgss-info-releases.aspx

5 The cohort members were asked to identify their ethnicity and whether they were of Māori descent.

6 This included living in a private landlord or state/council owned property, single rooms or bedsits, staying with family members, or other; e.g. living in a boat or caravan.

Appendix **Hierarchical logistic regression models predicting home ownership status from measures of (a) childhood family background and economic functioning factors, (b) individual characteristics/ psychosocial pathways and (c) adult economic functioning**

	Model 1		Model 2		Model 3	
Measure	**B(SE)**	***p***	**B(SE)**	***p***	**B(SE)**	***p***
Childhood Economic Functioning						
Childhood family socio-demographic background						
Mother lacked formal education qualifications	–0.23 (0.33)	0.49	—	—	—	—
Father lacked formal educational qualifications	0.09 (0.36)	0.81	—	—	—	—
Family of semi-skilled or unskilled socio-economic status	–0.03 (0.19)	0.88	—	—	—	—
Childhood family economic functioning						
Family had below-average living standards (0–10 years)	0.10 (0.07)	0.13	—	—	—	—
Family had below-average income (0–10 years)	0.04 (0.01)	0.01	0.01 (0.01)	0.62	—	—
Parents were homeowners (age 15)	0.53 (0.47)	0.26	—	—	—	—

Continued on next page

Measure	Model 1 B(SE)	*p*	Model 2 B(SE)	*p*	Model 3 B(SE)	*p*
Individual Characteristics / Psychosocial Pathways						
Individual factors/educational aspirations						
Gender			0.34 (0.45)	0.46	—	—
Attained Sixth Form Certificate			–0.23 (0.50)	0.64	—	—
Parents had 'high' educational aspirations (tertiary or higher)			0.41 (0.20)	0.04	0.44 (0.24)	0.06
Intervening mental health and well-being pathways (Ages 21–35)						
Major depression			0.32 (0.46)	0.48	—	—
Anxiety disorder			–0.91 (0.48)	0.06	–0.85 (0.52)	0.10
Substance dependence (alcohol or illicit drugs)			–1.05 (0.52)	0.05	–1.15 (0.63)	0.07
Welfare dependent (ever)			–1.41 (0.47)	< 0.01	–0.84 (0.48)	0.08
Unemployed (12 months or longer)			–0.23 (0.62)	0.72	—	—
Adult Economic Functioning						
Current economic circumstances (Age 35)						
Equivalised net household annual income (NZ$000)					0.02 (0.01)	0.12
savings and investments (NZ$000)					0.00 (0.00)	0.14
income poverty					1.16 (0.96)	0.23
Full-time employment (30+ hours per week)					0.17 (0.62)	0.78
Occupational status (NZSEI)					0.00 (0.02)	0.81
Attained tertiary educational qualification (level 5 or higher)					–0.19 (0.33)	0.57
Current household composition (Age 35)						
Long-term relationship (3+ years)					2.05 (0.61)	< 0.01
Number of dependent children					0.28 (0.25)	0.27
Crowding (index people/room)					–2.68 (1.30)	0.04

References

American Psychiatric Association (APA). (1994). Diagnostic and statistical manual of mental disorders: DSM-IV.

Arcus, M., & Nana, G., &. (2005). *Intergenerational and interfamilial transfers of wealth.* Wellington Centre for Housing Research Aotearoa New Zealand.

Baker, M., Zhang, J., Howden-Chapman, P., Blakely, T., Saville-Smith, K., & Crane, J. (2006). *Housing, crowding and health study: Characteristics of cohort members and their hospitalisations, February 2003 to June 2005* (Interim report). He Kainga Oranga/Housing and Health Research Programme. http://www.healthyhousing.org.nz/wp-content/uploads/2010/01/Housing-Crowding-and-Health-Characterisations-of-Cohort-Members-and-their-Hospitalisations.pdf

Buckett, N. R., Jones, M. S., & Marston, N. J. (2010). *2010 House Condition Survey* (BRANZ study report 264). https://d39d3mj7qio96p.cloudfront.net/media/documents/SR264_BRANZ_2010_House_Condition_Survey_-_condition_comparison_by_tenure.pdf

Carter, S., Paterson, J., & Williams, M. (2005). Housing tenure: Pacific families in New Zealand. *Urban Policy and Research, 23*(4), 413–428. https://doi.org/10.1080/08111470500354240

Elley, W. B., & Irving, J. C. (1976). Revised socio-economic index for New Zealand. *New Zealand Journal of Educational Studies, 11*(1), 25–36. https://www.researchgate.net/publication/252287484_The_New_Zealand_Socioeconomic_Index_of_Occupational_Status_NZSEI

Fergusson, D. M., & Horwood, J. L. (2001). The Christchurch Health and Development Study: Review of findings on child and adolescent mental health. *Australian & New Zealand Journal of Psychiatry, 35*(3), 287–296. https://doi.org/10.1046/j.1440-1614.2001.00902.x

————.. (2013). The Christchurch Health and Development Study. In P. Joyce, G. Nicholls, K. Thomas & T. Wilkinson (Eds.), *The Christchurch Experience: 40 Years of Research and Teaching* (pp. 79–87). University of Otago.

Flynn, M., Carne, S., & Soa-Lafoa'i, M. (2010). *Māori housing trends 2010.* Housing New Zealand Corporation.

Forster, M. (2008). Te hoe nuku roa: A journey towards Māori centered research. *Ethnobotany Research and Applications, 1*, 047–054. http://www.ethnobotanyjournal.org/index.php/era/article/view/28

Fund, G. M. H., &. (2004). The importance of stable housing for families with children: Child success workforce development, strong communities. Greater Minnesota Housing Fund.

Goodyear, R. (2017). A place to call home? Declining home-ownership rates for Māori and Pacific peoples in New Zealand. *New Zealand Population Review, 43*, 3–34. https://population.org.nz/app/uploads/2017/12/NZPR-Vol-43-Final.pdf

Howden-Chapman, P., & Tobias, M. (2000). *Social inequalities in health: New Zealand 1999.* Ministry of Health. https://www.moh.govt.nz/notebook/nbbooks.nsf/0/F6338BF7171E3F904C25696D001318EE/$file/SIHch1.pdf

James, B. (2007). *Children's and young people's housing experiences: Issues and scoping paper*. Centre for Housing Research, Aotearoa New Zealand. https://thehub.swa.govt.nz/assets/documents/childrens-young-peoples-housing-experiences.pdf

Jensen, J. (1988). *Income equivalencies and the estimation of family expenditures on children*. http://www2.stats.govt.nz/domino/external/web/prod_serv.nsf/Response/Indicator+16:+Jensen+Equivalised+Annual+Household+Income#references

Joynt, J. L. R., Tuatagaloa, P., & Lysnar, P. (2016). *Māori and housing in Tāmaki Makaurau: A stocktake of issues, experiences and initiatives*. Auckland Council. https://knowledgeauckland.org.nz/publications/m%C4%81ori-and-housing-in-t%C4%81maki-makaurau-a-stocktake-of-issues-experiences-and-initiatives/

Kelsey, J. (1995). The New Zealand experiment: A world model for structural adjustment? University of Auckland Press.

Koloto & Associates. (2007). *Pacific housing experiences: Developing trends and issues*. Centre for Housing Research. https://thehub.swa.govt.nz/resources/pacific-housing-experiences-developing-trends-and-issues/

Marie, D., Fergusson, D. M., & Boden, J. M. (2008a). Educational achievement in Māori: The roles of cultural identity and social disadvantage. Australian Journal of Education, 52(2), 183–196. https://doi.org/10.1177%2F000494410805200206

————. (2008b). Ethnic identification, social disadvantage, and mental health in adolescence/young adulthood: Results of a 25 year longitudinal study. *Australian & New Zealand Journal of Psychiatry, 42*(4), 293–300. https://doi.org/10.1080%2F00048670701787644

————. (2009). Ethnic identity and criminal offending in a New Zealand birth cohort. *Australian & New Zealand Journal of Criminology, 42*(3), 354–368. https://doi.org/10.1375%2Facri.42.3.354

Milligan, S., Fabian, A., Coope, P., & Errington, C. (2006). *Family wellbeing indicators from the 1981 – 2001 New Zealand censuses*: Statistics New Zealand, University of Auckland and University of Otago.

Milne, B. J., Byun, U., & Lee, A. (2013). *New Zealand socio-economic index 2006.* Statistics New Zealand. https://thehub.swa.govt.nz/resources/new-zealand-socio-economic-index-2006/

Ministry of Health. (2018). Socioeconomic indicators. https://www.health.govt.nz/our-work/populations/maori-health/tatau-kahukura-maori-health-statistics/nga-awe-o-te-hauora-socioeconomic-determinants-health/socioeconomic-indicators

Organisation for Economic Co-operation and Development (OECD). (2007). *Purchasing power parities (PPPs) for OECD countries since 1980.* http://www.oecd.org/std/ppp

————. (2012). Purchasing Power Parities (PPPs) for OECD Countries since 1980. http://www.oecd.org/std/ppp

Perry, B. (2014). *Household incomes in New Zealand: Trends in indicators of inequality and hardship 1982 to 2013*. Ministry of Social Development. https://thehub.swa.govt.nz/resources/household-incomes-in-new-zealand-trends-in-indicators-of-inequality-and-hardship-1982-to-2013/

Phibbs, P., & Young, P. (2005). *Housing assistance and non-shelter outcomes* (AHURI Report No. 74). Australian Housing and Urban Research Institute. https://www.ahuri.edu.au/research/final-reports/7

Roskruge, M., Grimes, A., McCann, P., & Poot, J. (2011). *Homeownership and social capital in New Zealand*. Motu Economic and Public Policy Research. https://www.motu.nz/our-research/urban-and-regional/housing/homeownership-and-social-capital-in-new-zealand/

Saville-Smith, K. (2018). *Revitalising the production of lower value homes: Researching dynamics and outcomes*. National Science Challenges Building Better Homes, Towns and Cities Ko ngā wā kāinga hei whakamāhorahora. https://www.buildingbetter.nz/publications/homes_spaces/Saville-Smith_2018_revitalising_production_lower_value_homes.pdf

Schluter, P. J., Ford, R. P., Mitchell, E. A., & Taylor, B. J. (1997). Housing and sudden infant death syndrome. The New Zealand Cot Death Study Group. *The New Zealand Medical Journal, 110*(1047), 243–246. https://pubmed.ncbi.nlm.nih.gov/9251707/

Statistics New Zealand. (2015). *How is our Māori population changing?* http://archive.stats.govt.nz/browse_for_stats/people_and_communities/maori/maori-population-article-2015.aspx

Statistics New Zealand. (2016). Changes in home-ownership patterns in New Zealand 1986–2013 with a particular focus on Māori and Pacific people. www.stats.govt.nz

Stats NZ. (2020a). *Housing in Aotearoa: 2020*. www.stats.govt.nz

————. (2020b). *2013 Census*. https://www.stats.govt.nz/census/previous-censuses/2013-census/

Su, B., & Wu, L. (2020). Occupants' health and their living conditions of remote Indigenous communities in New Zealand. *International Journal of Enviromental Research and Public Health, 17*(22), 8340. *https://doi.org/10.3390/ijerph17228340*

Te Puni Kōkiri. (2016). *Te Ture Whenua Māori Reform*. Te Puni Kōkiri. https://www.tpk.govt.nz/en/a-matou-kaupapa/crown-iwi-hapu-whānau-maori-relations/consultation/review-of-te-ture-whenua-maori-act-1993

Waldegrave, C., King, P., Walker, T., & Fitzgerald, E. (2006). *Māori housing experiences: Emerging trends and issues.* Centre for Housing Research Aotearoa New Zealand. https://thehub.swa.govt.nz/resources/maori-housing-experiences-emerging-trends-and-issue/

Waldegrave, C., & Urbanová, M. (2016). *Social and economic impacts of housing tenure*. New Zealand Housing Foundation. http://familycentre.org.nz/wp-content/uploads/2019/04/Social_and_Economic_Impacts_of_Housing_Tenure-1.pdf

White, V. W., Jones, M., Cowan V. J. & Chun, S. (2017). *BRANZ 2015 House Condition Survey: Comparison of house condition by tenure* (BRANZ Study Report SR370). BRANZ. https://www.branz.co.nz/pubs/research-reports/sr370/

World Health Organization. (1993). Composite International Diagnostic Interview (CIDI).

New Zealand Population Review, 47, 305–331

Statistical Representations of the Housing Problem in Briefings to Incoming Ministers, 2008–2020: The Politics of Housing Numbers

Ngā Whakaaturanga ā-Tauanga o te Raruraru Whare Noho i ngā Kupu Whakamārama ki ngā Minita Hou, 2008–2020: Ngā Take Tōrangapū mō te Maha o ngā Whare Noho

PATRICK BARRETT*
REUBEN GARRETT-WALKER†

Abstract

An interpretive policy studies perspective on what is understood to be the 'facts' about the housing problem in New Zealand has potential to uncover the way statistical representations of problems are embedded in larger normative narratives, and the consequential implications for housing policy and governance. This paper analyses such representations as they are evident in policy briefings to incoming Ministers of Housing between 2008 and 2020 by Housing New Zealand (HNZ) and its successor Kāinga Ora, and the way these reflect and reinforce a neoliberal political rationality and an agenda to residualise and marketise state housing support. The briefings represent authoritative accounts by a key bureaucratic advisory agency of the significant issues and priorities in the housing portfolio. The period prior to 2017 saw the emergence of new articulations of housing problems relating to affordability, declining rates of home ownership, an increasing rental population, and increasing homelessness. In the briefings to ministers, these problems were routinely framed as issues of supply and demand and market adjustment, and this has continued following the change of government in 2017. The focus of the paper is on identifying statistical representations within the discursive context that give weight to particular policy choices.

* Dr Patrick Barrett is a senior lecturer at the University of Waikato. He pūkenga matua a Tākuta Patrick Barrett i Te Whare Wānanga o Waikato. Email/Īmēra pbarrett@waikato.ac.nz

† Reuben Garrett-Walker is a research assistant at the University of Waikato. He kaiāwhina rangahau a Reuben Garrett-Walker i Te Whare Wānanga o Waikato. Email/Īmēra: reuben.gw@gmail.com