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Living in a crowded house:

Exploring the ethnicity and well-being of people in crowded households

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1 Purpose and summary

Purpose

Living in a crowded house: Exploring ethnicity and well-being of people in crowded households updates Ethnicity and crowding: A detailed examination of crowding among ethnic groups in New Zealand 1986–2006.

In this report we look at the changing rates of crowding over time – for the whole population and for different ethnic groups. We also look at indicators of well-being for people in crowded and uncrowded households.

Often crowding is only reported at the highest level of the ethnic classification, where different ethnic groups are classified under groupings such as Asian, Pacific peoples, and Middle Eastern, Latin American, and African. Populations included under these high-level groupings are quite different.

We also include some information on crowding at the more-detailed level of the ethnic classification. However, people may identify with more than one ethnic group, and there may be multiple ethnic groups within a household.

Data comes from the Census of Population and Dwellings, the General Social Survey, and the Household Economic Survey.

We look at the following questions:

- Does age-standardising crowding rates change the overall picture of trends in crowding in New Zealand between 1991 and 2013?
- Which ethnic groups are experiencing the most crowded living conditions in New Zealand, and has this changed since 2006?
- Do people living in crowded households experience lower material well-being?
- Do people in crowded households report lower levels of personal well-being?

Crowding varies markedly by ethnic group. Such variations have been observed in New Zealand and in other settler societies, such as the United States, Canada, and Australia. Studies found that ethnicity is one of the key factors associated with household crowding.

The information presented in this report may help policy-makers better understand the trends in crowding and the rates of exposure to crowding for different ethnic groups. Crowding, particularly severe crowding (where a household requires two or more extra bedrooms to adequately house its members), is linked with detrimental health outcomes and associated with higher rates of infectious diseases (Baker, Zhang, Howden-Chapman, Blakely, Saville-Smith, & Crane, 2006).

Summary points

- In 2013, 5.0 percent of households and 10.1 percent of people in New Zealand were living in crowded conditions.
- When we adjust for changes in the population structure, crowding rates in both 2006 and 2013 are higher than any time since the 1990s. In 2013, the age-standardised crowding rate was 10,130 per 100,000 people, compared with 10,090 in 2006 and 9,580 in 2001.
- Females between the ages of 35 and 44 years were slightly more likely to have crowded living conditions than males of the same age.
- Around 4 of 10 people (39.8 percent) with Pacific ethnicity lived in a crowded home in 2013, compared with around 1 in 10 of the total population.
- When we look at the largest Pacific ethnic groupings, crowding was highest among people with Tongan ethnicity (48.7 percent).
- Crowding rates fell slightly for most ethnic groups between 2006 and 2013, particularly for people with Chinese ethnicity (from 19.3 to 13.0 percent) and African ethnicities (32.0 to 25.3 percent).
- People living in crowded households experienced lower well-being on measures such as life satisfaction and material well-being.
- Around one-quarter of people in crowded households (24.2 percent) rated their life satisfaction as low (0–6 on a 10-point scale). In contrast, 15.5 percent of people living in a dwelling with spare bedrooms, and 17.1 percent of the total population, gave a low rating.
- People in crowded households were significantly more likely to say they did not have enough money for everyday needs (25.8 percent compared with 10.9 percent of the total population).
- Almost 4 of 10 people in crowded households said they had postponed visits to the doctor because of the cost (24.7 percent postponed by a little and 13.1 percent by a lot). This compares with around 2 of 10 in the total population.
- People in crowded households were more likely to report housing problems – 12.4 percent said they had a major problem with dampness and mould, compared with just 5.3 percent of the total population.

2 Crowding in New Zealand

Defining crowding

Crowding is caused when the dwellings that people live in are too small to accommodate the number of people in a household. There are many different measures of crowding. The capacity of a dwelling can be measured by floor area, or by the number of bedrooms or rooms.

The measure used in this report is the Canadian National Occupancy Standard (CNOS). This measure is complex and calculates the number of bedrooms needed – based on the demographic composition of the household. It presumes there should be no more than two people to a bedroom but that couples and children of certain ages can share a bedroom.

For example, using this definition, a household with a couple and two boys aged under 18 would require two bedrooms to meet the CNOS. If an extra person was added to the household it would be considered crowded – requiring one extra bedroom. If one of the boys turned 18, the household would require an extra bedroom.

Appendix 1 has more information about CNOS. Goodyear, Fabian, and Hay (2011) found CNOS was the best measure to use in the New Zealand context, both for data quality and for New Zealand's cultural norms.

Around 1 in 10 people lived in a crowded household in 2013

In 2013, 5.0 percent of households and 10.1 percent of people were living in crowded conditions. This compares with 7.0 percent of households and 12.8 percent of people in 1986, which is the earliest census for which we can calculate the CNOS. While crowding fell steadily over the 1980s and 1990s it has remained largely unchanged since 2001, at around 1 in 20 households and 1 in 10 people.

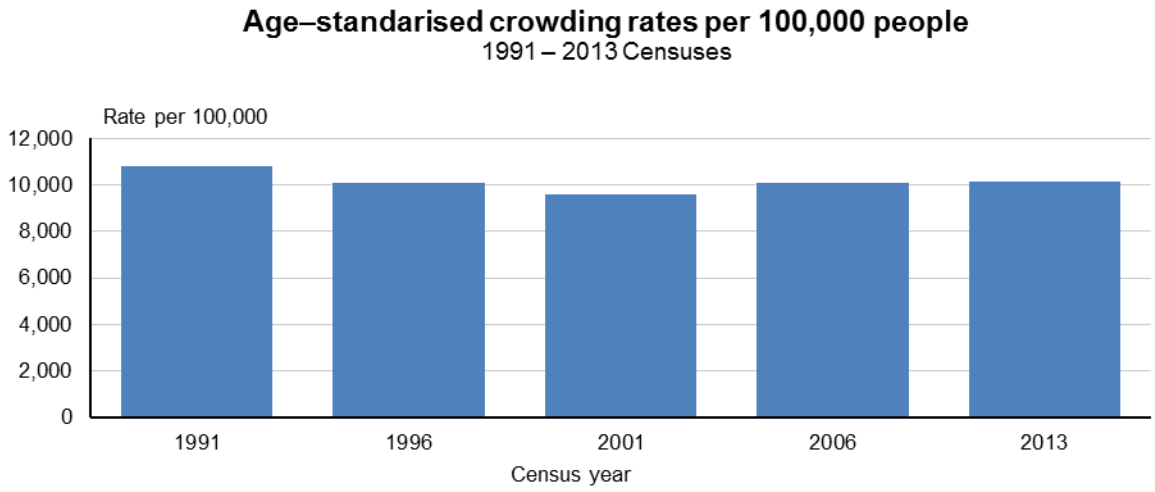
Changing age structure affects trends in crowding

The age structure of the population has changed considerably since the 1980s. In 1986 the median age of New Zealanders was around 29.7 years; in 2013 it was 38.0 years. The proportion of children in the population fell slightly, from 23.2 to 20.4 percent over the same period. As crowding tends to be much higher for households with children, the change in the age structure of the population means we should compare rates of crowding by age group, or age standardise the data.

We have calculated age-standardised crowding from 1991. Figure 1 shows that while the age-standardised crowding rate fell from 1991 to 2001, it began increasing from 2006. When we adjust for changes in the population structure, crowding rates in both 2006 and 2013 are higher than at any time since the 1990s.

In 2013, the age-standardised crowding rate was 10,130 per 100,000 people, compared with 10,090 in 2006 and 9,580 in 2001. In 1991 it was 10,800 people per 100,000 people.

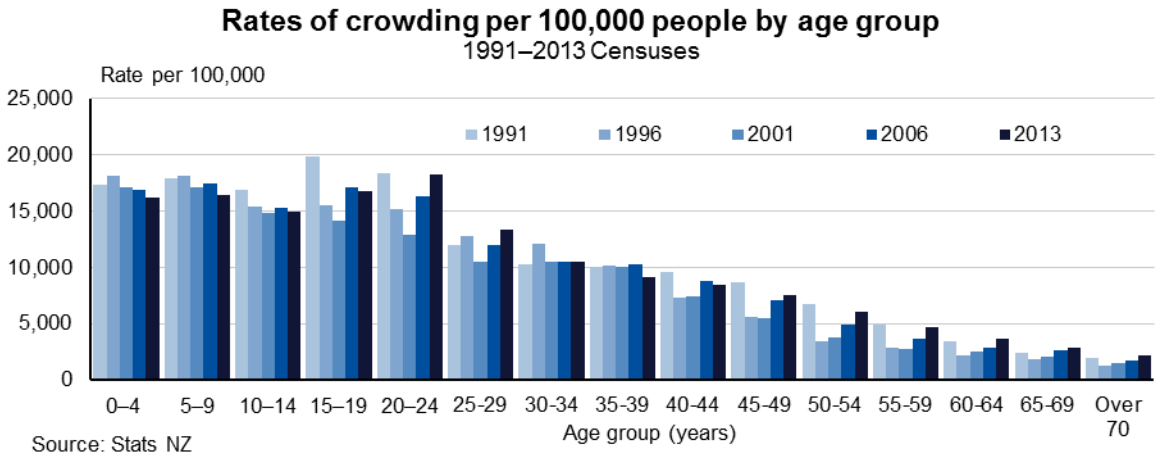
Figure 1



Note: Age standarised crowding is when we adjusted the crude crowding rates to the structure of the 2013 population, so we can better compare the change in crowding over time.
Source: Stats NZ

Figure 2 shows rates of crowding per 100,000 people by age group between 1991 and 2013. We can see that crowding rates have generally fallen for children since 1996. Since 2001, they have risen the most for people aged 20–24 and for people aged over 50.

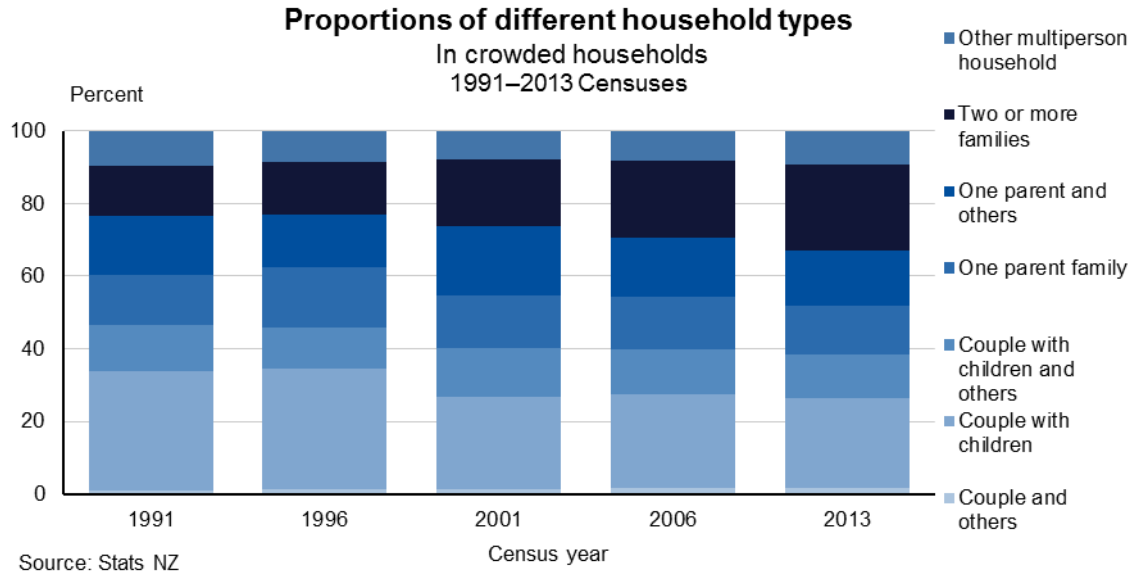
Figure 2



Source: Stats NZ

These changes are mirrored in the types of household that make up the crowded population. Figure 3 shows the changing household composition of crowded households.

Figure 3



In 1991, one-third of crowded households (32.9 percent) consisted of a couple and children. By 2013, only one-quarter of crowded households (24.7 percent) were this type. That year, households where two or more families lived together made up almost one-quarter of crowded households (23.7 percent), compared with 13.9 percent in 1991.

In total in 2013, less than half of all crowded households (38.4 percent) consisted of one family – either a couple with children or a one-parent family. Just under 10 percent (9.2 percent) were households of unrelated people, such as a flatting situation. This suggests that one driver of crowding has been in an increase in complex households – such as multiple families, and families with additional people.

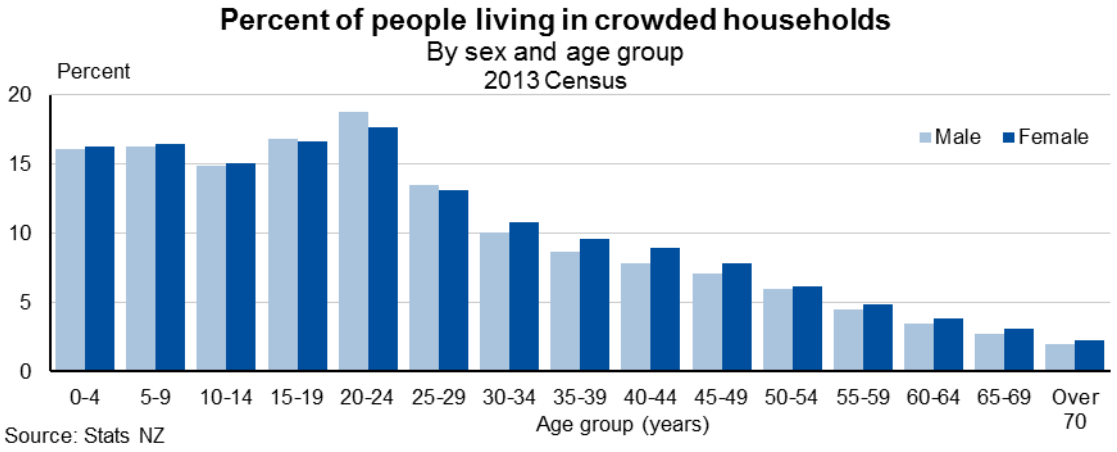
When we look at households that are severely crowded (those needing two or more additional bedrooms to accommodate the household), over two-thirds had additional people (71.9 percent). This includes one-family households with other people, and two-or-more-family households with or without other people. Almost half (42.1 percent) of severely crowded households consisted of two or more families, but two-or-more-family households were only around 3 percent of all households.

Appendix 3 has more information on household composition.

Women aged 35–44 have higher rates of crowding

Rates of crowding did not vary much by sex, but in 2013 females aged 35 to 44 years experienced slightly higher rates of crowding than males. Approximately 1 percent more females lived in a crowded house in these age groups. Males were slightly more likely to be crowded between 20 and 24 years (18.8 percent compared with 17.7 percent for females).

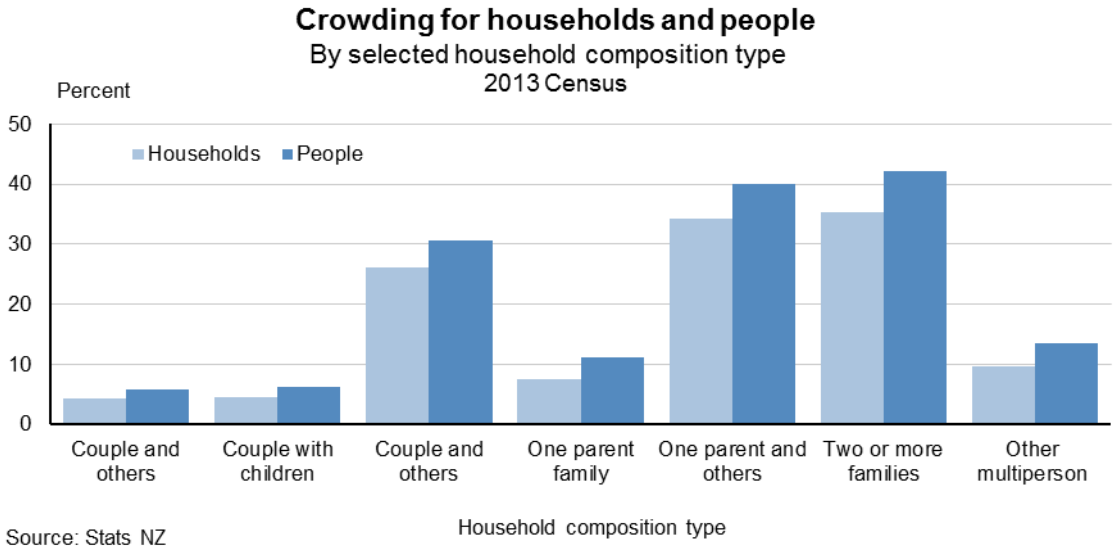
Figure 4



A higher proportion of female-headed sole-parent households is likely to affect crowding. Of the 201,804 sole-parent families in 2013, 82.1 percent (165,603 families) had a female sole parent. Crowding was higher for sole-parent than for couple-with-children households (figure 5).

In 2013, 11.2 percent of people living in a one-parent family, and 40.1 percent of people living in a one-parent family with others, were living in a crowded household. In contrast, 4.6 percent of couple-with-children households experienced crowded living conditions.

Figure 5



The increase in households with more than one family has been associated with more homelessness between 2006 and 2013. In 2013, Amore (2016) estimated around 1 in 100 New Zealanders were homeless, a 15 percent increase from 2006.

The 2009 New Zealand definition of homelessness defines it as:

> a living situation where people with no other options to acquire safe and secure housing are: without shelter, in temporary accommodation, sharing accommodation with a household, or living in uninhabitable housing.

Amore writes "the prevalence of people crowding into the others' dwellings has been increasing, driving much of the rising prevalence of severe housing deprivation overall."

Lowe et al (2017), researching for Toi Te Ora/Bay of Plenty District Health Board, noted the impact of crowded living conditions on the families they interviewed:

> Families reported moving in together, just to have a place to live. What started out as a short term solution had turned into a longer term problem, with the stress of whole families living in one room impacting on emotional wellbeing.

Household crowding varies markedly by ethnic group

Ethnic diversity increases in New Zealand

New Zealand has become more ethnically diverse since 1991. In 1991, people with European ethnicity were around 8 of every 10 people in New Zealand. By 2013, this was down to around 7 out of 10 people. Some ethnic groups have had large increases, particularly people identifying with the Asian and Middle Eastern, Latin American, and African populations (MELAA).

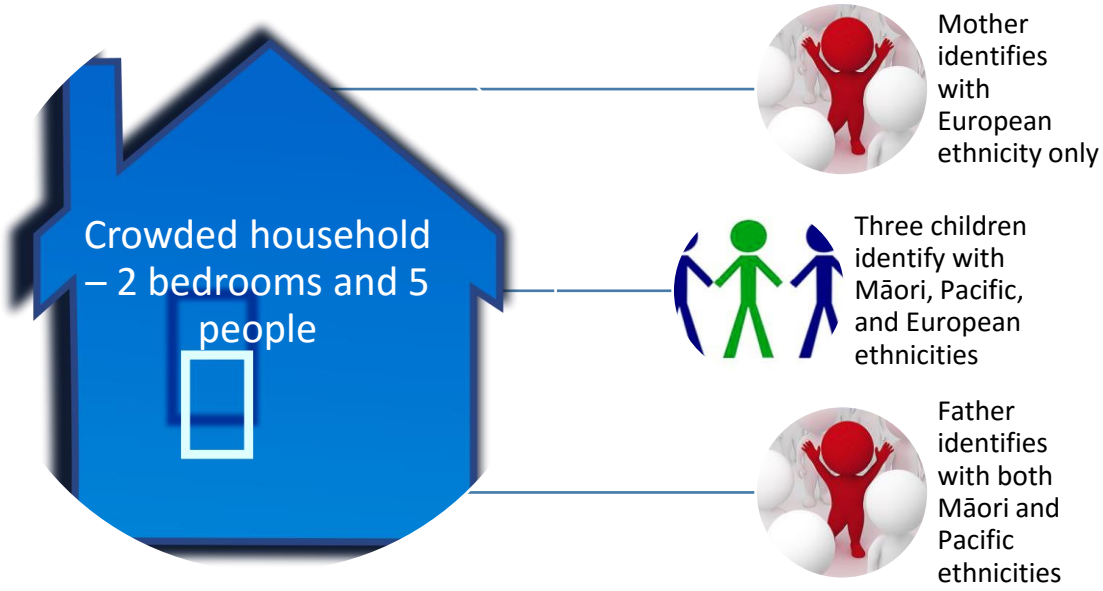
People with Asian ethnicities increased from 3.0 percent to 11.8 percent of the population between 1991 and 2013, and the MELAA population from 0.2 percent to 1.2 percent. The Pacific population also increased, from 5.0 percent to 7.4 percent. These groups have tended to experience higher crowding rates than the population with European ethnicities.

The proportion of the New Zealand population with multiple ethnicities has also increased since the 1990s. This has led to a blurring of boundaries between ethnic groups (Rocha & Wanhalla, 2018). In 2013, around 1 in 9 people identified with more than one ethnic group. For children under five years, multiple ethnicity was higher with around 1 in 4 identifying with two or more ethnic groups.

This means that people may identify with more than one ethnic group and there may also be multiple ethnicities present within a household. Figure 6 illustrates this point. It is important to remember that the larger and more complex the household, the more likely there are multiple ethnicities present.

Figure 6

Example of ethnic complexity in a crowded house – 1 household, 3 ethnic groups

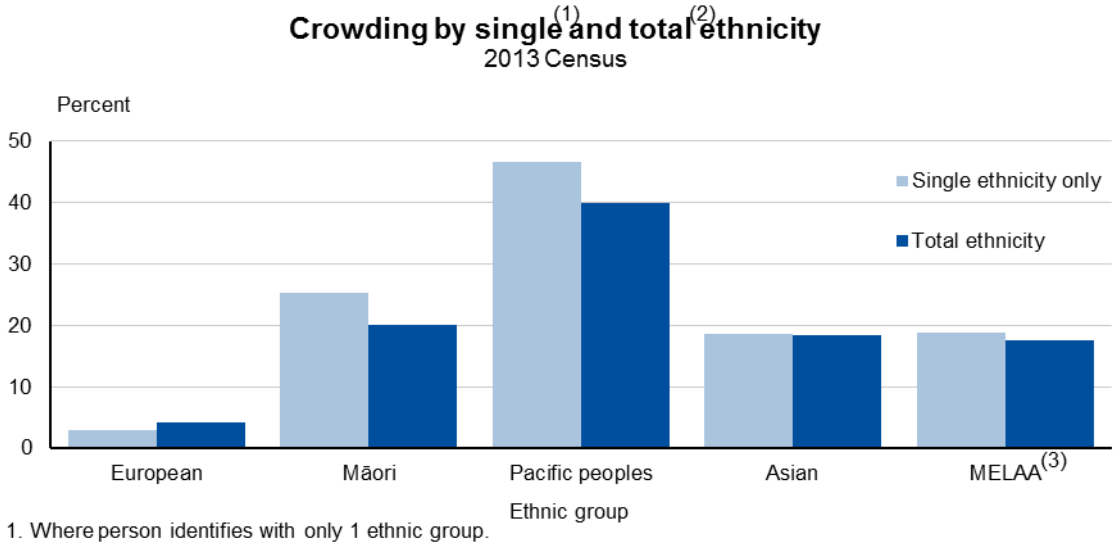


Ethnic complexity affects crowding

People in the figure 6 household would be included under crowding for Māori, Pacific, and European ethnicities.

We know there can be differences in levels of crowding depending on whether people identify with just one or more than one ethnic group. For example, people who identified as 'European only' tended to experience lower levels of crowding (3.0 percent, compared with 4.3 percent for people with European and one or more other ethnicities). In contrast, people with 'Māori ethnicity only' experienced higher levels of crowding than if they had more than one ethnicity (figure 7). This difference also occurred in previous censuses (Statistics NZ, 2012).

Figure 7



1. Where person identifies with only 1 ethnic group.
2. Where person identifies with 1 or more ethnic groups (up to 6 ethnicities).
3. Middle Eastern, Latin American and African.

Source: Stats NZ

Internationally, in the United States and Australia for example, some ethnic groups, including indigenous peoples, experience much higher levels of crowding than the general population. People of African American, American Indian, Asian, and Hispanic ethnicity in the United States had much higher levels of crowding than the European population (Moller, Johnson, & Dardia, 2002).

Moller et al found that crowding was not just a consequence of poverty, although poverty was an important factor. Levels of crowding remained high even when controlling for factors such as low income. In California, households headed by Hispanic people were 4.5 times more likely to be crowded, for Asian households it was 2.5 times more likely, American Indians 2.6 times more likely, and African Americans 2.8 times more likely (Moller et al, 2002).

In Canada, Ruiz-Castell, Muckle, Dewailly, Jacobsen, Jacobsen, Ayotte, & Riva (2015) found very high rates of crowding among Inuit families in the Arctic (around 49 percent). In the Arctic a chronic shortage of housing, combined with strong population growth, helped drive the high rates of crowding.

In Australia, crowding rates were around three times higher for indigenous households than for other households (Australian Institute of Health and Welfare, 2014). Clifford et al (2015) found that crowding rates were much worse for remote communities "with only 17% of Aboriginal people of all ages in major cities experiencing overcrowding, while over half (53%) of Aboriginal people living in very remote areas are affected by overcrowded living conditions".

In the United Kingdom, a 2006 report on overcrowding (Shelter, 2006) notes:

> Black and Minority Ethnic (BME) groups experience overcrowding disproportionately. According to a Shelter survey of 437 overcrowded families in six local authority areas, BME groups were about twice as likely as White British families to lack two or more bedrooms according to the Bedroom Standard.

New Zealand evidence also suggests ethnicity is a factor in crowding (Statistics NZ, 2012). The Ministry of Health (2014) noted in an analysis of crowding data that although "poverty was an important factor, there are factors beyond socioeconomic deprivation that lead to crowding at all income levels".

In New Zealand, Māori have consistently lived in more crowded conditions than Europeans (Statistics NZ, 2012). However, in recent years, Pacific peoples have experienced the highest levels of crowding (Statistics NZ, 2012).

In section 3 we look at factors associated with levels of crowding. Crowding can occur due to the cost of housing or difficulty securing housing, so individuals or families need to move in with others. Large households, such as those with multiple or extended families, and very large families, are more likely to find it difficult to access housing that is big enough.

While attitudes to crowding may vary between ethnic or cultural groups, living in crowded conditions can make life difficult for families regardless of cultural background.

Effects of crowding on households

Comprehensive research links crowded housing with different issues. For example, Maani, Vaithianathan, & Wolfe (2006) found that:

> for each 10% increase in the proportion of children living in crowded households in a particular census area, the rate of infectious disease admissions increases by 1% (after controlling for income and income inequality). Importantly, we also find that genetic and non-communicable diseases do not show the twin effects of crowding and income inequality.

Crowding has been linked with poorer physical health, especially rates of infectious disease transmission, and poorer: mental health, educational outcomes for children, and social outcomes. In New Zealand, crowding is particularly high among Pacific families.

Ruiz-Castell et al (2015) noted research that showed the psycho-social impact of crowding among household members, “Household crowding also has been identified as eliciting chronic stress responses in adults, anger and depression with possible repercussions on behaviors, withdrawal, and reduced social support.”

Researchers in America (Solari & Mare, 2013) found some aspects of children’s well-being suffered when exposed to crowded living conditions, even after controlling for socio-economic status. These negative effects could persist throughout a child’s lifetime, affecting adult socio-economic status and well-being.

From a study of Tokelauan families (Pene, Howden-Chapman, Peita, Vigger, & Gray, 2009), this comment reveals some of the stress experienced by the family members.

> There are nine in our family and only three bedrooms … the children have to share, three in one bedroom. They are always complaining because it is too many in one room … the lack of space and not enough bedrooms is a huge concern for me. (Father).

Existing overcrowding can be exacerbated by poor quality housing, with some families only able to afford to heat one room. Another family in the Tokelauan study (Pene et al, 2009) commented that “The whole house is very cold in winter, especially the bedrooms, and it is easier to heat just one room [the lounge] than to try and heat the whole house.”

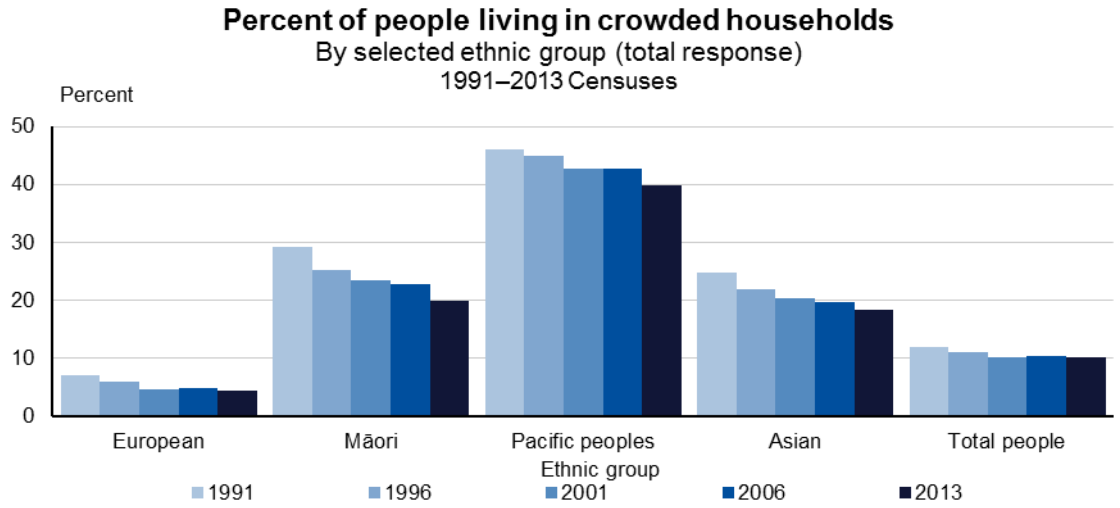
This can result in functional crowding – where families sleep in one heated room to keep warm. We currently don’t have any large scale data on this issue in New Zealand. However, we know that functional crowding is related to energy hardship (Lowe et al, 2017). Stats NZ (2017) estimates that around two-thirds of low-income households (the lowest 20 percent of households once income was

adjusted by the number of people in the household) experience one or more energy hardship indicators.

4 of 10 people with Pacific ethnicity live in a crowded home

Rates of crowding vary considerably by ethnic group; differences that have remained fairly constant since the 1980s. Pacific peoples had the highest levels of crowding, followed by people with Māori or Asian ethnicity. In 2013, around 4 of 10 people with Pacific ethnicity lived in a crowded household.

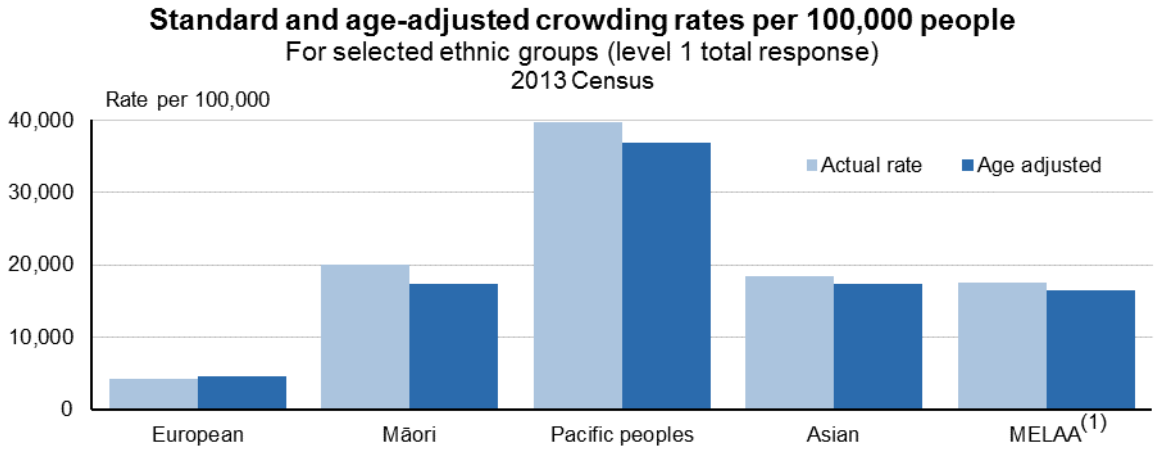
Figure 8



Source: Stats NZ

Even when we adjust for different age structures in different ethnic groups, the considerable disparities in crowding remain. In 2013, people with Māori, Asian, or MELAA ethnicity were around four times more likely to be living in crowded housing than people with European ethnicity – even when adjusted by age. Pacific peoples were around eight times more likely than people with European ethnicity to be living in a crowded house.

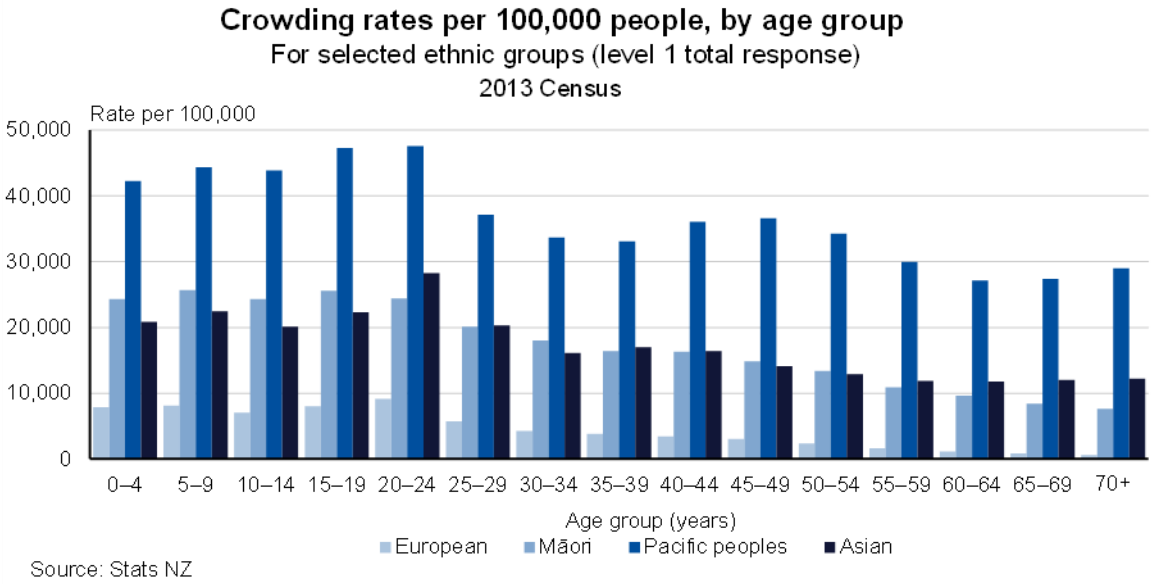
Figure 9



1. Middle Eastern, Latin American and African.
Source: Stats NZ

Figure 10 shows the rates of crowding are highest for children and young people with Pacific ethnicity.

Figure 10



Although crowding rates have fallen for all ethnic groups since 1991, they fell most for people with a European ethnicity and least for people with an Asian ethnicity. This pattern remains even when adjusted by age.

However, the composition of the diverse Asian population has changed considerably since 1991, particularly with growth of the large student population. This change means we are comparing very different populations over time.

In the next section we look at the very diverse Asian and MELAA populations in greater detail (figure 11).

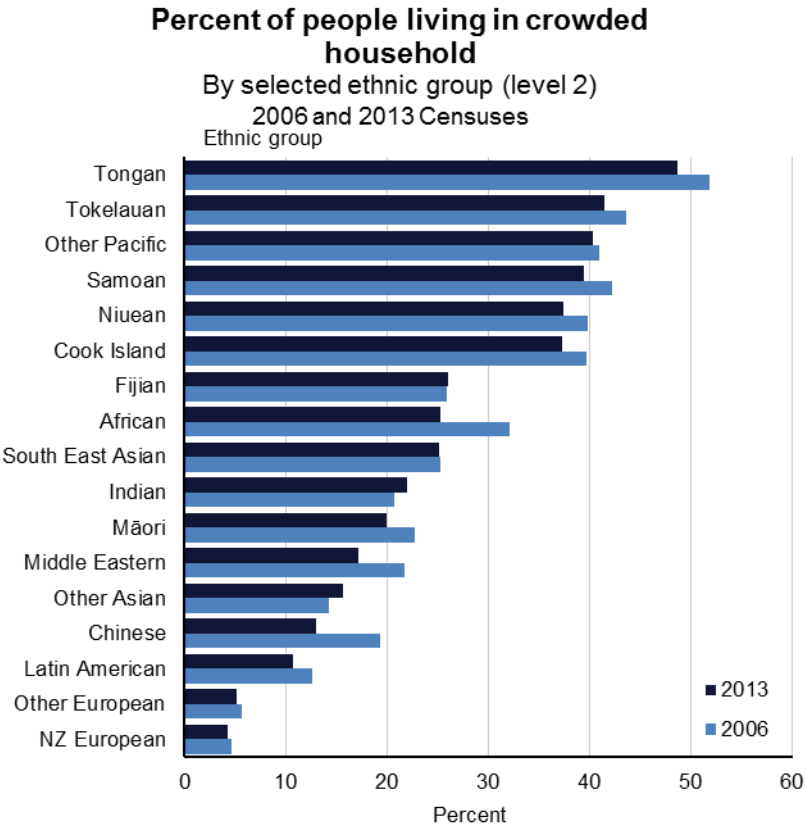
More detailed ethnic breakdowns

This section examines crowding for some ethnic groups at level 2 of the classification.

Crowding high for people with Tongan ethnicity

While crowding rates fell for most ethnic groups between 2006 and 2013, including Māori, crowding levels were still very high for some ethnic groups. Close to half of people identifying with the Tongan ethnic group lived in a crowded household in 2013. Crowding was also very high for African and South-east Asian people.

Figure 11



Source: Stats NZ

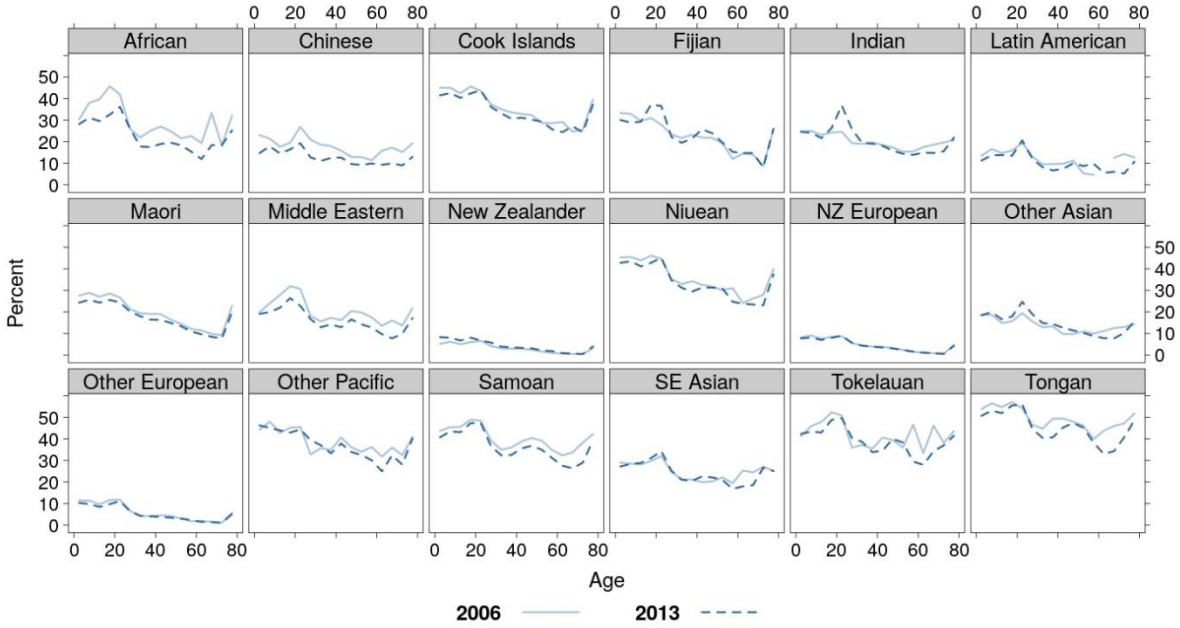
When we look at change in crowding by age group between 2006 and 2013 (figure 12), the greatest changes occurred within the Asian (level 1) ethnic group and for people with African (level 2) ethnicity. For people identifying with the Chinese ethnic group, crowding declined by around 6 percentage points. For 20-24-year-olds, who experienced the greatest levels of crowding overall, rates fell from 26.9 percent to 19.3 percent between 2006 and 2013.

In contrast, for the Indian population, crowding rates rose sharply for this age group (from 24.6 percent to 36.8 percent), around 12 percentage points. The rate also rose for people aged 20–24 with Fijian ethnicity, from 27.9 percent to 36.6 percent.

In figure 12 we see the percent of people living in a crowded house by age group, with age along the x axis and per cent crowded along the y axis.

Figure 12

Percent of people living in a crowded household, by selected ethnic group (level 2) and age, 2006 and 2013 Censuses



These changes may be related to changes in the migrant worker and international student populations. Between 2006 and 2013, the number of international students from China fell from 21,450 to 15,910 (Education Counts). The number of students from India rose (from 2,135 to 7,755 students).

In both 2006 and 2013 (Statistics NZ, 2012) we found that even though the 20–24-year age group was the most populous Chinese age group, their crowding rate was disproportionate to their number. In this age group, in both years, crowding was higher for those born overseas (20.1 percent compared with 15.5 percent for New Zealand-born). Among the overseas-born Chinese, crowding rates were slightly higher for people studying than non-students (20.8 and 17.2 percent, respectively).

The tables available with this report (under 'Download data and report') include some information on crowding for populations at the most-detailed level of the ethnic groupings (level 4). However, use caution when looking at percentages for small populations. At level 4 we find that people with Tuvaluan ethnicity had the highest rates of crowding (59.2 percent), followed by people with Somalian ethnicity (53.2 percent).

3 Factors influencing different crowding rates

Ethnicity and crowding: A detailed examination of crowding among ethnic groups in New Zealand 1986–2006 identified the following factors as being linked with higher crowding rates.

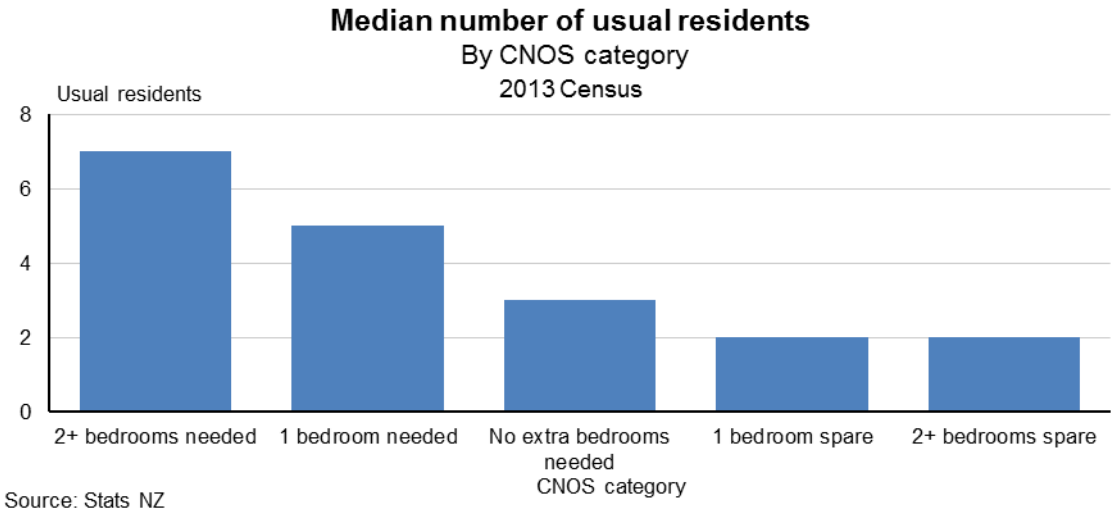
- larger households
- living arrangements
- lower incomes
- lack of large houses, particularly rental houses.

We found these factors have continued to be linked with household crowding since 2006.

Crowded households are larger

The characteristics of crowded households have also been fairly stable over time. Our analysis showed that crowded households are larger. In both 2013 and 2006, crowded households contained 5.4 people on average, compared with 2.7 per household nationally. Figures 10 and 11 show the median number of usual residents for each category within CNOS, and then the variation by ethnic group.

Figure 13



Comparing household size by ethnicity

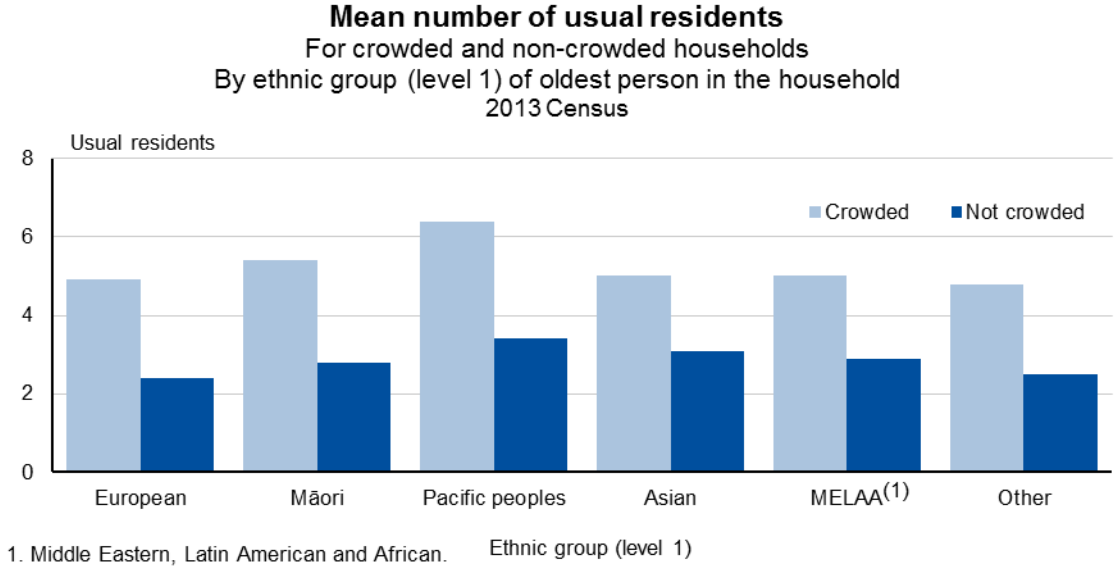
It is impossible to assign one ethnicity to a household, as individuals may belong to more than one ethnicity and people of multiple ethnicities are likely to live in each household. However, there are methods to compare the number of people in households by ethnicity.

These include presenting information for households where at least one person has a particular ethnicity (this involves considerable multiple counting of households – there may be many ethnicities within a household and households may therefore be counted many times). We could also classify households based on the ethnicity of the eldest person in the household. Both methods are imperfect; results only indicate the crowding experienced by different groups.

For this report, we used the ethnicity of the eldest person in the household to assign ethnicity to a household, a method used by the Otago University Wellington School of Medicine (Baker et al, 2012). This reduces the amount of multiple counting. The ethnicity of the household's eldest person closely aligns with the proportion of people of a specified ethnicity present in the population. However, it is important to remember that this individual's ethnicity may not be representative of the rest of the household.

Using this method, in crowded households we found some differences by median number of usual residents and ethnicity. Crowded households where the oldest person had Pacific ethnicity had a median number of six people, compared with five for people with Māori, European, Asian, and MELAA ethnicities.

Figure 14

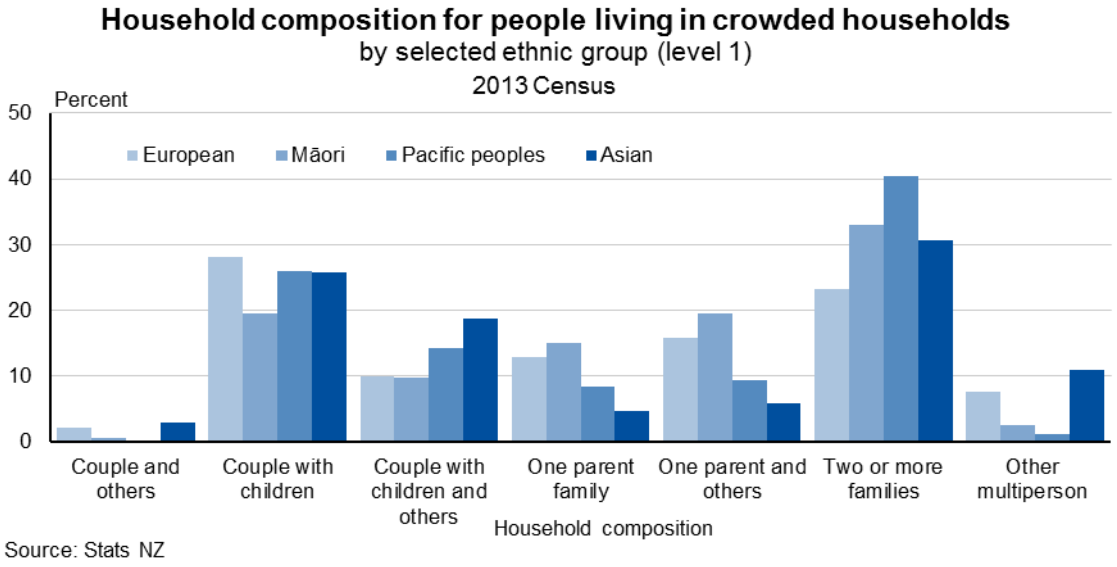


Crowded households were more likely to contain more than one family or to have additional residents.

Figure 15 shows the percentage of people in crowded households, in different ethnic groups, who were living in each household type. For example, for every 100 people identifying with a Pacific ethnicity and living in a crowded house, 40 would be living in a two-or-more-family household, 26 would be living in a couple-with-children household, 8 in a one-parent household, and 24 in a one-family household with others. Just 1 person would be living in another multi-person household (this category includes flatting situations).

In contrast, when we look at all Pacific people in households, just 24 of 100 people lived in a two-or-more family household.

Figure 15



Crowding more common in Auckland, Far North, and East Cape

As figure 16 shows, we see larger proportions of New Zealand's crowded households are in Auckland, Porirua, Far North, and the East Cape of the North Island.

Auckland, which has well-documented housing affordability and supply issues (Goodyear & Fabian, 2014), had the highest proportion of crowded households in 2013 (see figure 17).

Around half the total population of people experiencing crowding lived in the Auckland region, compared with around one-third in 1991. Rates of crowding were highest in South Auckland, where crowding was experienced by around 4 of 10 people in Mangere-Otahuhu (42.6 percent) and Otara-Papatoetoe local board areas (39.5 percent).

Figure 16

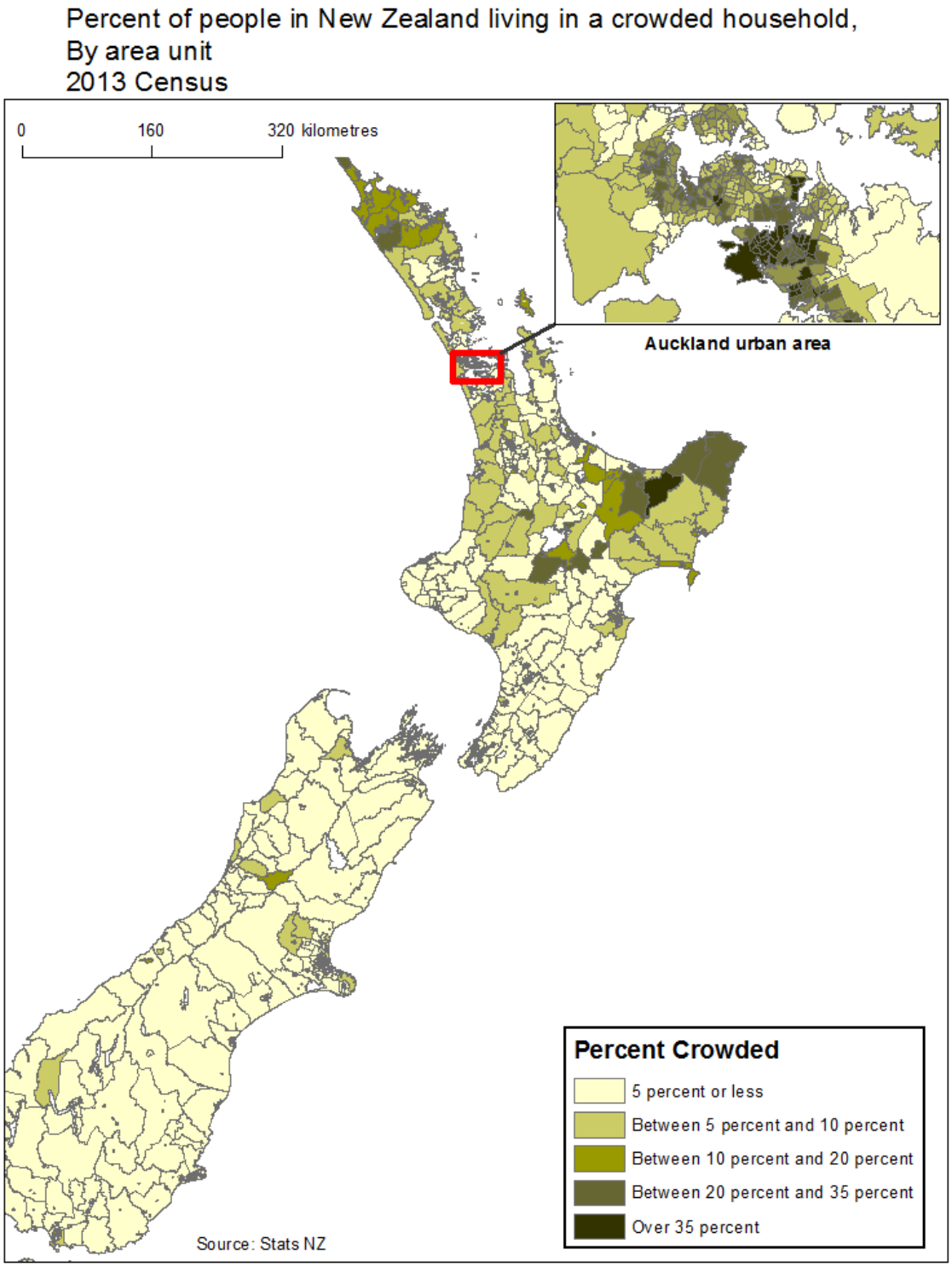
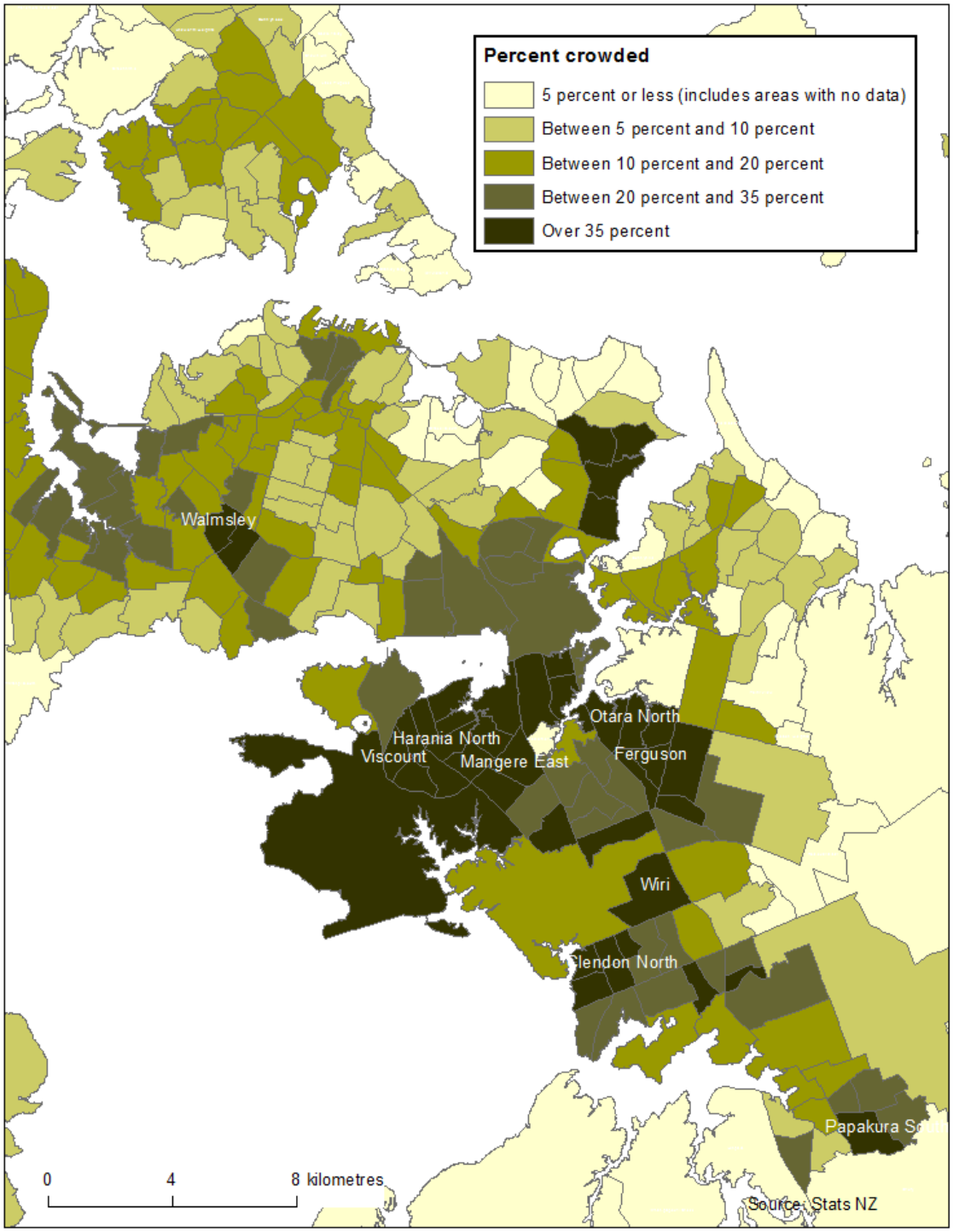

Percent of people in New Zealand living in a crowded household,
By area unit
2013 Census
0
160
320 kilometres
Auckland urban area
Percent Crowded
5 percent or less
Between 5 percent and 10 percent
Between 10 percent and 20 percent
Between 20 percent and 35 percent
Over 35 percent
Source: Stats NZ

Figure 17

Percent of people living in a crowded household
By area unit in Auckland region, 2013 Census



Fewer large houses are rented

Households will choose a house they can afford. Houses with enough bedrooms to accommodate a large household tend to be more expensive to buy or rent. For example, to accommodate a household of 10 people, even if six of them were children under 18 and the adults were two couples, people would need a house with at least five bedrooms.

Nationally only 17.5 percent of large dwellings with five or more bedrooms were occupied by renters. In South Auckland, where the highest proportion of crowding occurs, and where the average number of people in each home was close to twice the national average, only 19.7 percent of large dwellings were rented. Most of the other 80 percent were occupier-owned or held in a family trust.

Higher rents for large houses

Looking at Ministry for Business, Innovation and Employment (MBIE) data on market rents for the later half of 2017, rents in the suburbs of Manurewa North and Otara in Auckland were typically $100 to $200 a week more for a four-bedroom rental than for a two-bedroom rental. There were also few larger homes available; around three-quarters of all houses with bonds lodged during this period had either two or three bedrooms.

Figure 18

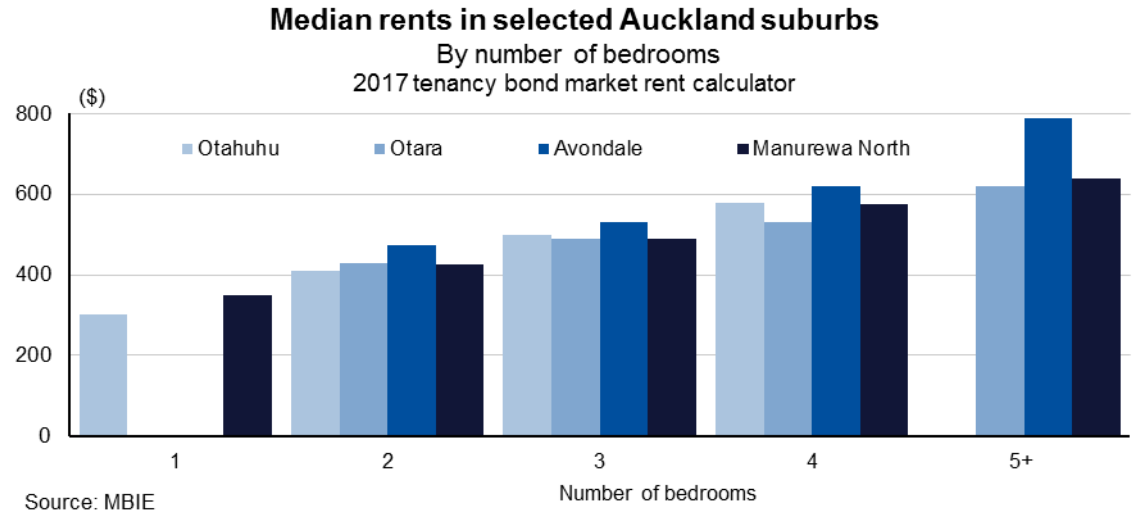
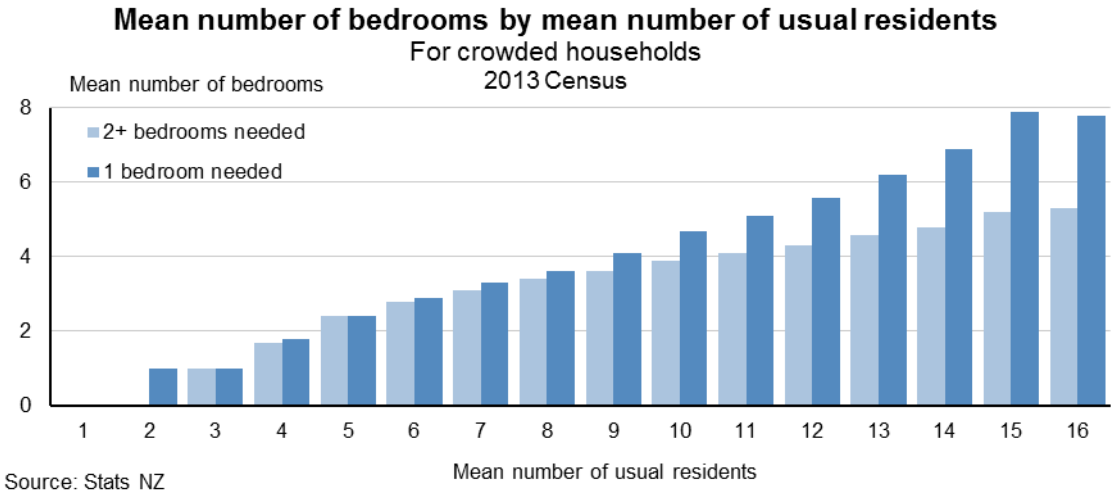


Figure 19 indicates the extremes of crowding. Even when severely crowded households have 16 usual residents, the mean number of bedrooms is only five.

Figure 19



People in crowded households have lower incomes

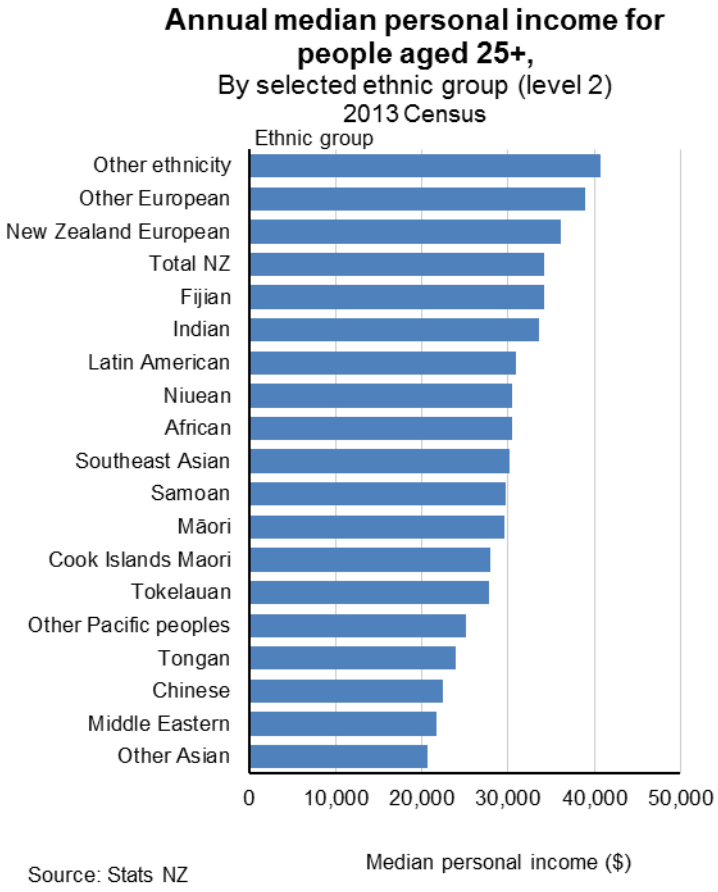
People in ethnic groups that have higher levels of crowding had lower incomes than the general population (based on median annual personal income statistics). How much people earn, and the size of the household, determines what type of accommodation they can afford. In 2013, people with Chinese, African, and some Pacific ethnicities (eg Tongan) had the lowest personal incomes. Research from Stats NZ (2018) has also shown that rent forms a larger part of household expenditure for certain groups, especially beneficiary households and households in the lowest household income quintiles.

Caution is needed when analysing income data grouped by ethnicity, due to relatively high non-response rates for some ethnic groups, particularly Pacific people (11.3 percent) and Māori (8.2 percent).

2013 Census information by variable has more information about non-response and the reliability of census income data.

Figure 20 shows median personal income for people aged 25 and over. Most people aged 15–24 have fairly low incomes. The different age structures of population groups can exaggerate the income differences between ethnic groups, so we don't include this age group.

Figure 20



Comparing incomes of crowded and non-crowded households

Census data (from 1991 onwards) indicates that people in crowded households had lower personal incomes than people in non-crowded households. When these incomes are combined into household income, the total household income (once adjusted by the number of people in the household) tended to be lower as well. This leads to people in crowded households experiencing lower material well-being, which can affect their ability to afford adequate housing, adequate food, and to pay for extra costs such as doctor's visits.

Section 4 has more on some of these issues.

Since housing is a major cost for a household, people on lower incomes may be forced to share housing to reduce their housing costs. Having enough income to cover basic needs affects the overall well-being of people living in the household. If a dwelling can't adequately accommodate the number of people living in it, it becomes crowded.

JEAH formula

The Jensen Equivalised Annual Household Income (JEAH) formula is used to compare income between households of different sizes. Crowded households tend to be much larger than households in the rest of the New Zealand population. On its own, total household income does not provide an adequate measure of affordability – an annual household income of $50,000 might be adequate for one or two people but is likely to be inadequate for nine or 10 people. We can use the JEAH formula to compare households.

The JEAH formula uses the number and ages of people in the household (children require less income than adults) to create an equivalised income for that household. Equivalising income means the household income is adjusted up or down according to the number and ages of people in the household.

Appendix 4 has more detailed information about the formula and how it is calculated.

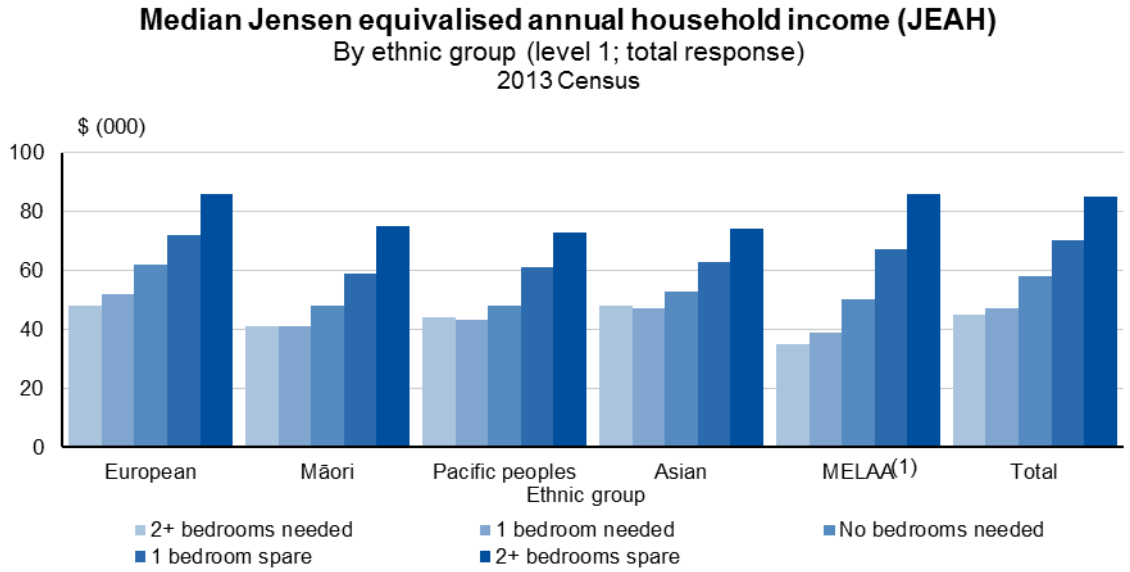
In the census, household income is calculated from the personal income of each household member aged 15 years or over. If an individual's information is missing (because they were absent on census night or did not answer the question) household income cannot be calculated, unless that household is already in the top income band ($100,000 or more).

In practice, this means the larger the household the greater the chance that some personal income information that relates to individuals in that household may be missing. Household income was missing for around 40 percent of crowded households in the 2013 Census.

However, when we compare results with data from the Household Economic Survey (HES), we find similar results despite the high non-response rate in census (HES 2013 mean $48,000; 2013 Census mean $46,000).

Figure 20 shows that for all ethnic groups, equivalised household income was much lower for crowded households – $45,000 a year for severely crowded households and $47,000 a year for households needing one extra bedroom. In contrast, households with 2+ spare bedrooms had a median JEAH income of $85,000.

Figure 21



1. Middle Eastern, Latin American and African.
Note: Non-response for household income is around 40% for crowded households.
Source: Stats NZ

4 People in crowded households rate well-being lower

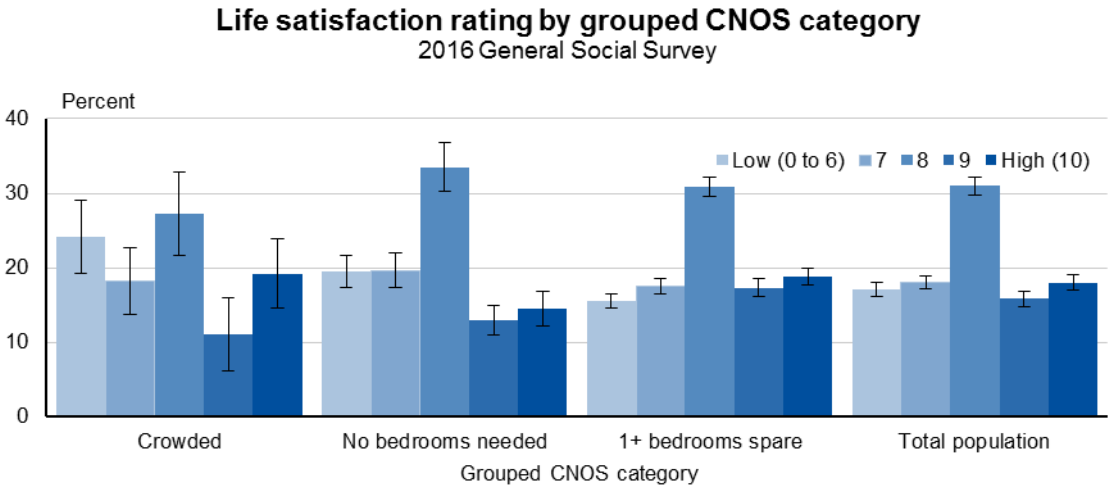
We expected to find evidence of lower well-being among people in crowded households since research links crowding with detrimental outcomes, such as financial stress, and reduced physical and mental well-being.

Information here is from the 2016 General Social Survey. This survey interviewed almost 9,000 people between April 2016 and April 2017 and asked questions about their well-being.

Lower life satisfaction in crowded homes

We found that people living in crowded households were significantly more likely to experience lower life satisfaction than people living in houses with spare bedrooms.

Figure 22



Note: Error bars show the variability within the estimate. As crowded households are a small proportion of all households, there is greater variability around that estimate.

Source: Stats NZ

While the large sample errors for crowded households in figure 22 indicate a high degree of variability in life satisfaction, the figure still suggests people in these dwellings have lower life satisfaction than people in households with spare bedrooms. However, most of these differences were not statistically significant.

There was a marginal difference in experiencing lower life satisfaction for people with European ethnicity (an estimated 24.3 percent, compared with 16.0 percent of the European population that was not crowded).

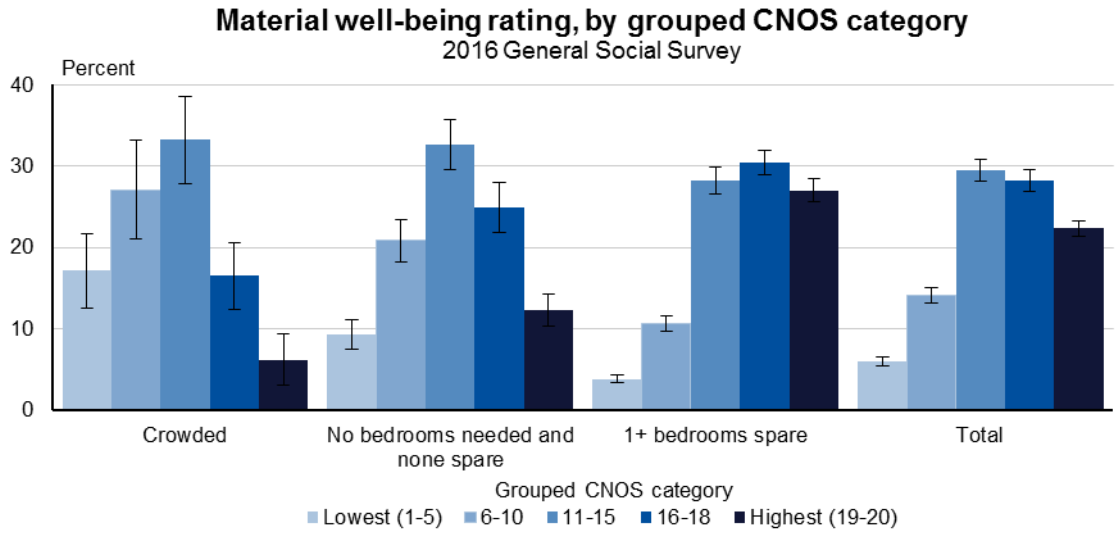
Material well-being lower in crowded homes

Material well-being ratings were also lower for people in crowded households, although again the large sample errors introduce more variability into the results. The material well-being rating is from

responses to questions such as whether a household was doing without key items in order to save money.

Figure 23 shows that people living in crowded households were almost five times more likely to rate their material well-being at 1–5 (1 being the lowest) than households with spare bedrooms (17.1 percent and 3.8 percent, respectively).

Figure 23

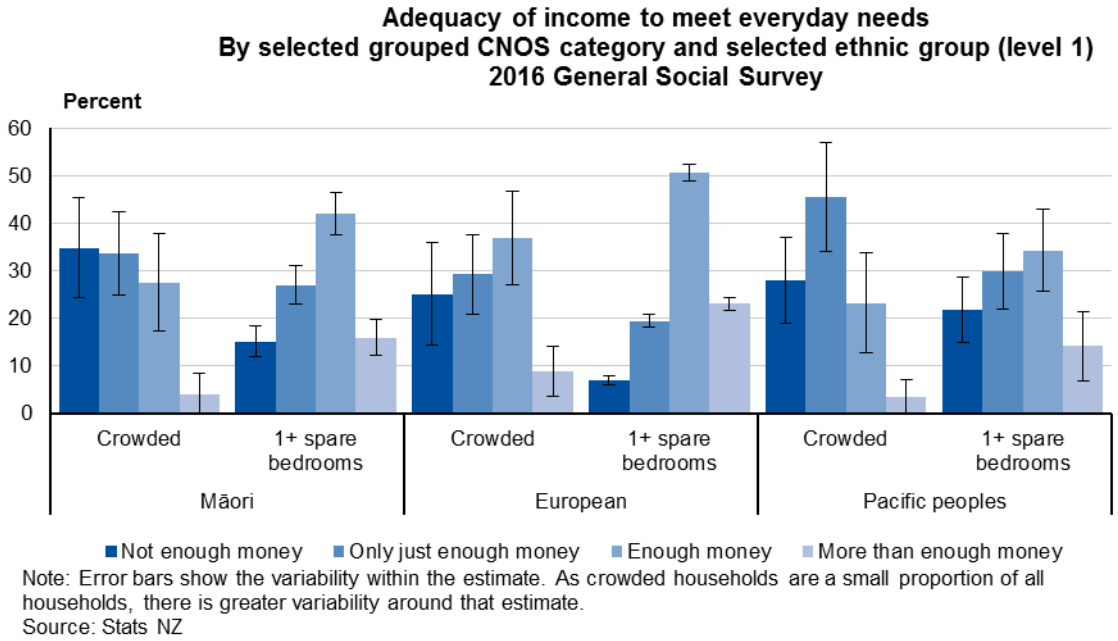


Note: Error bars show the variability within the estimate. As crowded households are a small proportion of all households, there is greater variability around that estimate.

Source: Stats NZ

Around one-quarter of people in crowded households said they did have not enough money for everyday needs. This compares with one-tenth of the total population. Looking within ethnic groups, it is clear that people in crowded households experienced lower material well-being regardless of ethnicity, as shown in figure 24.

Figure 24



Note: Error bars show the variability within the estimate. As crowded households are a small proportion of all households, there is greater variability around that estimate.
Source: Stats NZ

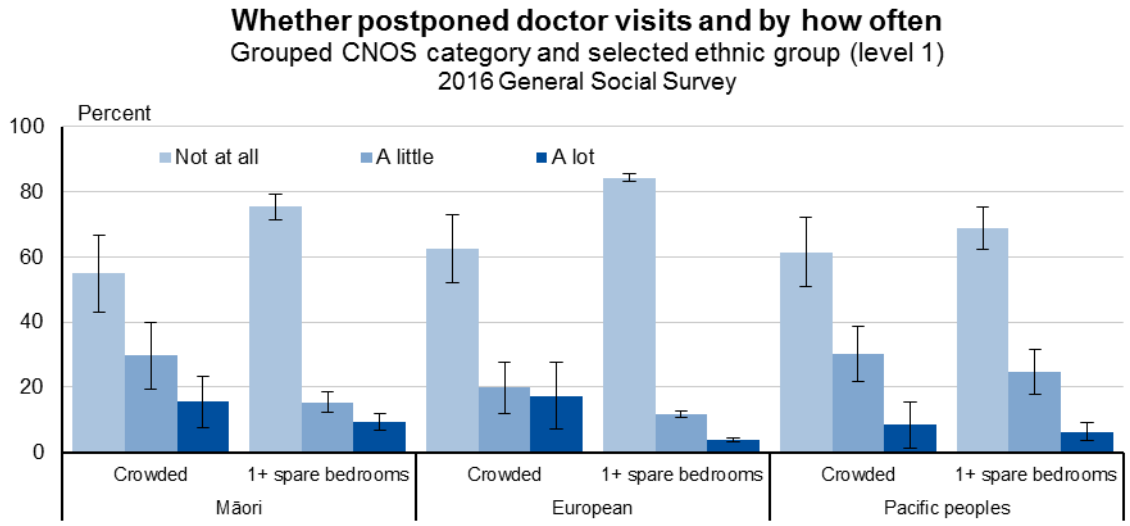
Around one-third of people in crowded households who identified with Māori ethnicity said they did not have enough money for their everyday needs. For Māori living in households with spare bedrooms the figure was 15.1 percent.

People in crowded households were also more likely to cut back on fresh fruit and vegetables because of the cost – around 4 of 10 people in crowded households said they had done this either a little (28.1 percent) or a lot (12.5 percent) in the last 12 months.

People in crowded households (13 percent) were significantly more likely than the general population (6 percent) to have put off going to the doctor to save money in the last 12 months.

Figure 25 shows who postponed doctor visits. Again because of small numbers, there were large sample errors. Results were statistically significant for the European population, where 17.4 percent of people in a crowded home put off going to the doctor a lot, compared with 4.0 percent of those with spare bedrooms. Almost half the people with Māori ethnicity who lived in a crowded household had put off visits to the doctor, either a little (29.7 percent) or a lot (15.5 percent).

Figure 25



Note: Error bars show the variability within the estimate. As crowded households are a small proportion of all households, there is greater variability around that estimate.

Source: Stats NZ

Research in New Zealand and overseas links higher rates of infectious diseases, such as meningococcal disease and rheumatic fever, with household crowding. A case control study by Baker, McNicholas, Garrett, Jones, Stewart, Koberstein, & Lennon (2000) found that risk of meningococcal disease was strongly associated with overcrowding.

The impact of household crowding was greater for Māori and Pacific peoples than for other ethnicities. Baker, McDonald, Zhang & Howden-Chapman (2013) estimate crowding accounted for an estimated 790 hospitalisations a year (17 percent of admissions for Māori), and 692 admissions a year for Pacific people (25 percent) – on average for 2007–11.

Again the research found that Māori and Pacific children had higher rates of meningococcal disease, with their increased exposure to household crowding contributing to these high rates.

The authors conclude:

> This systematic review also supports the conclusion that ethnic inequalities in household crowding in NZ are making a large contribution to inequalities in the risk of infectious disease. Children are not only disproportionately exposed to household crowding in NZ, but evidence suggests they may be disproportionately affected by the consequences of this exposure.

People in crowded households experience poorer housing quality

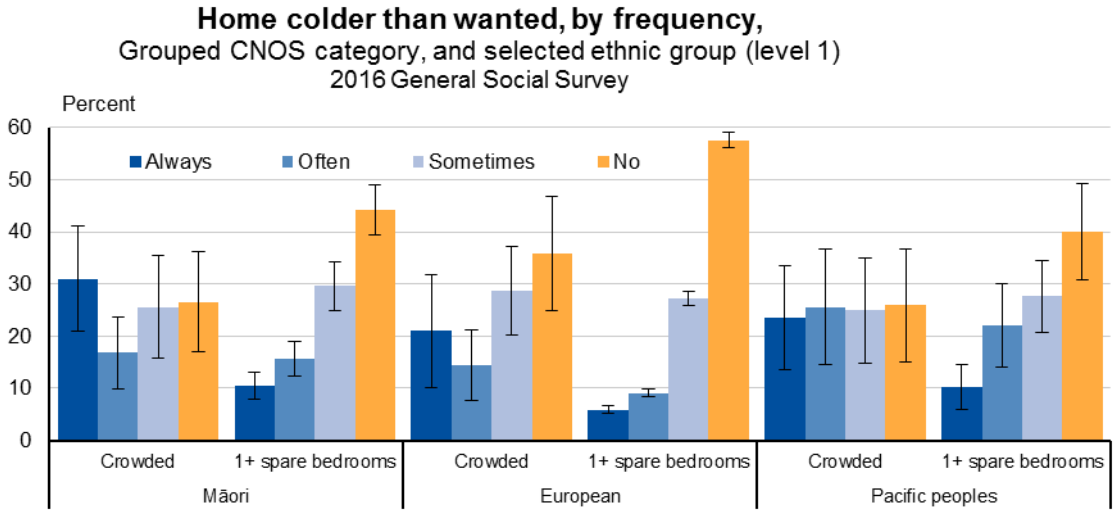
People living in crowded households were significantly more likely than people with spare bedrooms to experience poor housing quality. Around 1 in 8 (12.2 percent) lived in a dwelling where immediate/extensive repairs and maintenance were needed, compared with 1 in 15 nationally (6.7 percent).

Dampness and mould were also more likely to be a problem – 12.4 percent of people in crowded households lived in a dwelling where this was a major problem, compared with 5.3 percent of the total population. Only one-third (32.3 percent) of people in crowded households did not have a problem with their house or flat being colder than they would like; half (51.8 percent) of the total population had no problem.

This difference is partly attributable to high rates of renting. Almost two-thirds of people in crowded households (65.2 percent) lived in rented dwellings. White, Jones, Cowan, & Chun (2017) showed that rented dwellings tend to be of poorer quality. When we just consider rented dwellings, people in crowded dwellings still recorded poorer housing quality than people in households with spare bedrooms, although the differences were not as marked. For example, 44.2 percent of people in crowded households who rented said they had no problem with dampness or mould, compared with 60.0 percent those with spare bedrooms.

Figure 26 shows clear differences in self-reported coldness for crowded households and households with spare bedrooms. There were no statistically significant differences across ethnic groups for people in crowded households. However, almost 1 in 3 people with Māori ethnicity and living in a crowded household said their home was always cold (31.0 percent). This compares with 10.5 percent of people identifying with Māori ethnicity who lived in a dwelling with spare bedrooms.

Figure 26



Note: Error bars show the variability within the estimate. As crowded households are a small proportion of all households, there is greater variability around that estimate.
Source: Stats NZ

Variables showing little difference

For some variables we found very few significant differences between crowded and non-crowded households. We looked at health, family well-being, and loneliness, where differences were either very small or not significant. There was no significant difference for these variables when we compared crowded households with people in households with no spare bedrooms or where no extra bedrooms were needed.

5 Conclusion

In 2013, around 1 in 10 New Zealanders lived in crowded homes. Some ethnic groups had higher crowding rates than others, particularly people identifying with a Pacific ethnicity, where 4 of 10 people experienced crowding.

This report shows that although crowding rates fell from the 1980s to the 2000s, crowding has remained largely static since then. When we adjust for the different age structure of populations we find a small increase in age-adjusted crowding between 2006 and 2013. In 2013, less than half of crowded households consisted of a one family household – either a couple with children or a one-parent family. When we consider severely crowded households (where two or more bedrooms were needed for people in the household), around 40 percent were two-or-more-family households. Amore (2016) identified the increase in 'hidden' homelessness – where people crowd in with others – as a key factor in the estimated increase in homelessness between 2006 and 2013.

Large households, a constrained supply of large houses (particularly for renting households), and lower incomes all influence crowding. These factors particularly affect Pacific peoples, who have the largest average household size and are more likely to live in extended family situations. Other ethnic groups are also affected. Crowding is a particular issue in Auckland (Goodyear & Fabian, 2014).

In addition to the negative relationship between crowding and factors such as income and life satisfaction, crowding's relationship with the transmission of infectious disease is also concerning. People in crowded households were more likely to have postponed visits to the doctor because of cost. Baker et al (2013) found, household crowding was implicated in some deadly diseases such as rheumatic fever and meningococcal disease.

When we look at the well-being of people in crowded households, they have significantly less life satisfaction and are more likely to experience lower material well-being and poorer housing quality.

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Appendix 1: Canadian National Occupancy Standard

The Canadian National Occupancy Standard (CNOS) was developed by the Canada Mortgage and Housing Corporation. It is used to measure whether a house is crowded. A house is crowded if the dwelling requires extra bedrooms in order to meet the following criteria.

- No more than two people per bedroom; parents or couples share a bedroom.
- Children aged less than five years, either of same or opposite sex, may reasonably share a bedroom.
- Children aged less than 18 years of the same sex may reasonably share a bedroom.
- A child aged five to 17 years does not share a bedroom with one aged under five of the opposite sex; single adults aged 18 years and over and any unpaired children require a separate bedroom.

Finding the crowding index that works best for New Zealand: Applying different crowding indexes to Census of Population and Dwellings data for 1986–2006 has more information about different crowding indexes.

Appendix 2: About ethnicity

Defining ethnicity

Ethnicity is the ethnic group or groups that people identify with or feel they belong to. Ethnicity is a measure of cultural affiliation, as opposed to race, ancestry, nationality, or citizenship. Ethnicity is self-perceived and people can belong to more than one ethnic group.

How information about ethnic groupings is presented

Information about the proportion of the people living in crowded houses is usually presented by the broadest (level 1) ethnic groupings (European, Māori, Pacific peoples, Asian, MELAA, and other). However, except for Māori, none are individual ethnic groups but are collections of ethnicities. For example, the Pacific peoples grouping includes Tongan, Niuean, Cook Island Maori, Samoan, and Fijian.

Figure 27 shows how these ethnic groupings are arranged.

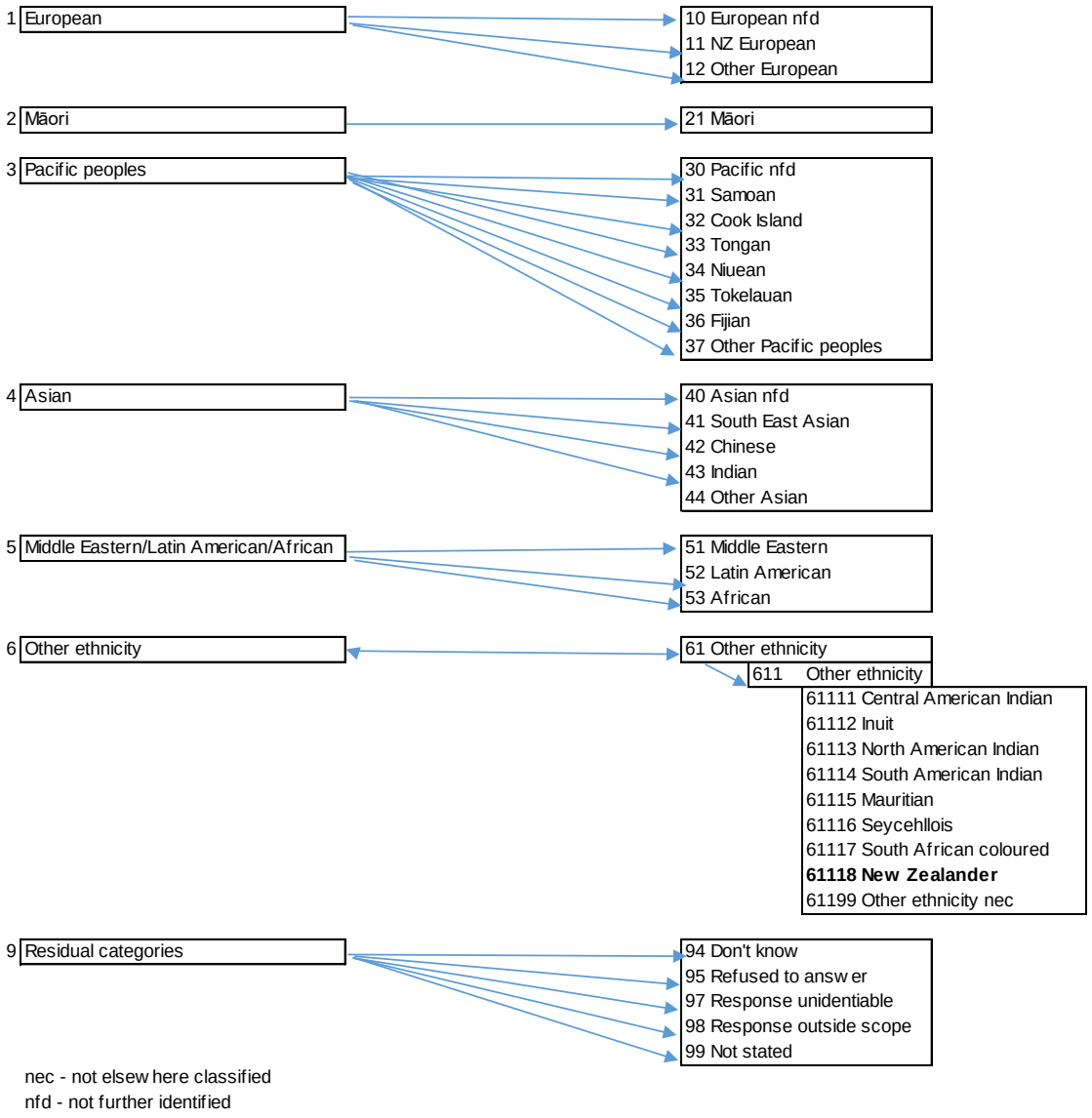
There is considerable variation within the level 1 groupings, particularly for Asian, and for Middle Eastern, Latin American, African, and Asian (MELAA) people. We have used data about more detailed (level 2) ethnic groupings to explore how crowding varies by ethnicity.

The ‘New Zealander’ group is not reported at level 2, but it was part of the ‘other’ category used in the 2006 Census. We’ve included it for comparison, as it comprises most of the ‘other’ response. Before 2006, ‘New Zealanders’ were included in the European category. However, the New Zealander group includes responses from multiple ethnic groups including Māori.

Profile of New Zealander responses, ethnicity question: 2006 Census has more details.

Figure 27

Level 1 and level 2 ethnicity classifications



Appendix 3: Additional tables

Appendix table 1

Household composition type, by CNOS category, 2013 Census						
	CNOS category (for households)					
	Severe crowding	1 bedroom needed	No bedrooms needed none spare	1 bedroom spare	2+ bedrooms spare	Total stated
Household composition type	Percent of households					
Couple only	0	0	5.7	14.7	49.1	26.4
Couple and others	1.1	2.1	2.9	2.8	1.4	2.2
Couple with children	13.8	28.3	31.8	36.5	17.8	27.2
Couple with children and others	13.4	11.3	4.1	1.8	0.6	2.3
One-parent family	6.9	16	16.6	11.3	3.0	9.1
One parent and others	15.4	14.9	4.8	1.1	0.2	2.2
Two or more families	42.1	17.6	4.8	2.3	1.1	3.4
Other multi-person household	7.4	9.7	10.3	5.0	1.3	4.8
One-person household	0	0	18.8	24.5	25.5	22.5
Total stated	100	100	100	100	100	100

Note: under CNOS a one-person or couple-only household cannot be considered crowded.

Source: Stats NZ

Appendix table 2

Household composition type for people in crowded households, 2013 Census						
Household composition	**CNOS category (for people)**					
	2+ bedrooms needed	**1 bedroom needed**	**Total crowded**	**2+ bedrooms needed**	**1 bedroom needed**	**Total crowded**
	Number			Percent		
Couple only	0	0	0	0	0	0
Couple and others	1,215	5,352	6,567	0.9	2	1.7
Couple with children	17,994	81,336	99,333	14	30.2	25
Couple with children and others	17,520	34,713	52,230	13.6	12.9	13.1
One-parent family	7,068	33,456	40,524	5.5	12.4	10.2
One parent and others	15,726	34,515	50,238	12.2	12.8	12.6
Two or more families	62,352	61,542	123,894	48.4	22.9	31.1
Other multi-person household	6,984	18,000	24,987	5.4	6.7	6.3
One-person household	0	0	0	0	0	0
Total stated	128,859	268,917	397,776	100	100	100
Household composition unidentifiable	264	255	519	0.2	0.1	0.1
Total	129,123	269,169	398,292	100.2	100.1	100.1

Note: under CNOS a one-person or couple-only household cannot be considered crowded.

Source: Stats NZ

Appendix table 3

Whether household did without fresh fruit and vegetables to keep costs down, by grouped CNOS category, GSS 2016

Grouped CNOS category	Extent	Estimate (Percent)	Confidence intervals	
			Lower	Upper
Crowded households	Not at all	59.4	52.8	66.1
	a little	28.1	22.3	33.8
	a lot	12.5	8.2	16.8
No bedrooms needed and none spare	Not at all	72.4	69.8	74.9
	a little	21.4	19.0	23.8
	a lot	6.3	4.8	7.7
1 + bedrooms spare	Not at all	87.6	86.7	88.6
	a little	9.8	9.0	10.7
	a lot	2.5	2.1	2.9
Total	Not at all	82.1	81.0	83.1
	a little	13.8	12.8	14.7
	a lot	4.1	3.6	4.7

Source: Stats NZ

Appendix 4: About equivalised income

Revised Jensen scale (RJS3) and Jensen equivalised annual household income (JEAH)

Annual household income, derived by summing annual personal income for all household members, provides basic information about household wealth. However, annual household income is an inadequate indicator of relative standard of living. For example, a one-adult household with an annual household income of $35,000 is likely to be able to enjoy a higher standard of living than a household of 10 people with the same income.

To allow comparison of household income across household types, we can use a scale to equivalise annual household income for household composition. Equivalised income is a ranked measure of income. The equivalence scale we use is the revised Jensen scale (RJS3), developed by John Jensen of the (then) Department of Social Welfare (Jensen, 1988).

The scale is constructed so that a two-adult household has a Jensen rating of 1; households with fewer members score less than 1, those with more score more than 1. The scale also accounts for children being likely to require less income than adults to maintain a similar standard of living. JEAH income is calculated for individual households by reweighting household income to a two-adult household.

The formula for JEAH Income is:

$$\text{JEAH income} = \frac{\text{Annual household income}}{\text{Jensen rating}}$$

where

$$\text{Jensen rating} = \frac{(a + xc + yt)^z}{2^z}$$

with

a = number of adults in household
c = number of children in household
t = total age of children in household

x, y, z are constants.

For example, a two-adult household with an annual total income $35,000 will also have a JEAH income of $35,000, since its Jensen rating is 1.

If this household included a seven-year-old child, its Jensen rating would increase to 1.19 and its JEAH would be:

$$\frac{\$35{,}000}{1.19} = \$29{,}400 \text{ (rounded to nearest } \$100)$$