Severe crowding in New Zealand since 1921: "A challenge to health and decency"
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Purpose and summary of findings

Purpose

*Severe crowding in New Zealand since 1921: A challenge to health and decency* explores the history of crowding in New Zealand homes. This paper gives an overview of changes in crowding patterns since the 1920s and discusses some of the reasons that crowding has declined over time. Although the proportion of people living in crowded homes declined by the beginning of the 21st century, crowding remains a health and social policy issue. A number of researchers have been concerned about the high rates of infectious disease in New Zealand, particularly among Māori and Pacific peoples. There is strong research evidence linking crowding and infectious disease (Baker et al., 2000).

A crowded dwelling is considered inadequate for the number of people that usually live there. Definitions of crowding have changed over time, but for consistency, this paper has used the 1921 crowding definition. A report on crowding, based on the 1921 Census, classified a dwelling as crowded if “the number of its inhabitants and the manner of their disposal about that building is such as to challenge health and decency” (Census and Population Office, 1924). In 1921, this meant a dwelling was crowded if there were more than 1.5 people per room.

Summary of findings

Key findings from our analysis are:

- Crowded houses were identified as an important health issue in New Zealand in the 1920s.
- The 1921 Census identified 9 percent of dwellings as crowded. These were dwellings with more than 1.5 people per room (now considered severe crowding).
- Crowding affected almost 1 in 7 people in the New Zealand population (excluding Māori) in 1921.
- Crowding fell steadily over the 20th century, but remained high in the baby boom years.
- Rates of severe crowding were much higher among Māori.
- Crowding decreased as houses became larger and family size fell.
- According to the 1921 people per room measure, less than 1 percent of households were severely crowded in 2006.

Methodology for calculating crowding

In the early 20th century, crowding statistics were calculated using the people per room (PPR) measure. This measure is calculated by dividing the number of people who live in a dwelling (occupants) by the number of rooms. If the number of occupants was more than 1.5 people per room the dwelling was considered crowded. For example, if there were four people in a dwelling but only two rooms, the dwelling was defined as crowded. Table 1 illustrates how this measure is used to calculate how crowded a house is.
Table 1

Example of how the 1921 crowding measure works

<table>
<thead>
<tr>
<th>Occupants</th>
<th>Rooms</th>
<th>People per room</th>
<th>Crowding status</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>2</td>
<td>2.0</td>
<td>Crowded</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>1.5</td>
<td>Not crowded</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>0.7</td>
<td>Not crowded</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>1.7</td>
<td>Crowded</td>
</tr>
</tbody>
</table>

In New Zealand and overseas, definitions of crowding changed after the 1960s. The current American Crowding Index (people per room) defines a crowded house as having more than one person per room. Therefore, houses that were deemed crowded in 1921 are now considered severely crowded. In 2006, only 0.8 percent of households, or 1.9 percent of people, lived in houses where there were more than 1.5 people per room.

To calculate the rates of severe crowding in private dwellings over the 20th century, the PPR measure can be used to analyse published census information about the number of rooms and number of occupants. The methodology for calculating the PPR measure is explained in more detail in table 3 in the ‘Methodology for calculating crowding indexes and comparing occupancy rates’ section.

Calculations based on published census information may vary in quality, depending on the level of detail in data published about the number of rooms and occupants. There have also been conceptual changes in how Statistics New Zealand collects data about households and their occupants. These may reduce the consistency of the crowding data presented in this paper.

The consistency of the data used to calculate the people per room measure in this paper has been affected by the following factors:

- Details about number of rooms and occupants vary considerably between censuses. In some census years, the published tables only include eight or more rooms and occupants, in other years data was published about up to 15 or 20 rooms and occupants. This resulted in greater accuracy of the overall crowding results.

- Who is counted as an occupant of a house has changed over time. In earlier years, people visiting a home on census night were counted as occupants of that house. Since the 1980s, only usual residents have been counted. In 2006, 0.9 percent of private dwellings were severely crowded if all occupants on census night were counted and 0.8 percent of households were severely crowded if just usual residents were counted.

- As the dwellings we live in changed, particularly with the development of the open plan house (where walls are knocked out to make rooms more spacious), counting rooms became more difficult. In the 1980s, census staff became aware that the quality of rooms data had deteriorated because it was difficult to count rooms in open-plan houses. Because of concerns with the quality of data about rooms collected in 1981, the 1986 Census did not include a rooms question. No crowding index can be calculated for that year.

- The 1991 Census included a question about how many rooms were in a dwelling but there were no instructions about how to count rooms. The definition of rooms in a dwelling excludes bathrooms and laundries. Levels of crowding are determined by how many people there are per room. It is likely that people counted bathrooms and laundries when they answered the question in the 1991 Census. As a result,
rooms were over-counted: 54 percent of dwellings were recorded as having four or more other rooms (as well as bedrooms) in 1991 compared with just 28 percent in 1996.

Figure 1

Rooms question in 1991

![Figure 1](image1.png)

Figure 2

Rooms question in 2006

![Figure 2](image2.png)

How rates of crowding have changed since the 1920s

**Crowding in 1921**

Concerns about crowding in New Zealand homes emerged after the Great Spanish Influenza pandemic of 1918–19. During this epidemic, almost 8,600 people in New Zealand died in less than two months; the death rate was particularly high among Māori at 42.3 per thousand people. Māori death rates were seven times those of Europeans (Ministry for Culture and Heritage, 2009).

Medical examinations of soldiers recruited to fight in World War I raised concern about the physical health of New Zealand men. Authorities identified inadequate housing as a contributor to the spread of disease and poor health of many New Zealanders. The Ashburton Guardian noted in 1919 that “overcrowded housing” helped to spread influenza.

Overcrowding was a recurrent theme in the media in the 1920s. In 1920, for example, the Grey River Argus published articles about the number of Wellington families living in one room “at rack-rent charges.”
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Special report on crowding produced after 1921 Census

The Census and Statistical Office (1924) included a special report on household crowding in the 1921 Census volume. This report showed that many New Zealanders were living in crowded houses. Authorities were concerned that crowded houses could endanger the health of the population. The New Zealand Census and Statistics Office (1924) noted that crowded houses were a problem in similar countries. Their report on crowding in 1921 quoted from the British Board of Trade Journal, which attributed the shortage of dwellings to “wage earning single women from all walks of life now occupy [ing] independent apartments instead of residing with their parents as before the war. . . .”

In 1921, the Census and Statistics Office calculated that almost 9 percent of private dwellings were crowded and 15 percent of the New Zealand population lived in these dwellings. These percentages did not include households defined as solely occupied by Māori. Households where Māori and Europeans lived together were included in general statistics.

Whether Māori were included in census statistics or counted as part of the Māori Census depended on “his mode of living; if in the European manner, then he is classed as a European; if otherwise, then as a Māori” (Census and Statistical Office, 1925).
There was considerable regional variation in household crowding. In 1921, Wellington had the worst crowding for an urban area, but crowding was more severe outside main urban centres.

**Table 2**

**People living in crowded houses**

1921 Census

<table>
<thead>
<tr>
<th>Urban area</th>
<th>Overcrowded dwellings</th>
<th>People living in overcrowded dwellings</th>
<th>Total dwellings where rooms specified</th>
<th>Total people living in dwellings where rooms specified</th>
<th>Percent of dwellings overcrowded</th>
<th>Percent of people living in crowded houses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auckland</td>
<td>2,321</td>
<td>16,899</td>
<td>32,130</td>
<td>141,135</td>
<td>7.2</td>
<td>12.0</td>
</tr>
<tr>
<td>Wellington</td>
<td>1,920</td>
<td>12,828</td>
<td>21,991</td>
<td>94,199</td>
<td>8.7</td>
<td>13.6</td>
</tr>
<tr>
<td>Christchurch</td>
<td>1,348</td>
<td>10,316</td>
<td>23,304</td>
<td>95,876</td>
<td>5.8</td>
<td>10.8</td>
</tr>
<tr>
<td>Dunedin</td>
<td>933</td>
<td>7,179</td>
<td>15,888</td>
<td>66,139</td>
<td>5.9</td>
<td>10.9</td>
</tr>
<tr>
<td>Remainder of Dominion</td>
<td>16,533</td>
<td>117,676</td>
<td>165,470</td>
<td>711,300</td>
<td>10.0</td>
<td>16.5</td>
</tr>
<tr>
<td>Total (rooms specified)</td>
<td>23,055</td>
<td>164,898</td>
<td>258,783</td>
<td>1,108,649</td>
<td>8.9</td>
<td>14.9</td>
</tr>
</tbody>
</table>

Source: Census and Statistical Office

**Crowding since 1921**

Figures 4 and 5 show the change in the proportion and number of severely crowded households (more than 1.5 people per room). Data is shown from 1921 to 2006. However, before the 1980s crowding rates were based on figures that included people who were present in the household on census night. This is likely to slightly raise the number of people that lived in crowded houses.
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Figure 4

Percent of New Zealand households that were severely crowded
(More than 1.5 people per room)
1921 to 2006 Censuses

1. No census held.
2. Figures for 1945 do not include servicemen who were overseas.
3. The census questionnaire did not ask about the number of rooms in 1986.
4. Figures for 1991 were omitted because of data quality issues.

Source: Statistics New Zealand

Figure 5

Number of New Zealand households that were severely crowded
(More than 1.5 people per room)
1921–2006 Censuses

1. No census was held.
2. Figures for 1945 do not include servicemen who were overseas. Before the 1980s, figures included visitors on census night.
3. The census questionnaire did not ask about the number of rooms in 1986. Figures for 1991 were omitted because of data quality issues.
4. Before the 1980s, figures included visitors on census night.

Source: Statistics New Zealand

Figure 5 shows the number of severely crowded households in New Zealand, based on census data from 1921 to 2006. There was a steady decline in crowding over the 20th century. There was a slight rise in the proportion of crowded households in the early 1950s. In the 1950s, there was a shortage of housing because fewer dwellings were built during the Depression years and there was a lack of building materials during World War II (Derby, 2010). The number of households that were severely crowded in 1945 may have been slightly lower, due to 43,415 servicemen still being overseas when the 1945 Census was held (Census and Statistics Department, 1947).

Rates of severe crowding much higher for Māori
It is also possible to calculate how crowded Māori dwellings were using the people per room (PPR) measure. Results from the Māori Census, which were counted separately,
can be used to estimate how crowded Māori dwellings were between the 1920s and 1970s.

**Definition of Māori changes over time**

Because of significant changes to the definition of Māori ethnicity, data about crowding among the Māori population is only presented here to the beginning of the 1970s.

Before the 1970s, the definition of who was Māori was based on a concept of race and degrees of blood. The Māori Census counted people who were defined as Māori of “full blood, Māori – European half castes” and “all Māori-Europeans who are nearer to Māori in blood than to European” (Department of Statistics, 1925).

The 1971 Census asked about people’s “descent origin” and by 1976 the term had changed to “ethnic origin”. In 1974, the Maori Affairs Act 1953 was amended and the definition of Māori was changed to include descendants of Māori who were less than half Māori by blood. From the 1980s, the definition changed to one largely based on identification rather than blood, although a Māori ancestry question was retained.

**Population growth puts pressure on housing**

For much of the 20th century, housing for Māori was considered very inadequate. Occupancy rates (people per dwelling/household) were higher than among the European population. In 1945, for example, the occupancy rate was 5.7 people per dwelling compared with the total population figure of 3.7 people per dwelling.

Strong population growth among the Māori population in the mid-20th century put further pressure on housing (see figure 3). Housing was especially inadequate in rural areas, where most Māori lived before the 1950s. A period of rapid urbanisation occurred after the 1950s, which helped to relieve pressure on housing in rural areas. In 1926, 84.4 percent of Māori lived in rural areas, but by 1966, this had fallen to 38.4 percent. By 2006, rates of urbanisation were very similar for Māori and the total New Zealand population.
Figure 6

Urban / rural distribution of Māori(1) population
1926 – 2006 Censuses

1. The definition of Māori has changed over time, from degrees of blood (pre-1975) to total ethnicity concept. Before 1981, this referred to the census night population – New Zealand residents and overseas visitors counted in New Zealand at each census.

Source: Statistics New Zealand

Rates of severe crowding were much higher for Māori (according to the people per room measure) but declined sharply throughout the 20th century.

Figure 7

Percentage of severely crowded New Zealand households (PPR measure) defined as Māori(1)
Selected census years 1926–1971

1. The definition of Māori changed during this period and figures are not directly comparable with later definitions. Before the 1970s, definitions depended on concepts based on degrees of blood. The 1971 Census asked about ‘descent origin’.
2. The 1926 figures do not include whares or huts.
3. Figures for 1945 exclude the 1,300 servicemen overseas when the census results were counted.

Source: Statistics New Zealand
Reasons for decline in crowding

The number of crowded houses has declined since 1921. This is due to a number of factors:

- more dwellings were built (after the shortage during the Depression and war years)
- more state housing was provided
- dwellings increased in size
- living standards rose
- families and households became smaller.

Number of houses increases

During the Depression years, housing construction declined. A shortage of materials during the war years further constrained supply. After the war, housing construction increased, but New Zealand still faced a housing shortage. In 1935, *The Evening Post* headlined the shortage and noted that the prices of both timber and land were driving up the cost of housing.

Subsequent governments attempted to address housing shortages by providing more state housing and encouraging the private sector to provide more affordable housing. In 1953, the government called a national housing conference. A target of 206,000 houses in 10 years was set at this conference. By the mid-1960s, over 200,000 house units had been built (Department of Statistics, 1967). The government encouraged home ownership by offering potential buyers cheap loans (known as state advances).

Figure 8

![Building consents issued for residential dwellings](chart.png)

Providing state housing helps improve living conditions

Providing state housing helped to improve housing conditions. The housing shortage in the 1930s had led to pressure on affordable housing. The Labour Government elected in 1935 made providing state housing a national priority. It aimed to provide affordable housing for low- to middle-income families (Schrader, 2011). Initially, state housing was not provided for Māori, but in 1948, the government began providing state houses for Māori in urban areas.
By the end of the 1930s, there were large waiting lists for state houses and these continued to grow (10,000 in February 1939 and 50,000 by 1950). Demand quickly outgrew supply but by 1950, the government had built 30,000 homes (Schrader, 2011).

**Figure 9**

The increase in the number of state houses contributed to a decrease in crowding. This is despite rapid population growth over the 20th century.

**Dwellings become larger over time**

As figure 4 shows, the percentage of severely crowded households has decreased sharply since the beginning of the 20th century. Part of this decrease is due to dwellings becoming larger. In 1921, on average, there were just over four rooms per dwelling; by 2006, this had risen to approximately six. New dwellings are also likely to be larger. Building consents data shows that the average floor area per dwelling increased from 139m² in 1991 to 191m² in 2006.
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**Figure 10**

**Number of rooms per dwelling**
1921, 1976, and 2006 Censuses

![Graph showing number of rooms per dwelling](image)

Source: Statistics New Zealand

**Figure 11**

**Average floor area of consented new dwellings**
1974–2011

![Graph showing average floor area](image)

1. Includes houses, flats, and apartments. Each dwelling unit in a housing project is counted separately.

Source: Infoshare, Statistics New Zealand

**Living standards rise**

New Zealand became more prosperous after the difficult years of the Depression. Gross domestic product (GDP) per capita has generally risen over the last 37 years (see figure 12). Economic historians (Easton, 2010) argue that income inequality fell in the 1950s and 1960s, although it rose again from the 1980s.

Household incomes also rose as greater numbers of women entered the workforce. Increases in incomes made suitable housing more affordable. Census data shows that housing quality improved as indoor toilets, bathrooms, and electricity became standard features of New Zealand homes during the 1950s and 1960s.
Households decrease in size

Households have also changed considerably over the 20th century. Average household size has decreased from 4.9 people per dwelling in 1901 to 2.7 people per household in 2006. Part of the recent decrease (since the 1970s) in household size was due to women having fewer babies (declining fertility rate) and ageing of the population. The fertility rate peaked during the baby boom in the 1960s.

The composition of households has also changed: people are living longer and are more likely to have years without children in the home and more people are choosing not to have children. Couples are also delaying having a family, having fewer children, and there are higher rates of separation and divorce. Consequently, the proportion of couple only and one person households has risen.
Figure 13

**Occupancy rate and total fertility rate\(^{(1)}\)**

All females and Māori females

1867–2006

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1. The average number of live births that a woman would have during her life if she experienced the age-specific fertility rates of a given period (usually a year). It excludes the effect of mortality.

Source: *Demographic Trends*, Statistics New Zealand

Among Māori, fertility rates and the average number of people per household also declined over the 20th century. However, both of these remained higher than the rates for the total New Zealand population. Fertility for Māori women peaked in the early 1960s, at just over 6 children per female (based on the ethnicity of the child). By the early 1980s, Māori fertility was only slightly higher than for the total female population.
Conclusion

This paper has traced the decline in household crowding over the 20th century and analysed some of the reasons why the proportion of people living in crowded accommodation has decreased.

A number of factors have converged to reduce crowding. Firstly, there has been a change in housing stock. From the late 1940s, there was an increase in house building. Government promoted home ownership and home-building, as well as providing more state housing as part of a strategy to reduce the housing shortage. In recent years the average floor area of new dwellings has increased and there are more four and five bedroom properties.

Secondly, there has been a rise in incomes since the 1920s and 1930s. People have been able to afford better housing, particularly since the state welfare system reduced the extremes of poverty.

Thirdly, the structure of the population has changed. From the 1970s, reduced fertility has contributed to a decline in crowding. There has been a growth in one- and two-person households and a decline in family-with-children households.

However, many houses in New Zealand are still crowded. While there has been an increase in house size in recent years, larger houses tend to be newer and more expensive. Large families and households still struggle to find accommodation that meets their needs. There has also been pressure on housing in some areas. Crowding rates have remained consistently high in places such as South Auckland. While the number of Māori living in crowded houses has decreased, more Māori than European people live in crowded houses.

The health concerns that brought crowding to the attention of authorities in the 1920s remain of concern. Crowded living conditions contribute to the spread of disease and poor health within the New Zealand population. Rates of some infectious diseases, which tend to be strongly associated with crowding, are higher in New Zealand than in comparative countries. This paper is part of a series of reports on crowding in New Zealand. We hope that the data presented in this series of papers will help to inform policymakers about the conditions of families living in crowded houses today.
Methodology for calculating crowding indexes and comparing occupancy rates

Methodology for calculating people per room measure

The following table was used to calculate the people per room measures used in this paper. To be severely crowded, a dwelling has to have more than 1.5 people per room. Because the people per room calculation is based on aggregate data rather than individual household data, the calculations are not exact – particularly for years when the rooms and bedrooms data collected in the census was less detailed.

The data from 1996 onwards was calculated using the same format as previous census years (even though the availability of electronic data means that we could calculate the exact number of people per room). This was done to make data after 1996 compatible with pre-1996 data.

The table below shows different crowding index numbers, based on different combinations of number of rooms and number of people. For example, 1 room, one usual residents/1 room means that there is 1.0 person per room (not crowded). Two people per room/1 room means that there are 2.0 people per room (severely crowded). The shaded numbers in the table were not used to calculate the crowding index.

Table 3

<table>
<thead>
<tr>
<th>Number of rooms</th>
<th>Number of usual residents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5,781 1,914 231</td>
</tr>
<tr>
<td>2</td>
<td>14,499 6,720 1,833</td>
</tr>
<tr>
<td>3</td>
<td>35,739 20,644 7,572</td>
</tr>
<tr>
<td>4</td>
<td>53,172 47,967 17,667</td>
</tr>
<tr>
<td>5</td>
<td>71,706 64,387 38,547</td>
</tr>
<tr>
<td>6</td>
<td>69,477 132,030 64,953</td>
</tr>
<tr>
<td>7</td>
<td>29,322 84,177 42,663</td>
</tr>
<tr>
<td>8</td>
<td>13,155 46,659 27,291</td>
</tr>
<tr>
<td>9</td>
<td>5,508 23,211 14,364</td>
</tr>
<tr>
<td>10</td>
<td>2,769 10,881 6,960</td>
</tr>
<tr>
<td>11</td>
<td>1,131 4,617 3,033</td>
</tr>
<tr>
<td>12</td>
<td>657 2,595 1,707</td>
</tr>
<tr>
<td>13</td>
<td>297 1,192 735</td>
</tr>
<tr>
<td>14</td>
<td>570 1,314 762</td>
</tr>
<tr>
<td>15 or more</td>
<td>891 1,740 1,074</td>
</tr>
<tr>
<td>Not elsewhere included</td>
<td>23,640 20,614 10,815</td>
</tr>
</tbody>
</table>

Note: All cells have been randomly rounded to base 3.
Source: Statistics New Zealand

Comparing average number of people per household (occupancy rates) with earlier censuses

The concept of usual residents in a household is relatively recent. In earlier censuses, the number of occupants could include people who were visiting on census night.

For example, the instructions in the 1945 Census asked people to: “state total number of occupants in this dwelling on Census night. (Include persons arriving or returning next day and not included elsewhere in the census).” (Department of Statistics, 1945).
Table 4

Occupancy rates for New Zealand
1867–2006

<table>
<thead>
<tr>
<th>Year</th>
<th>Occupancy rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1867</td>
<td>4.05</td>
</tr>
<tr>
<td>1871</td>
<td>4.48</td>
</tr>
<tr>
<td>1874</td>
<td>4.88</td>
</tr>
<tr>
<td>1878</td>
<td>5.02</td>
</tr>
<tr>
<td>1881</td>
<td>5.12</td>
</tr>
<tr>
<td>1886</td>
<td>5.17</td>
</tr>
<tr>
<td>1891</td>
<td>5.06</td>
</tr>
<tr>
<td>1896</td>
<td>4.98</td>
</tr>
<tr>
<td>1901</td>
<td>4.86</td>
</tr>
<tr>
<td>1906</td>
<td>4.81</td>
</tr>
<tr>
<td>1911</td>
<td>4.68</td>
</tr>
<tr>
<td>1916</td>
<td>4.25</td>
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<td>1921</td>
<td>4.28</td>
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<td>1926</td>
<td>4.17</td>
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<tr>
<td>1931</td>
<td>...</td>
</tr>
<tr>
<td>1936</td>
<td>3.91</td>
</tr>
<tr>
<td>1941</td>
<td>...</td>
</tr>
<tr>
<td>1945</td>
<td>3.68</td>
</tr>
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<td>1951</td>
<td>3.61</td>
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<td>1956</td>
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</tr>
</tbody>
</table>

Note:
1986–2001 occupancy rate based on private occupied dwellings.
1926–1981 occupancy rate based on permanent private occupied dwellings.
1867–1921 occupancy rate based on private occupied dwellings.
1867–1936 excludes dwellings occupied only by Māori people.

Symbol:
... not applicable as no census was taken in 1931

All cells in this table have been rounded to base 3.

Source: Statistics New Zealand, Census of Population and Dwellings
Glossary

Dwelling (1921)
The distinct residence of a private family, whether the family live in a house, rooms in a house, or rooms or quarters in a non-residential building.

Dwelling (2006)
A dwelling is any building or structure, or part thereof, that people live in (or intend to live in). It can be of a permanent or temporary nature and includes structures such as houses, motels, hotels, prisons, motor homes, huts, and tents.

There can be more than one dwelling within a building, for example, each separate apartment or unit within an apartment building is considered a dwelling.

Household
A household, as defined in the Census of Population and Dwellings, is either one person who usually lives alone, or two or more people who usually live together and share facilities (e.g., cooking or bathroom facilities, a living area) in a private dwelling. It may include other people in addition to a family, or two or more families living together.

People per room (PPR) measure
Also known as the American crowding index, this measures how crowded a house is, based on people per room. If there is more than 1 person per room, households are defined as crowded. If there are more than 1.5 people per room the household/dwelling is defined as severely crowded.

Rooms
The census asks people to count the number of rooms in their dwellings. Bedrooms, kitchens, dining rooms, lounges, family rooms, studies, and conservatories that people can sit in are included in the count. Open-plan areas are counted as separate rooms. Bathrooms and laundries are excluded from the count of rooms.

In recent years, how the number of rooms is measured has been reasonably consistent, although the quality of the data varied. For example, in 1991 the rooms question did not explain what should be counted as a room, resulting in a much higher count of rooms. This is possibly because people included bathrooms and laundries in the total number of rooms in their dwelling.

The concept of rooms has changed slightly since the 1921 Census. The main changes are summarised below.

1921: number of rooms excludes shops, offices, store, bathroom, pantry, scullery, washhouse; but includes kitchen. In the case of a tenement, people were asked to give number of rooms in tenement only. In case of a building only partly used as a dwelling, people were asked to state the number of rooms so used.

Prior to 1940s: pantries, laundries, and washrooms were not counted as rooms.

1945 Census: people where asked not to "count scullery, pantry or laundry, bathroom, sleeping porch not wholly enclosed, or kitchenette not used occasionally for meals...a detached building adjoining a dwelling and occupied as bedroom should be counted as a room of the dwelling." (Department of Statistics, 1945)

1981 Census: asked for number of bathrooms and laundries, however, it did not record whether these were counted in the number of rooms. We have not included 1981 census figures on crowding in our analysis as they were suspiciously low.
**Occupancy rate (now referred to as average household size)**
The average number of people per household.

**Total fertility rate**
The average number of times a woman would give birth during her life if she experienced the age-specific fertility rates of a given period (usually a year).
References and further reading

References


Further reading


Canadian Tuberculosis Committee (2007). Housing conditions that serve as risk factors for tuberculosis infection and disease. *Canada Communicable Disease Report* 33 (9).
Census of Population and Dwellings forms are available on the Statistics New Zealand website.

Department of Statistics (1925) Results of a Census of the Dominion of New Zealand taken for the night of the 17th April, 1921, General Report. Wellington: Department of Statistics.


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