Vulnerability to climate change

HIGHLIGHTS:

- **Babies and young children (under 5 years), older adults (85+ years), Māori, and those living in poverty are some of the population groups more vulnerable to health impacts of climate change.**
- **Kāpiti Coast District has the highest percentage of people aged 85 years and over. Kawerau District has the highest percentage of under five year olds.**
- **Northland, the Bay of Plenty, Gisborne and parts of Waikato have high Māori populations.**
- **Regions with high levels of socio-economic deprivation include Northland, parts of Auckland, parts of the Bay of Plenty, and Gisborne.**

This factsheet describes population vulnerability to health impacts of climate change in New Zealand and explains the role of monitoring vulnerable populations. It provides information on key vulnerable populations.

About population vulnerability and climate change

Some population groups will be more affected by climate change than others

Some groups of people will be more at risk than others to health impacts of a changing climate (WHO 2003; Ebi et al 2006; Berrang-Ford et al 2012). Vulnerability to climate change can be related to:

- increased **exposure** to climate changes
- **sensitivity** to effects of climate change
- reduced **capacity** to adapt to climate change.

Key potentially vulnerable groups to many health impacts from climate change include babies and young children (under 5 years), older adults (85+ years), Māori, and those living in poverty. Examples of how these groups could be more vulnerable are:

- people on low incomes generally have fewer resources to be able to protect themselves from **exposure** to extreme weather
- people on low incomes may be less able to **adapt** to climate changes because they have fewer resources
- older people are more **sensitive** to dehydration on very hot days
- Māori communities are often more dependent on climate-sensitive primary industries (like farming and fisheries).

Monitoring vulnerable groups helps to plan for climate change

Identifying the location, size and type of vulnerable groups in a community helps us to plan what additional supports might be required for these groups to adapt to climate change. For example, when a heat wave warning is distributed in parts of France, authorities will contact all older people living alone to ensure they are prepared. The aim is to decrease the excess illness and death in older people that has been seen in previous heat waves.

In the New Zealand context, data on vulnerable populations could be used by local authorities to help decide how to target information and action on preparing for climate changes, including extreme weather events.

Vulnerable population groups

Key population groups vulnerable to health impacts of climate change are:

population under five years old percentage and number of people aged under five years
population aged 85 years and over percentage and number of people aged 85 years and over
population identifying as Māori percentage and number of people identifying as Māori
New Zealand Index of Deprivation New Zealand Index of Deprivation in quintiles

Some TAs have a high percentage of older people or young children

Vulnerable age groups are those under 5 years old, and those aged 85 years and over.

Overall, New Zealand's age structure is not dominated by a large number of under 5 year olds (6.9%), or people aged 85 years and over (1.7%). However, some territorial authorities (TA) have different age profiles compared to the national picture.

TAs with the highest percentage of **people aged 85 years and over** (Figure 1) are:

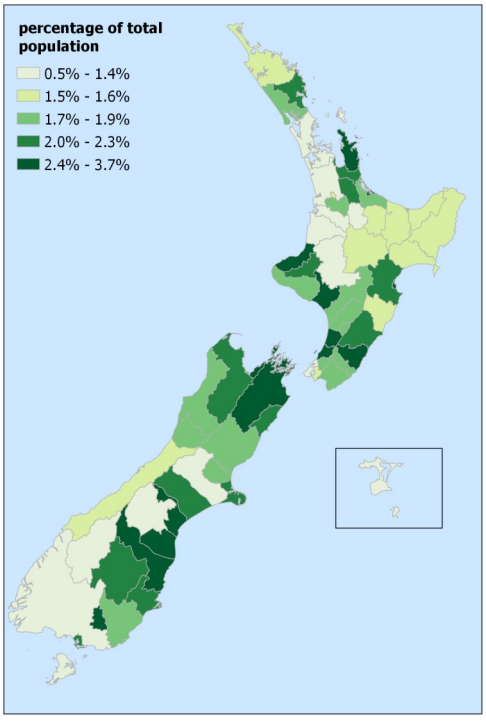
- **Kapiti Coast** (Wellington): 3.7%
- **Thames-Coromandel** (Waikato): 2.8%
- **Waitaki** (Otago): 2.8%

TAs with the highest percentage of **under five year olds** (Figure 2) are:

- **Kawerau** (Bay of Plenty): 8.8%
- **Porirua** (Wellington): 8.6%
- **Wairoa** (Hawke's Bay): 8.5%

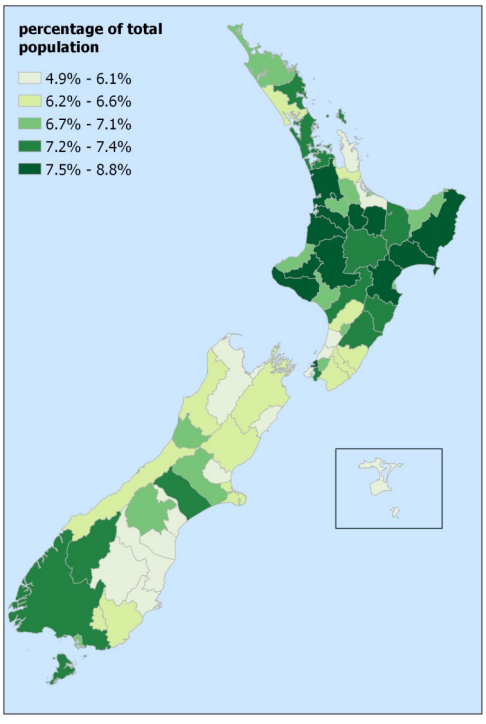
To demonstrate the impact of age vulnerability, an area with a large percentage and/or high number of older or very young people may need more supports in place to cope with unexpected weather events. They might need transport to collect essential supplies before a severe storm. These supports would normally be provided by the working age section of the population. An area with a large older or infant population has people more susceptible to 'heat stress' or extreme cold.

Figure 1: Population aged 85 years and older, by Territorial Authority, 2013 (percent)



Source: Census 2013, Stats NZ

Figure 2: Population under 5 years old, by Territorial Authority, 2013 (percent)



Source: Census 2013, Stats NZ

Large Māori populations in Northland, Bay of Plenty and East Cape

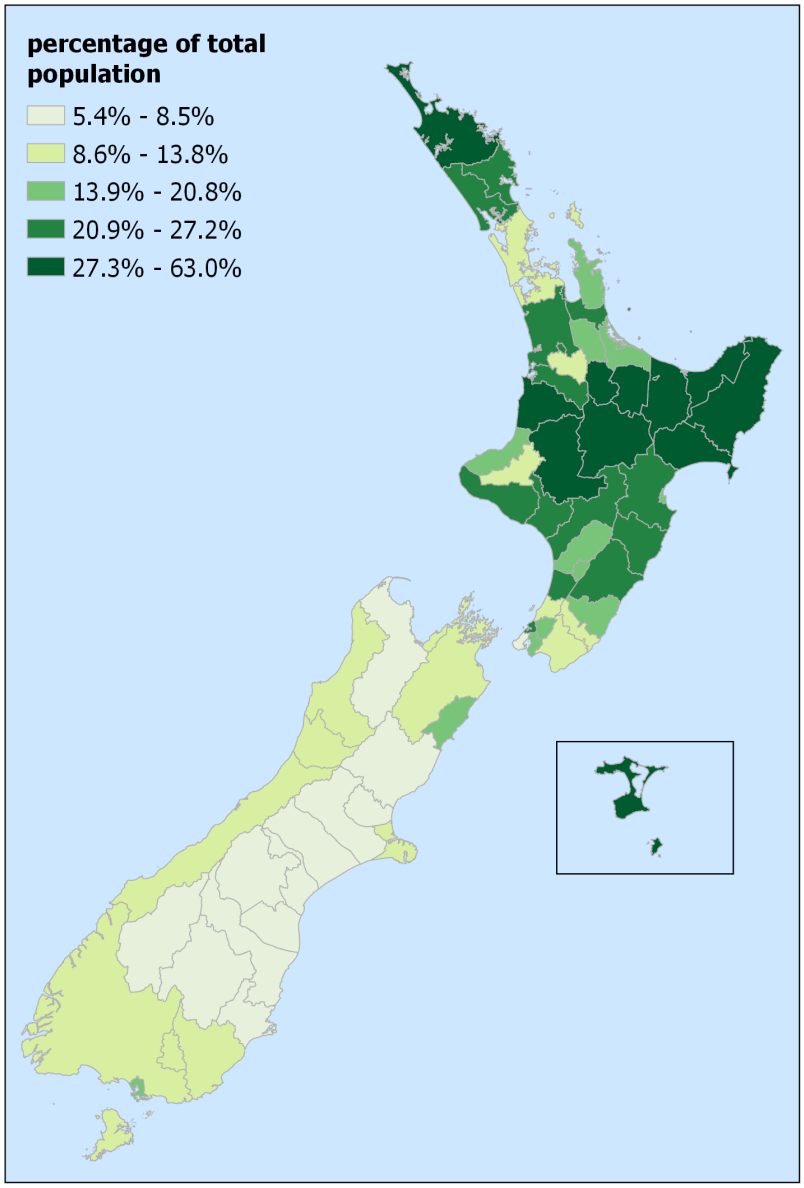
Māori are likely to be more vulnerable to a changing climate due to increased exposure to environmental risks (eg, many Māori live in the north and east of New Zealand where hot days are projected to increase) (IPCC 2013) and increased sensitivity to its effects (eg, the Māori economy is heavily reliant on climate-sensitive primary industries) (Te Puni Kōkiri 2007).

However, these causes of vulnerability need to be balanced against factors that will increase adaptive capacity, like whānau support.

Census data show the following areas have a high percentage of the population that identifies as Māori (Figure 3):

- **Northland** (Far North, Whāngarei and Kaipara districts)
- **Bay of Plenty and Gisborne** (Whakatane, Kawerau, Ōpōtiki, Gisborne and Wairoa districts)
- Ruapehu District
- Chatham Islands District

Figure 3: Māori population, by Territorial Authority, (percent)



Source: Census 2013, Stats NZ

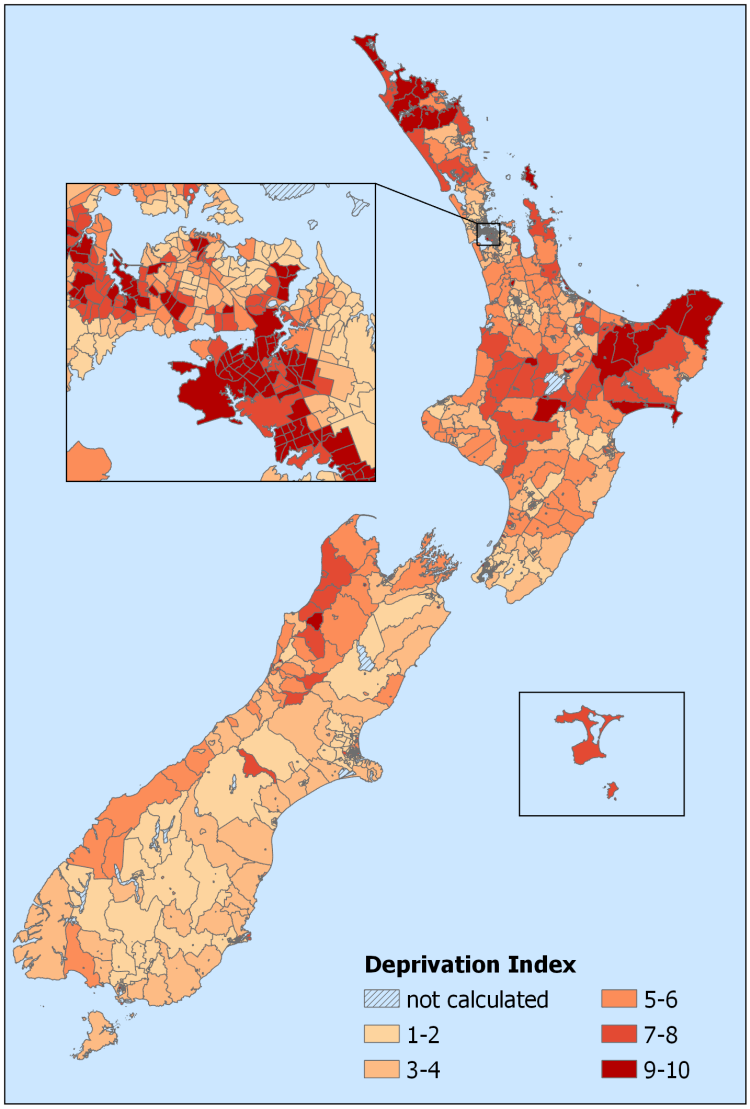
High levels of socioeconomic deprivation in Northland, East Cape and parts of the Bay of Plenty and Auckland

People who live in poverty are more susceptible to environmental risks. In relation to a changing climate, for example, it can be harder to stay cool on a very hot day - if you do not have money, it can be hard to get transport to a swimming pool or beach, or to buy and run an electric fan. Similarly, if you do not have money for a contents insurance policy, a major storm could cause damage that you are unable to repair.

In New Zealand, socioeconomic deprivation is measured at an area level by the New Zealand Index of Deprivation (NZDep) score. Decile 1 is the least deprived 10% of areas, and Decile 10 is the most deprived 10% of areas. Regions with high levels of deprivation include **Northland, parts of Auckland,** parts of the **Bay of Plenty,** and **Gisborne** (Figure 4).

For more information on population vulnerability and environmental health and population statistics, see our Population Vulnerability domain.

Figure 4: Socioeconomic deprivation index (NZDep2013 decile), by Area Unit, (NZDep2013 decile 1= least deprived)



Source: Stats NZ and Otago University

FURTHER INFORMATION

Related environmental health indicators for Climate Change are available from the **EHINZ website**.

DATA FOR THESE INDICATORS

Indicators are presented for vulnerable age groups (<5 years and 85+ years), population identifying as Māori, and those living in poverty using a small area socio-economic deprivation index. The vulnerable population indicators are reported using the usually resident population from the 2013 Census. The New Zealand index of deprivation uses eight measures of deprivation from the Census.

Indicators are presented as percentage of the population. Population percentages can be useful to understand the population vulnerability profile of a particular area and the potential health needs of the population. Comparing counts of vulnerable populations across areas can also be useful for understanding the size of the populations potentially more affected by climate change, and to help with planning and targeting action across multiple locations.

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