

Analysis of Household Crowding

Based on Census 2013 data

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MANATŪ HAUORA



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Key findings

Data from the Census 2013 shows that:

- around 10 percent of New Zealanders live in crowded conditions (398,300 people in 74,124 households)
- the Counties Manukau DHB region has the greatest proportion of people living in crowded conditions (22%), followed by Auckland (16%) and then Tairāwhiti (15%)
- children are over represented in crowded households. Over half of crowded households have two or more children (at least one child aged between 5 and 14 years) living in them
- two in five Pacific people (38%) and one in five Māori (20%) and Asian (18%) people live in crowded households. This compares to 1 in 25 Europeans (4%)
- there has been a 9 percent increase in people living in crowded conditions in the Counties Manukau DHB region (7755 more people) since 2006. This is likely to reflect a population increase in the region
- for the lowest household income quintile, 15 percent of households are crowded; for the highest household income quintile just 2 percent of households are crowded
- of people living in crowded households nationally, 35,847 (9%) live in households that do not use any form of heating in their houses. The highest percentage (16%) is in the Counties Manukau DHB region, where 14,103 people living in crowded households use no heating.

Introduction

This report was commissioned by the Ministry of Health and the Ministry of Business, Employment and Innovation to inform cross-agency housing work in the context of crowding as a determinant of health. The report provides a description of household crowding in New Zealand using Census 2013 data. It updates previous work that looked at the distribution of household crowding in New Zealand based on 1995–2006 census data (Baker et al 2006). Finally it provides a platform for further analysis and policy development to reduce crowding, particularly in the context of its impact on rheumatic fever.

The report provides statistical information over time where possible, with short commentary to explain the data. The information is presented nationally and also by district health board (DHB) about the following relationships:

- national crowding and occupancy rates
- crowding and age
- crowding and ethnicity
- crowding and income
- crowding and housing tenure
- crowding and sector of landlord (see glossary)
- crowding, fuel use and heating
- the effect that visitors have on household crowding.

Results are presented to answer three questions for each topic:

- What is the current level in the population and for DHBs?
- How has it changed?
- Is it the same for everyone?

Background

Freedom from crowding is one of the six dimensions of housing adequacy recognised by Statistics New Zealand. Crowding in a dwelling occurs where the number of people residing in a household exceeds the capacity of that household to provide adequate shelter and services to its members. Crowding may arise for a number of reasons, including socioeconomic status, cultural preference, social cohesion, limited availability of appropriate housing stock and accepting high occupant density as a means of containing cost.

National and international research has shown that non-European populations, such as Māori and Pacific peoples in New Zealand, live in the most crowded housing (Baker et al 2013). However, this is not just a product of poverty; it is likely that a combination of factors contribute. These include larger household size (including a higher proportion of households involving multiple families or extended families), affordability issues (the household cannot afford a dwelling large enough to accommodate its members), living arrangements and lack of housing stock.

Immigration into New Zealand is also a factor contributing to crowding for some ethnic groups. Factors such as limited large-sized housing stock, cultural living arrangements and low incomes all compound crowding in these groups.

Crowding and health

Best available evidence indicates that housing that is an appropriate size for the householders and is affordable to heat is linked to improved health and may promote improved social relationships within and beyond the household (Thomson et al 2013).

Exposure to household crowding has been found to be related to a number of poorer health outcomes. Crowding is an important risk factor for infectious diseases such as rheumatic fever (Jaine et al 2011), meningococcal disease, respiratory infections (Baker et al 2012) and skin infections (cellulitis) (Baker et al 2013), as well as pneumonia, elevated blood pressure and increased risk of childhood injuries. Furthermore, it has been suggested that adults and children living in crowded households are less likely to access health care services than are those in non-crowded households (Cutts et al 2011).

Looking more broadly into the social sector, there is some suggestion that provision of adequate, affordable warmth may reduce absences from school or work (Thomson et al 2013).

Overview of methods

This study was based on crowding data derived from the 1991, 1996, 2001, 2006 and 2013 censuses. It was analysed at the unit record level by the Ministry of Health in collaboration with Statistics New Zealand.

Glossary

American Crowding Index

This measure of crowding is used once in this report due to the statistical requirements of reporting on the final section ‘Visitors to households’. The American Crowding Index is an alternative measure of household crowding used by the United States Census Bureau. It is defined as the number of usual residents in a dwelling divided by the number of rooms in the dwelling. This measure of crowding is less detailed than the Canadian National Occupancy Standard as it does not take into account the types of rooms in the dwelling nor does it make adjustments for the age and sex of the usual residents.

Canadian National Occupancy Standard (CNOS)

The Canadian National Occupancy Standard (CNOS) is one of several indicators available that is used to evaluate the extent of crowding in New Zealand and was used in previous analyses of crowding using census data. It is the primary measure of crowding used in this report and is used in all sections except the ‘Visitors to households’ section, where statistical requirements meant the American Crowding Index had to be used (see above).

CNOS has been developed by the Canada Mortgage and Housing Corporation to help determine the number of bedrooms a dwelling should have to provide freedom from crowding. The CNOS is based on the number, age, sex and interrelationships of household members.

The CNOS states that:

- no more than two people shall share a bedroom
- parents or couples may share a bedroom
- children under 5 years of age of the same or opposite sex may share a bedroom
- children under 18 years of age of the same sex may share a bedroom
- a child from 5 to 17 years of age should not share a bedroom with a child under 5 years of age of the opposite sex
- single adults 18 years of age and over and any unpaired children require separate bedrooms.

Census 2013

Census New Zealand is the official count of household composition (number of people and their ages and interrelationship status) and the number of rooms in the house. It takes a snapshot of the people in New Zealand and the places where we live.

Data is collected and reported by Area Units, which are aggregations of the meshblocks (the smallest geographic unit for which statistical data is collected by Statistics New Zealand). Area Units are non-administrative, geographic areas that are in between meshblocks and territorial authorities in size. Area units within urban areas normally contain a population of 3000–5000, though this can vary due to such things as industrial areas, port areas, and rural areas within the urban area boundaries.

Confidence interval (CI)

A confidence interval is a range around an estimate that tells us how precise that estimate is; the confidence interval indicates the level of uncertainty in a measurement that occurs due to taking a sample.

The results presented in this report have 95 percent confidence intervals (95% CI). If many samples are selected, the 95% CI encloses the 'true' value for the population 95 percent of the time. The sample size of the group influences the size of the confidence interval. Where the sample size is small, the confidence interval is typically wider and the estimate is less precise.

District health boards (DHBs)

District health boards (DHBs) are organisations responsible for providing or purchasing health services in a particular district of New Zealand (although some health services are funded and purchased nationally by the Ministry of Health). There are 20 DHBs in New Zealand, with DHB populations ranging from 30,000 to over 1 million people.

Where possible, census results for crowding data have been broken down by DHB to represent the geographic differences in crowding across New Zealand.

Ethnicity

This report uses total response ethnicity to define ethnic groups. Total response ethnicity includes a person in all the ethnic groups that they identify with. This means that people can appear in more than one ethnic group.

Household crowding

Crowding is shown as a percent and is calculated using the CNOS (a measure of crowding, see above) divided by the total number of people who responded to the occupancy question in the census (as opposed to the total population). Crowding is defined when one or more bedrooms are required in a household.

Jensen Equivalised Annual Household (JEAH) income

Income quintiles have been calculated using the JEAH scale, which compares household income across household types. The scale is constructed so that a two-adult household has a rating of 1; households with fewer members score less than 1 and those with more than two adults score more than 1. The scale also accounts for the fact that children are likely to require less income than adults to maintain a similar standard of living.

JEAH income is calculated for individual households by dividing annual household income by a household's rating.

Low income

Low income has been calculated using the lowest two quintiles of the Jensen Equivalised Annual Household income (see above); that is, those areas that are in the lowest and second lowest groups for household income.

Rounding

In this report, percentages have been rounded to one decimal place, except for low percentages, which are rounded to two decimal places. Numbers are rounded to the nearest 100 people. Rounding and the exclusion of 'not stated' means that numbers and percentages across tables do not always add up to the same total and percentages do not always add up to 100 percent.

Sector of landlord

Sector of landlord refers to the type of organisation or person from whom households rent or lease private occupied dwellings. It can be the private sector (private person, trust or business) or the state sector (Housing New Zealand Corporation, a local authority or city council, or another state-owned corporation or state-owned enterprise, government department or ministry).

A rented private dwelling is a dwelling that is not owned by the usual resident(s) and for which the usual resident(s) make rent payments.

Trends over time

Where possible, trends are provided over time. Trends are provided back to the 1991 census for national crowding; for other indicators, a comparison is made where possible with 2006 census data.

Results

National crowding and occupancy rates

Crowding

Approximately 10 percent of New Zealanders live in crowded conditions. Crowding as a proportion of total people decreased between 1991 and 2013 from 11.8 percent to 10.1 percent. In terms of numerical change, there has been an increase in the number of people living in crowded households. This can be broken into two periods as follows. Between 1991 and 2001, the number of people living in crowded conditions decreased by 31,540. Between 2001 and 2013, the number of people in New Zealand living in crowded conditions increased by 49,950 people.

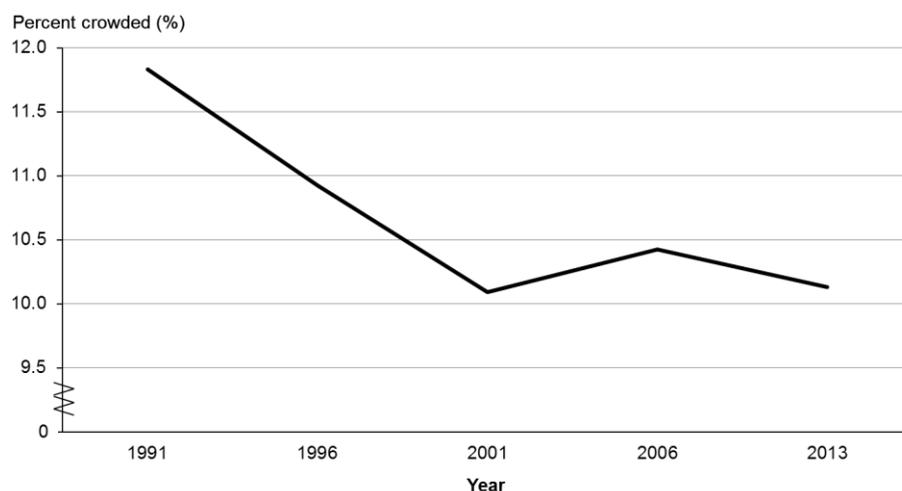
Table 1a: Crowding in New Zealand, 1991–2013*

Census year	People		Percent crowded (95% CIs)	Change (1991–2013)	
	Total crowded	Total people		Number	Percent
1991	379,890	3,210,320	11.8 (11.8–11.9)		
1996	369,660	3,383,520	10.9 (10.9–11.0)		
2001	348,350	3,451,380	10.1 (10.0–10.1)		
2006	389,390	3,735,030	10.4 (10.4–10.5)		
2013	398,300	3,931,041	10.1 (10.1–10.2)	18,410	4.8

* Household crowding, for usual residents in households, in private dwellings.

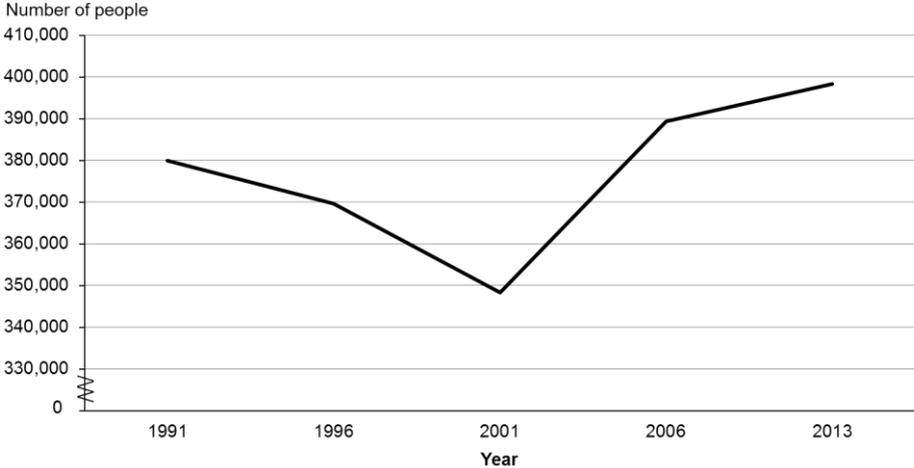
Crowding, calculated as a proportion of the population, has decreased significantly since 2006. Even though there is only a small decrease, the large survey sample of the census means that the change is significant (Figure 1).

Figure 1: Proportion of New Zealanders living in crowded conditions, 1991–2013



In terms of numerical change, there are 8910 (2.3%) more people living in crowded households in 2013 than there were in 2006 (Figure 2). In comparison, population growth in the same period was 5 percent; in essence, growth in household crowding is slower than overall population growth.

Figure 2: Population (number) living in crowded conditions, 1991–2013



Across all housing stock, including rental and owner occupied, 5 percent of all stock is crowded. This is a small, but significant decrease from 2006 when 5.2 percent of housing stock was crowded (Table 1b).

Table 1b: Crowded households in New Zealand

Year	Crowded households	Total households	Percent (95% CIs)
2006	71,870	1,390,640	5.2 (5.1–5.2)
2013	74,124	1,471,779	5.0 (5.0–5.1)

Just over half (55%) of all crowded households has at least two or more children, with at least one child aged between 5 and 14 years (Table 1c). This information is important because children in households with at least two children in the household (with at least one child aged between 5 and 14 years) are at higher risk of developing health problems.

Table 1c: Crowding in households with two or more children, where one of the children is aged between 5–14 years*

Crowded households with two or more children (one child aged 5–14 years)	Total crowded households	Percent of total crowded households that had two or more children (one aged 5–14 years)
41,244	74,124	55.6

* 2013 census household crowding, with at least two or more children who usually reside at the household where one of the children is aged between 5 and 14 years for households in private dwellings.

Crowding as a percentage of population has increased in three DHBs; Waitemata (9.4% to 9.6%), Canterbury (5.9% to 6.2%) and South Canterbury (2.9% to 3.4%) (Table 1d). All other DHBs have either decreased or stayed the same. However, the number of people living in crowded conditions increased in eight DHBs, with the largest increases in Counties Manukau (7755), Waitemata (4704), Canterbury (1698), Auckland (1089) and South Canterbury (315). The increases reflect population increases in each DHB, however, the increased crowding in Canterbury and South Canterbury is likely due to housing shortages as a result of the September 2010 and February 2011 Christchurch earthquakes.

Table 1d: Crowding by DHB*

DHB	Numbers crowded			Percent crowded		
	2006	2013	Change	2006	2013	% change
Northland	15,663	13,956	-1,707	11.9	10.2	-14.3
Waitemata	42,744	47,448	4,704	9.4	9.6	2.1
Auckland	61,047	62,136	1,089	16.5	15.5	-6.1
Counties Manukau	87,522	95,277	7,755	21.9	21.8	-0.5
Waikato	30,486	29,562	-924	9.7	8.9	-8.2
Bay of Plenty	17,217	16,905	-312	9.6	8.8	-8.3
Lakes	10,401	9,153	-1,248	11.6	10.3	-11.2
Tairāwhiti	6,102	5,919	-183	15.2	14.8	-2.6
Taranaki	5,880	5,499	-381	6.1	5.4	-11.5
Whanganui	4,431	4,077	-354	7.8	7.4	-5.1
Hawke's Bay	14,349	13,521	-828	10.5	9.7	-7.6
MidCentral	9,687	9,741	54	6.6	6.5	-1.5
Hutt Valley	13,638	12,696	-942	10.6	9.8	-7.5
Capital & Coast	22,335	22,623	288	9.0	8.6	-4.4
Wairarapa	1,914	1,881	-33	5.3	4.9	-7.5
Nelson Marlborough	6,162	5,985	-177	5.1	4.7	-7.8
West Coast	1,143	1,017	-126	4.1	3.6	-12.2
Canterbury	25,938	27,636	1,698	5.9	6.2	5.1
South Canterbury	1,470	1,785	315	2.9	3.4	17.2
Southern	11,256	11,283	27	4.3	4.1	-4.7
New Zealand	389,385	398,100	8,715	10.4	10.1	-2.9

* Household crowding (counting people) by DHB.

Occupancy

The national occupancy rate for 2013 is 2.7 people per household (Table 2a). Census 2013 shows that occupancy rates have decreased (albeit only slightly) since 2006. That is to say, in 2013, there were on average fewer people per household than there were in 2006. There are a number of reasons why the occupancy rate has gone down, for example, single person households increased between 2006 and 2013 (a continuing trend over the last two decades). This drives down the national occupancy rate but does not necessarily discount the fact that some groups may now have higher occupancy rates than in 2006. Hence, the national occupancy rate is not a reliable indicator of crowding because it does not consider the distribution of crowded households: it would be better to use the median number of people in a household.

Table 2a: New Zealand occupancy rates*

Census year	Total people	Households	Occupancy rate
1996	3,499,900	1,268,000	2.76
2001	3,589,200	1,344,300	2.67
2006	3,897,200	1,454,200	2.68
2013	4,127,500	1,549,900	2.66

* Household crowding for usual residents in households, in private dwellings.

The Counties Manukau DHB region has the highest occupancy rate in New Zealand (3.31 people per household) followed by Waitemata (2.87 people per household), Auckland (2.76 people per household) and Tairāwhiti (2.67 per household). Waitemata, Auckland, Counties Manukau, Capital & Coast and Canterbury have had small increases in occupancy rates since 2006. All other DHBs have had small decreases (Table 2b).

Table 2b: Occupancy rates by DHB region

DHB	2006	2013	Change
Northland	2.62	2.50	↓
Waitemata	2.83	2.87	↑
Auckland	2.73	2.76	↑
Counties Manukau	3.29	3.31	↑
Waikato	2.67	2.62	↓
Bay of Plenty	2.59	2.54	↓
Lakes	2.68	2.58	↓
Tairāwhiti	2.76	2.67	↓
Taranaki	2.50	2.46	↓
Whanganui	2.47	2.37	↓
Hawke's Bay	2.60	2.54	↓
MidCentral	2.54	2.48	↓
Hutt Valley	2.67	2.64	↓
Wairarapa	2.43	2.37	↓
Capital & Coast	2.61	2.62	↑
Nelson Marlborough	2.48	2.42	↓
West Coast	2.34	2.29	↓
Canterbury	2.55	2.56	↑
South Canterbury	2.37	2.32	↓
Southern	2.47	2.43	↓
New Zealand	2.68	2.66	↓

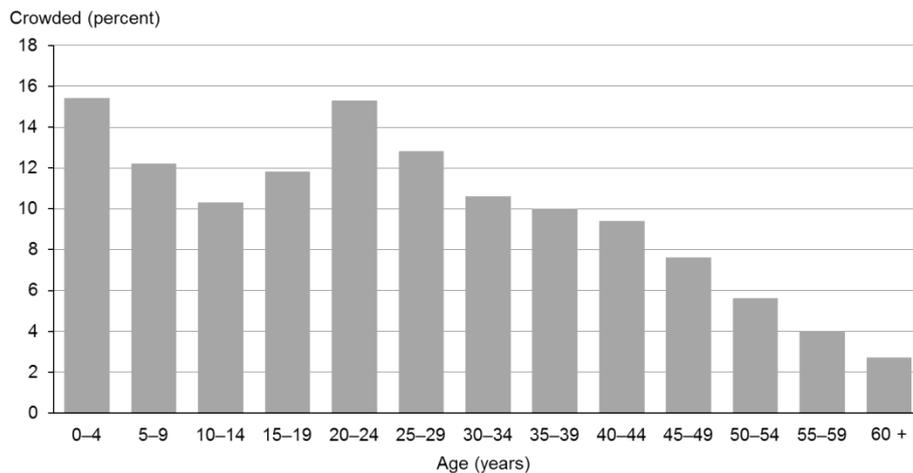
Age

Crowding levels above the national mean (10.1%) occurs in all age groups below 35–39. Age groups most likely to live in a crowded house are: 0–4 years and 20–24 years. This suggests that crowded households are likely to include a higher proportion of children 0–4 years and young adults 20–24 years. Relatively high levels of crowding probably occur in households with multiple children and/or with young adults (Table 3a and Figure 3).

Table 3a: Proportion of crowding by age group – percent crowded

New Zealand	Age in years													Total
	0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60+	
Crowded	15.4	12.2	10.3	11.8	15.3	12.8	10.6	10.0	9.4	7.6	5.6	4.0	2.7	10.1
Not crowded	84.6	87.8	89.7	88.2	84.7	87.2	89.4	90.0	90.6	92.4	94.4	96.0	97.3	89.9

Figure 3: Proportion of New Zealanders living in crowded conditions by age group – percent crowded



The Counties Manukau DHB region has the highest crowding levels across all age groups. For children aged 0–14, the highest crowding levels occurs in Counties Manukau, Tairawhiti, Auckland and Northland.

In Counties Manukau DHB, 30 percent of children aged 0–4 years are living in crowded households. Tairawhiti DHB has 24 percent for the same age group; Auckland has 21 percent, Northland has 19 percent and Hawke’s Bay and Lakes both have 17 percent (Table 3b).

Table 3b: Crowding by age group and district health board – percent crowded

DHB	Age in years													Total
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60+	
Northland	19.2	14.0	11.3	12.8	14.8	12.9	13.6	10.5	10.0	7.4	5.2	2.6	1.7	10.2
Waitemata	13.1	10.9	9.8	10.6	13.7	11.0	9.3	9.6	9.1	8.0	6.5	4.7	3.6	9.6
Auckland	21.3	18.0	16.3	18.2	21.3	16.4	11.8	12.1	12.1	11.5	11.1	7.9	6.6	15.5
Counties Manukau	30.1	24.4	20.3	22.4	27.3	24.3	22.6	23.1	22.3	18.2	14.9	11.8	9.0	21.8
Waikato	13.8	11.1	9.2	11.2	13.1	11.8	10.3	8.8	7.7	6.9	4.0	2.7	1.6	8.9
Bay of Plenty	14.7	11.7	8.8	11.2	15.6	13.1	9.8	10.2	9.6	7.4	4.1	2.8	1.6	8.8
Lakes	16.7	13.9	9.8	11.8	16.7	14.9	13.4	9.4	9.2	5.6	5.2	3.1	1.7	10.3
Tairawhiti	23.9	17.3	15.1	18.6	21.3	16.3	16.6	15.0	15.7	7.9	7.5	4.9	3.4	14.8
Taranaki	8.6	6.7	5.9	7.9	9.0	6.1	6.3	5.7	5.8	3.8	2.0	1.7	0.9	5.4
Whanganui	14.7	9.4	8.4	9.5	10.6	9.1	9.7	8.1	6.0	4.1	3.2	1.6	1.0	7.4
Hawke’s Bay	16.7	12.6	10.3	11.2	15.4	14.1	13.3	9.6	9.5	7.3	4.7	3.0	1.4	9.7
MidCentral	11.6	8.4	7.0	8.0	9.1	8.1	7.0	6.1	6.7	4.6	2.4	2.0	1.3	6.5
Hutt Valley	14.5	11.9	11.0	11.3	13.4	11.1	9.0	8.7	8.0	8.3	5.7	4.9	3.1	9.9
Wairarapa	8.9	6.8	6.3	7.7	8.0	4.5	6.7	7.1	4.5	2.5	1.9	0.9	0.7	4.9
Capital & Coast	11.9	9.7	8.4	10.2	13.5	10.5	7.3	6.9	6.1	6.9	5.1	3.7	2.7	8.6
Nelson Marlborough	8.2	6.3	4.5	6.4	10.2	7.9	6.8	5.9	4.7	2.5	2.4	1.5	0.7	4.7
West Coast	8.6	5.2	4.3	4.4	5.6	4.8	4.0	3.6	1.3	1.2	0.5	1.0	0.1	3.7
Canterbury	9.5	7.0	6.1	7.4	10.6	8.3	6.9	6.6	6.2	4.5	3.4	2.1	1.2	6.2
South Canterbury	6.5	4.8	4.2	3.8	7.7	4.3	5.6	3.4	3.6	3.4	1.7	0.7	0.3	3.5
Southern	6.4	5.1	4.4	5.6	8.1	6.5	5.4	4.4	3.3	2.0	1.5	1.1	0.6	4.2

Ethnicity

Table 4a shows that 40 percent of Pacific peoples of all ages are living in crowded households. For Māori, the figure is 20 percent; for Asians, it is 18 percent and for Europeans, it is 4 percent.

For age groups 0–19, there is a slightly higher percentage of crowding across all ethnicities. The youngest age group (0–4 years) has the highest level of overcrowding for all three ethnicities of: Pacific peoples (45%), Māori (26%) and Asians (20%).

Table 4a: Crowding by ethnicity

Ethnicity for all age groups	European	Māori	Pacific	Asian
Crowded (number)	119,430	110,940	108,660	82,143
Percent crowded	4.3	20.0	39.8	18.4
Not crowded	2,675,790	444,831	164,523	365,361
Percent not crowded	95.7	80.0	60.2	81.6
Total people stated	2,795,220	555,771	273,183	447,504

Ethnicity by selected age group	Aged 0–4	Aged 5–9	Aged 10–14	Aged 14–19	Total aged 0–19
Māori					
Crowded (number)	32,700	15,846	10,683	10,605	69,834
Percent crowded	25.9	21.9	19.2	22.3	23.1
Not crowded	93,729	56,421	45,048	36,963	232,161
Percent not crowded	74.1	78.1	80.8	77.7	76.9
Total people stated	126,429	72,267	55,731	47,568	301,995
Pacific					
Crowded (number)	30,810	14,820	10,641	10,326	66,597
Percent crowded	44.5	40.4	38.6	43.0	42.3
Not crowded	38,391	21,888	16,926	13,695	90,900
Percent not crowded	55.5	59.6	61.4	57.0	57.7
Total people stated	69,201	36,708	27,567	24,021	157,497
Asian					
Crowded (number)	13,101	7,236	6,144	7,611	34,092
Percent crowded	20.3	18.5	17.5	20.1	19.3
Not crowded	51,300	31,785	28,899	30,237	142,221
Percent not crowded	79.7	81.5	82.5	79.9	80.7
Total people stated	64,401	39,021	35,043	37,848	176,313

Household crowding by total responses of usual resident for households in private dwellings.

Income

In Table 5a below, incomes are shown by quintile, being five equal-sized groups into which the population is divided according to the distribution of income values. For example, quintile 5 is made up of the 20 percent of people in the population with the highest incomes.

There is a roughly linear relationship between crowding and income. The proportion of crowded houses increases as household income decreases. For the lowest income quintile (1), 15 percent of houses are crowded; for the highest quintile (5), just 2 percent of houses are crowded (Table 5a).

Table 5a: Crowding by Jensen Equivalised Annual Household income quintile

Income quintile	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Income	lowest				highest
Crowded	91,995	64,512	47,880	38,208	12,330
Percent	14.7	10.1	6.9	5.3	1.8
Not crowded	531,756	575,262	648,528	680,442	668,190
Percent	85.3	89.9	93.1	94.7	98.2
Total New Zealand	623,751	639,774	696,408	718,650	680,520

Household crowding and JEAH income quintile for households in private dwellings.

Table 5b: Crowding in low-income households, by ethnicity and DHB – percent crowded

	Ethnic group – Total responses of usual resident			
	European	Māori	Pacific peoples	Asian
Northland	6.1	22.4	28.7	16.2
Waitemata	6.2	22.4	38.3	16.3
Auckland	9.3	26.5	47.6	25.5
Counties Manukau	10.1	35.0	48.3	21.9
Waikato	6.0	22.1	27.5	17.9
Bay of Plenty	4.9	22.6	26.2	21.1
Lakes	6.5	22.9	25.1	20.5
Tairāwhiti	9.1	25.4	28.9	16.0
Taranaki	4.8	16.7	22.3	16.2
Whanganui	5.2	15.5	20.4	13.3
Hawke's Bay	5.8	23.7	32.4	21.1
MidCentral	5.1	16.2	25.1	17.2
Hutt Valley	7.5	22.9	36.2	19.9
Wairarapa	4.3	13.6	23.7	7.3
Capital & Coast	6.8	21.1	34.0	19.9
Nelson Marlborough	3.9	12.4	29.2	19.8
West Coast	4.1	10.6	23.4	16.1
Canterbury	5.3	15.3	31.3	16.5
South Canterbury	3.3	10.8	11.8	14.2
Southern	3.9	10.3	20.2	13.6
Total New Zealand	5.9	21.9	40.1	20.2

There are strong associations between urban DHB crowding and low income for Pacific and Māori families, but the same association is not as clear for European and Asian families.

For low income households, crowding is most significant in Counties Manukau, where the highest levels of crowding nationally are seen for Pacific (48%), Māori (35%) and European (10%), and the second highest level of crowding for Asian ethnicities (22%).

For Pacific peoples, crowding is highest in Counties Manukau (48%), Auckland (48%), Waitemata (38%), Hutt Valley (36%), Capital & Coast (34%) and Hawke's Bay (32%)

For Māori people, crowding is highest in Counties Manukau (35%), Auckland (27%), Tairāwhiti (25%) and Hawke's Bay (24%). The rate of crowding for Māori is almost 10 percent higher in Counties Manukau than in any other DHB (Table 5b).

Housing tenure and sector of landlord

Rented properties have the highest levels of crowding (18.6%). Properties that are owned (whether mortgage payments are made or not made) have considerably less crowding. For example, dwellings held in a family trust or owned 'mortgage free' have the lowest levels of crowding (3.5%), followed by dwellings that are owned and making mortgage payments (5.7%) (Table 6a).

Table 6a: Crowding by tenure of household in New Zealand

CNOS	Dwelling not owned and not held in family trust; rent payments made (rented)	Dwelling held in family trust or owned with mortgage payments made (owned)	Dwelling held in family trust or owned with mortgage payments not made (owned, no mortgage payments)
Crowded	262,302	104,184	22,479
(Percent)	18.7	5.7	3.5
Not crowded	1,142,613	1,725,828	617,997
(Percent)	81.3	94.3	96.5
Total stated	1,404,915	1,830,012	640,476

Household crowding and tenure of household for usual residents in household, in private dwellings by DHB.

In the two DHBs with the most crowded households, Counties Manukau and Auckland, the proportion of crowding is higher in all three household tenure categories than in all other DHBs. The proportion of crowding in rental accommodation in Counties Manukau (34%) and Auckland (30%) is significantly higher than the crowded rental accommodation of the next most crowded DHB region – Tairāwhiti (23%) (Table 6b).

Table 6b: Crowding in low-income households, by household tenure and DHB – percent crowded*

DHB	Dwelling not owned and not held in family trust; rent payments made (Rented)	Dwelling held in family trust or owned with mortgage payments made (Owned)	Dwelling held in family trust or owned with mortgage payments not made (Owned 'mortgage free')
Northland	17.1	7.1	4.8
Waitemata	19.1	8.7	3.5
Auckland	29.9	13.6	7.8
Counties Manukau	34.4	17.3	7.0
Waikato	15.9	6.8	3.0
Bay of Plenty	14.9	7.2	3.7
Lakes	18.3	8.1	4.6
Tairāwhiti	22.5	12.2	7.8
Taranaki	11.3	4.5	1.7
Whanganui	10.1	7.2	3.2
Hawke's Bay	17.8	6.8	2.5
MidCentral	12.2	5.3	2.4
Hutt Valley	20.8	9.2	2.9
Wairarapa	9.5	4.1	1.2
Capital & Coast	18.3	8.8	2.9
Nelson Marlborough	10.2	3.3	1.2
West Coast	7.6	3.7	2.2
Canterbury	12.8	5.2	2.2
South Canterbury	7.7	2.9	0.6
Southern	7.8	3.6	1.9
New Zealand	18.9	7.9	3.4

* Household crowding and tenure of household by JEAH income quintile (1+2 combined) by DHB.

Nationally, the most crowded quintile (5) of area units (with between 13.4 and 58.2% crowding), have a much higher proportion of Housing New Zealand managed homes (Table 6c).

Table 6c: Crowding by sector of landlord for households in rented private dwellings

Percent crowded	Quintile	Private person, trust or business	Housing New Zealand Corporation
< 3.2%	1	90.4	2.1
3.2–4.9%	2	86.6	4.2
5.0–7.5%	3	84.5	6.2
7.6–13.4%	4	79.5	10.0
> 13.4% (upper limit 58.2%)	5	66.1	22.8

Fuel use and heating

Table 7a shows the type of fuel used for heating by crowding status. Each column shows the total number of households using that fuel type and how many of those households are crowded.

There is a range of fuel used for heating across both crowded and non-crowded households, with electricity being the most common type of heating used for both types of households. However, crowded households are more than three times more likely than non-crowded households to not have any type of heating for their home (9% compared with 3% respectively). Crowded households also use bottled gas more often than non-crowded households (19% compared with 16% respectively).

Table 7a: Crowded households by heating type used by residents in New Zealand*

	Electricity	Wood	Bottled gas	Mains gas	Other fuels	No fuels
Crowded	283,932	30,768	71,760	107,832	27,495	35,847
(Percent)	(73.5)	(27.9)	(18.6)	(8.0)	(7.1)	(9.3)
Not crowded	2,792,613	466,965	550,737	1,401,138	264,678	88,713
	(79.7)	(40.0)	(15.7)	(13.3)	(7.6)	(2.5)
Total New Zealand	3,086,505	1,512,978	624,630	499,131	293,550	125,334
	(79.0)	(38.7)	(16.0)	(12.8)	(7.5)	(3.2)

* Household crowding and fuel type – total responses for usual residents in household, in private dwellings. Total New Zealand row includes responses where crowding information was not available. Therefore the total responses in the table will be more than the total number of crowded and not crowded.

In the Auckland region (Auckland, Counties Manukau and Waitemata DHB regions), 27,330 people in crowded households use no heating in their household. This is 16 percent of people in crowded households in the Counties Manukau DHB region, 15 percent in Auckland and 10 percent of people in crowded households in the Waitemata DHB region.

There is high variance in the level of bottled gas use in crowded households, with the highest level of use being outside the main centres in the Bay of Plenty, Hawke's Bay, Northland and Tairāwhiti DHB regions (Table 7b).

Table 7b: Crowding by heating type used by residents, by DHB region

	Electricity	Wood	Bottled gas	Mains gas	Other fuels	No fuels	Total people who stated fuels
Northland number	8,307	5,463	3,591	186	846	1,377	13,635
(percent)	(60.9)	(40.1)	(26.3)	(1.4)	(6.2)	(10.1)	
Waitemata	35,847	9,969	9,606	2,580	2,499	4,455	46,206
	(77.6)	(21.6)	(20.8)	(5.6)	(5.4)	(9.6)	
Auckland	45,498	8,298	8,859	4,407	3,282	8,772	59,841
	(76.0)	(13.9)	(14.8)	(7.4)	(5.5)	(14.7)	
Counties Manukau	64,395	14,631	18,405	6,078	6,297	14,103	90,612
	(71.1)	(16.1)	(20.3)	(6.7)	(6.9)	(15.6)	
Waikato	20,931	9,687	5,379	4,254	2,664	1,557	28,887
	(72.5)	(33.5)	(18.6)	(14.7)	(9.2)	(5.4)	
Bay of Plenty	10,548	6,957	4,575	648	1,104	1,167	16,572
	(63.6)	(42.0)	(27.6)	(3.9)	(6.7)	(7.0)	
Lakes	5,751	5,385	1,800	390	750	267	9,051
	(63.5)	(59.5)	(19.9)	(4.3)	(8.3)	(2.9)	
Tairāwhiti	3,540	3,408	1,527	708	411	135	5,787
	(61.2)	(58.9)	(26.4)	(12.2)	(7.1)	(2.3)	
Taranaki	3,264	2,298	807	1,308	318	228	5,400
	(60.4)	(42.6)	(14.9)	(24.2)	(5.9)	(4.2)	
Whanganui	2,502	1,986	918	876	222	105	3,945
	(63.4)	(50.3)	(23.3)	(22.2)	(5.6)	(2.7)	
Hawke's Bay	8,514	7,350	3,591	528	858	537	13,134
	(64.8)	(56)	(27.3)	(4.0)	(6.5)	(4.1)	
Midcentral	6,147	4,020	1,659	2,280	432	330	9,504
	(64.7)	(42.3)	(17.5)	(24.0)	(4.5)	(3.5)	
Hutt	10,278	2,928	1,749	2,502	855	483	12,471
	(82.4)	(23.5)	(14.0)	(20.1)	(6.9)	(3.9)	
Wairarapa	1,113	1,476	390	18	177	36	1,872
	(59.5)	(78.8)	(20.8)	(1.0)	(9.5)	(1.9)	
Capital and Coast	18,567	3,981	2,514	3,351	1,167	1,407	22,197
	(83.6)	(17.9)	(11.3)	(15.1)	(5.3)	(6.3)	
Nelson Marlborough	4,314	3,126	963	75	450	156	5,925
	(72.8)	(52.8)	(16.3)	(1.3)	(7.6)	(2.6)	
West Coast	585	804	132	–	705	12	1,044
	(56.0)	(77.0)	(12.6)	(0.0)	(67.5)	(1.1)	
Canterbury	23,451	8,685	3,657	336	1,254	534	27,210
	(86.2)	(31.9)	(13.4)	(1.2)	(4.6)	(2.0)	
South Canterbury	1,410	1,191	204	–	144	9	1,782
	(79.1)	(66.8)	(11.4)	(0.0)	(8.1)	(0.5)	
Southern	8,961	6,189	1,437	237	3,072	180	11,232
	(79.8)	(55.1)	(12.8)	(2.1)	(27.4)	(1.6)	

* Includes all people who stated using more than one fuel type for heating were counted in each stated category. Therefore the total responses in the table will be more than the total number of people in households for occupied private dwellings.

Visitors to households

Night crowding for all households increases for all New Zealanders and by European, Maori, Asians ethnicities. However the increase is not significant for Maori. For Pacific peoples night crowding actually decreases, but this is not statistically significant (Table 8a).

Table 8a: Census night DHB region, American Crowding Index: all households

	Percent crowded (95% CIs)	
	Usual residents	Census night population
European	1.5 (1.5–1.5)	1.7 (1.7–1.7)
Māori	9.5 (9.4–9.6)	9.6 (9.4–9.7)
Pacific peoples	24.7 (24.4–24.9)	24.4 (24.1–24.6)
Asian	9.2 (9.0–9.3)	9.5 (9.3–9.6)
Total persons	4.7 (4.7–4.7)	4.8 (4.8–4.8)

Crowding increases for all ethnicities in low-income households when visitors to the household are included in the count but not significantly for Pacific People (Table 8b). For low-income European households, crowding was 0.2 percent higher when the count included visitors on census night; for Māori, it was 0.5 percent higher, for Pacific peoples, it was 0.7 percent higher and for the Asian ethnicity, it was 0.6 percent higher. Thus it can be seen that the increase is slightly more for Māori and Pacific peoples low-income families than for the other ethnicities.

This result signals that, particularly for low-income families, visitors are a significant factor that has not been considered in previous census-based analysis of household crowding (Table 8b). Note: The American Crowding Index was used for measurement purposes for this table only because CNOS does not measure the impact of visitors.

Table 8b: Census night DHB region, American Crowding Index: low-income households

	Percent crowded (95% CIs)	
	Usual residents	Census night population
European	2.3 (2.3–2.4)	2.5 (2.5–2.6)
Māori	10.6 (10.4–10.8)	11.1 (11.0–11.3)
Pacific peoples	26.4 (26.0–26.8)	27.1 (26.7–27.6)
Asian	10.3 (10.1–10.5)	11.0 (10.8–11.2)
Total persons	6.3 (6.2–6.3)	6.6 (6.5–6.7)

Implications

This report provides a picture of household crowding in New Zealand in 2013 in the context of age, ethnicity, income, housing tenure and landlord sector, fuel use for heating and visitors to the household.

It is important that the characteristics and extent of household crowding in New Zealand are understood across the health and wider government sector because research has shown that crowding is linked to a number of poor health outcomes, including rheumatic fever (Baker et al 2013; Maani et al 2006).

Although crowding analyses have been conducted previously, this report highlights what policy makers may see as key associations between crowding and the other factors assessed. This evidence reminds policy makers and health and social sector providers that communities experiencing high levels of crowding face a complex mix of challenges. Interventions are more likely to be successful in reducing crowding if such interventions take into account the varied and often complex circumstances of crowded households.

Crowding is strongly associated with Māori, Pacific and, to a lesser extent, Asian ethnicities in New Zealand. However, Māori and Pacific peoples, and in particular Māori and Pacific children, are most likely to experience crowding along with poverty while also presenting for housing related illness and experiencing poorer health outcomes overall.

The most prevalent levels of poverty and crowding are seen in the wider Auckland metropolitan area. Focusing on these areas within Auckland will enable service providers to reach communities where upwards of 40 percent of that community may be experiencing crowding. Interventions are likely to be more effective if agencies and providers enable communities to have meaningful input into service design and delivery of interventions to reduce crowding relevant to their community.

Finally, crowding is related to a range of factors. While poverty is an important factor, this report shows that there are factors beyond socioeconomic deprivation that lead to crowding at all income levels. Future work could investigate the reasons for crowding and seek to answer the question, 'Is crowding associated with poorer outcomes over all income levels, or is it associated most closely with poorer outcomes for low-socioeconomic status households?'

Conclusion

This report highlights that, in New Zealand in 2013, there are still a significant number of New Zealanders living in crowded households. Further, there are inequities by age, ethnicity, income and spatial distribution (geographical area).

Household crowding is relatively uncommon for most populations in New Zealand, with the exception of some sociodemographic groups, particularly Māori, Pacific peoples and children. These findings align with the suggestion that household crowding is making a considerable contribution to infectious disease burden in New Zealand, including rheumatic fever.

Findings from this report support the continued need for interventions that are aimed at reducing household crowding for Pacific and Māori households in New Zealand, particularly those with children.

Important limitations to consider include the lack of an internationally standardised method for measuring household crowding, as reflected in the range of definitions in use in this report. Similarly, there is no internationally agreed threshold for defining household crowding. This report excludes people living in non-private dwellings, such as boarding houses and night shelters because household and room data has not been collected for these dwellings.

The census can only record some dimensions of household crowding, so it is important not to lose sight of the fact that there is potential for 'functional crowding' to be even greater than that estimated here (for example, in situations where families may sleep in a single room to keep warm over winter).

This report can be used as evidence in the development of policy around household crowding. In addition, it sets a foundation for a range of possible further analysis or research. Some areas for further investigation include: children and household crowding, ethnic differences in household crowding based on income, and local-level detailed crowding analysis.

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