Home heating

This report presents statistics on the main types of heating used in dwellings in Aotearoa New Zealand, from the 2023 Census. It focuses on heating types that negatively impact people's health through outdoor air pollution (wood and coal burners), the indoor environment (portable gas heaters) and/or lack of heating.

Key facts

- From 2018 to 2023, there were decreases in the use of almost all main types of home heating, including wood burners, coal burners, portable gas heaters, and no form of home heating. By contrast, the percentage of dwellings using heat pumps as a main type of heating has increased substantially, from 47.3% to 66.8% of dwellings.
- In 2023, more than one in four homes (28.2%) used a wood burner as a main type of heating, with higher rates in the South Island (39.3%) than the North Island (21.4%). Nationally, only 0.7% of dwellings used a coal burner, but the rate was much higher in the West Coast health district (24.3% of dwellings).
- Portable gas heater use fell in all districts from 2018 to 2023. However, some districts like Tairāwhiti (4.7%) and Whanganui (4.3%) still showed relatively higher usage in 2023, compared to the national rate (2.5%).
- Nearly 40,000 New Zealand homes had no source of heating in 2023 (2.4% of dwellings). Around one in fifteen (6.6%) homes in Auckland health district reported having no source of heating.

Home heating can impact on people's health and the environment

Living in a warm home is important for health. Indoor temperatures below 18°C are associated with negative health effects (Janssen et al 2023). Cold homes increase the risk of illness, particularly respiratory and circulatory illness (Clair and Baker 2022). Cold homes can also contribute to dampness and mould.

Wood and coal fires are one of the main sources of fine particulate matter ($PM_{2.5}$) in New Zealand. Both short- and long-term exposure to particulate matter is linked to a wide range of health impacts, from mild impacts such as shortness of breath and coughing, to more severe outcomes such as premature death and an increased risk of lung cancer (Ministry for the Environment & Stats NZ 2018; WHO 2013). Coal burners have particularly high environmental impacts due to their high greenhouse gas emissions and toxicity levels (Mahmoud et al 2021). In 2016, $PM_{2.5}$ air pollution from domestic wood and coal fires caused an estimated 962 premature deaths in people aged 30+ years in New Zealand (Kuschel et al 2022).

Portable (unflued) gas heaters release water vapour, nitrogen dioxide, carbon monoxide, and other pollutants into the indoor environment, contributing to a wide variety of health problems (Howden-Chapman et al 2008). They increase the severity of respiratory conditions such as asthma, coughing, wheezing, and general nose, throat, and lung irritation (Canterbury District Health Board 2015).

By contrast, heat pumps are generally considered beneficial to health. They use less energy, produce no direct indoor or outdoor emissions, help keep homes at comfortable temperatures (cool on hot days, and warm on cold days), and can help reduce dampness and mould.

Changes in patterns of home heating used from 2018 to 2023

From 2018 to 2023, there was a decrease in the use of wood burners, coal burners, portable gas heaters, fixed gas heaters, and electric heaters as the main types of heating in dwellings. There was also a decrease in the percentage of dwellings with no source of home heating. By contrast, the percentage of dwellings using a heat pump as the main type of heating increased substantially, from 47.3% to 66.8% of dwellings (Figure 1).

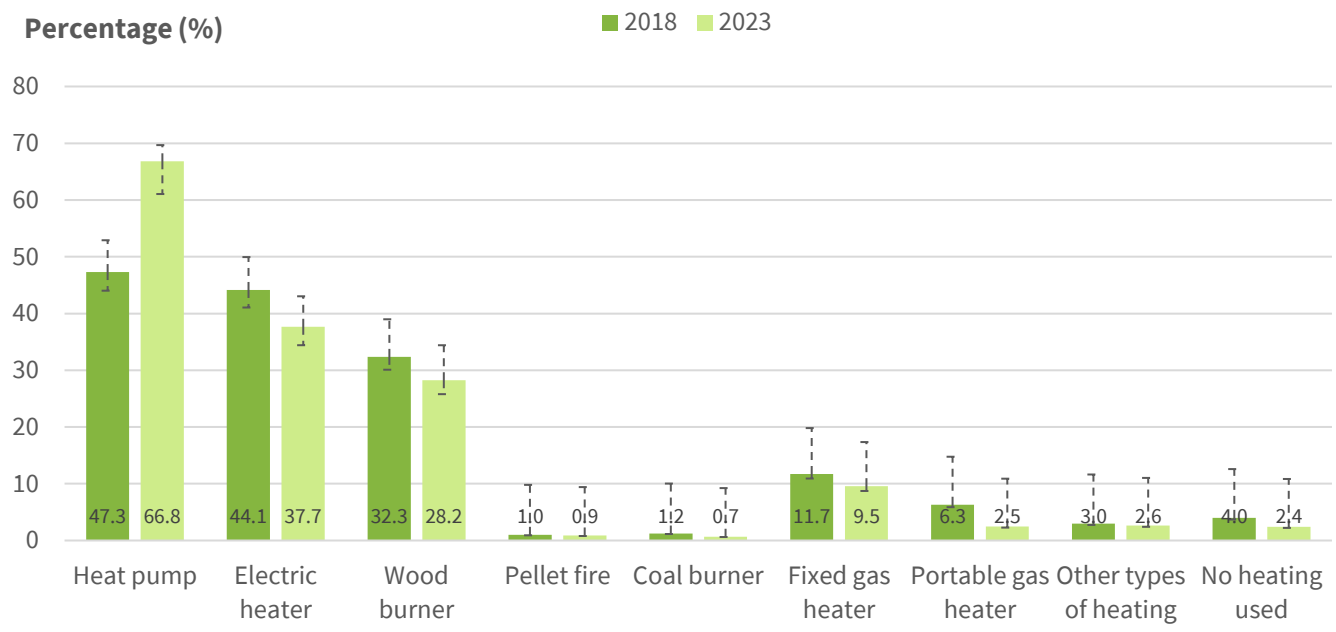
The number of homes using wood burners as their main source of heating dropped by 4.1 percentage points, from 32.3% in 2018 to 28.2% in 2023.

Coal burners were used by only a small percentage of dwellings, with their usage decreasing from 1.2% of dwellings in 2018 to 0.7% of dwellings in 2023.

The number of dwellings using portable gas heaters declined by more than half, from 96,570 (6.3% of dwellings) in 2018 to 40,797 (2.5% of dwellings) in 2023.

The number of dwellings without a source of heating decreased from 60,800 (4.0% of dwellings) in 2018 to 39,900 (2.4% of dwellings) in 2023, representing a reduction of 1.6 percentage points over five years.

Figure 1: Main types of heating used to heat dwellings, total New Zealand, by census year



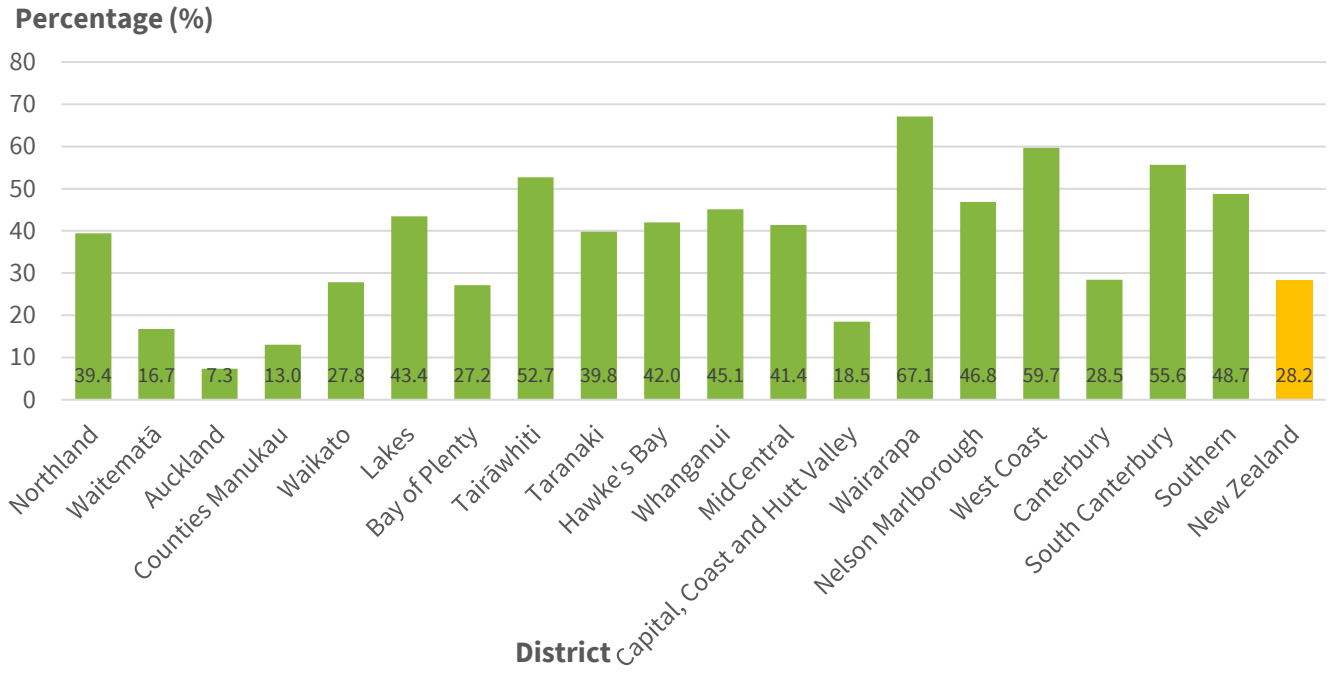
Notes: As multiple responses were allowed, the percentages do not add up to 100% for each year. Logical bounds give the lower and upper bounds of what the percentage could be, allowing for the missing data due to implementation problems with the Census.
Source: Stats NZ, 2023

Higher use of wood burners in the South Island

In 2023, wood burners remained a key heating source in several health districts (formerly district health boards). Wairarapa district reported the highest usage, with 67.1% of dwellings using wood burners as a main type of home heating, followed closely by West Coast (59.7%) and South Canterbury (55.6%) health

districts. By contrast, the three Auckland health districts (Waitematā, Auckland and Counties Manukau) reported the lowest percentages of dwellings using wood burners as a main type of heating (Figure 2).

Figure 2: Percentage of dwellings using wood burners as a main type of heating, by district, 2023

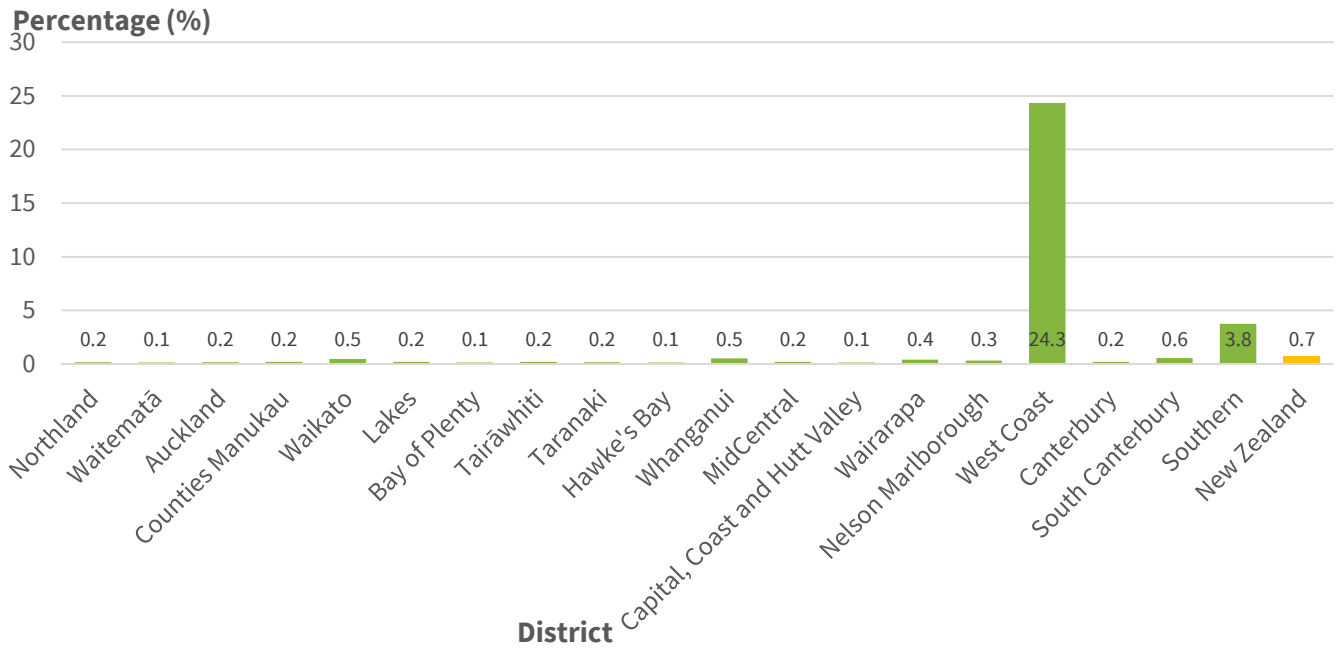


Source: Stats NZ, 2023

Coal burners were rare nationally, but common in the West Coast health district

In 2023, coal burners were used in only a small number of dwellings (11,037 dwellings) in New Zealand, representing 0.7% of dwellings. However, usage remained notably higher in a few districts. In the West Coast health district (24.3%) and the Southern health district (3.8%) the rate of dwellings using a coal burner in 2023, far exceeded that in any other districts. In contrast, all other districts reported rates below the national average (Figure 3).

Figure 3: Percentage of dwellings using coal burners as a main type of heating, by district, 2023



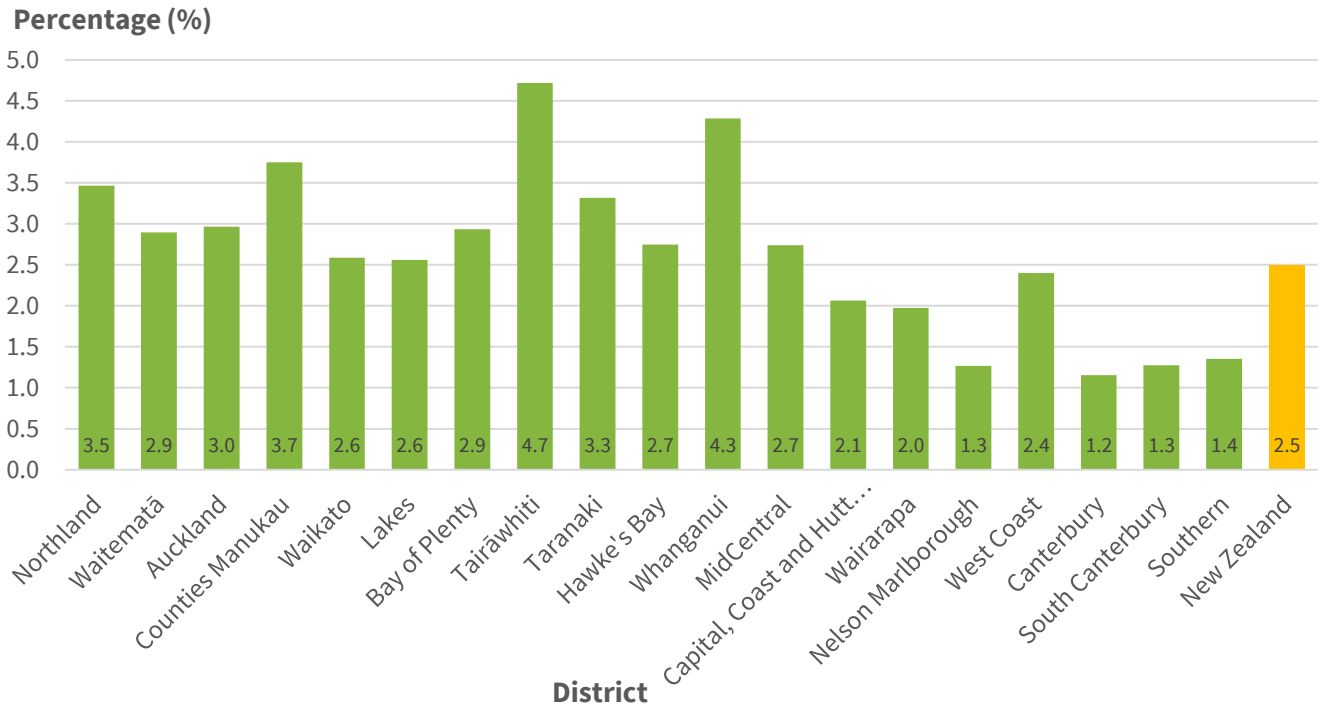
Source: Stats NZ, 2023

Portable gas heater use was highest in Tairāwhiti and Whanganui health districts in 2023

In 2023, the use of portable gas heaters varied across New Zealand's health districts, with the highest usage reported in Tairāwhiti (4.7%), Whanganui (4.3%), Counties Manukau (3.7%), and Northland (3.5%) health districts. These figures are well above the national rate of 2.5% (Figure 4).

In contrast, districts such as Canterbury (1.2%), South Canterbury (1.3%), and Nelson Marlborough (1.3%) reported the lowest use of portable gas heaters as a main type of heating.

Figure 4: Percentage of dwelllings using portable gas heaters as a main type of heating, by district, 2023



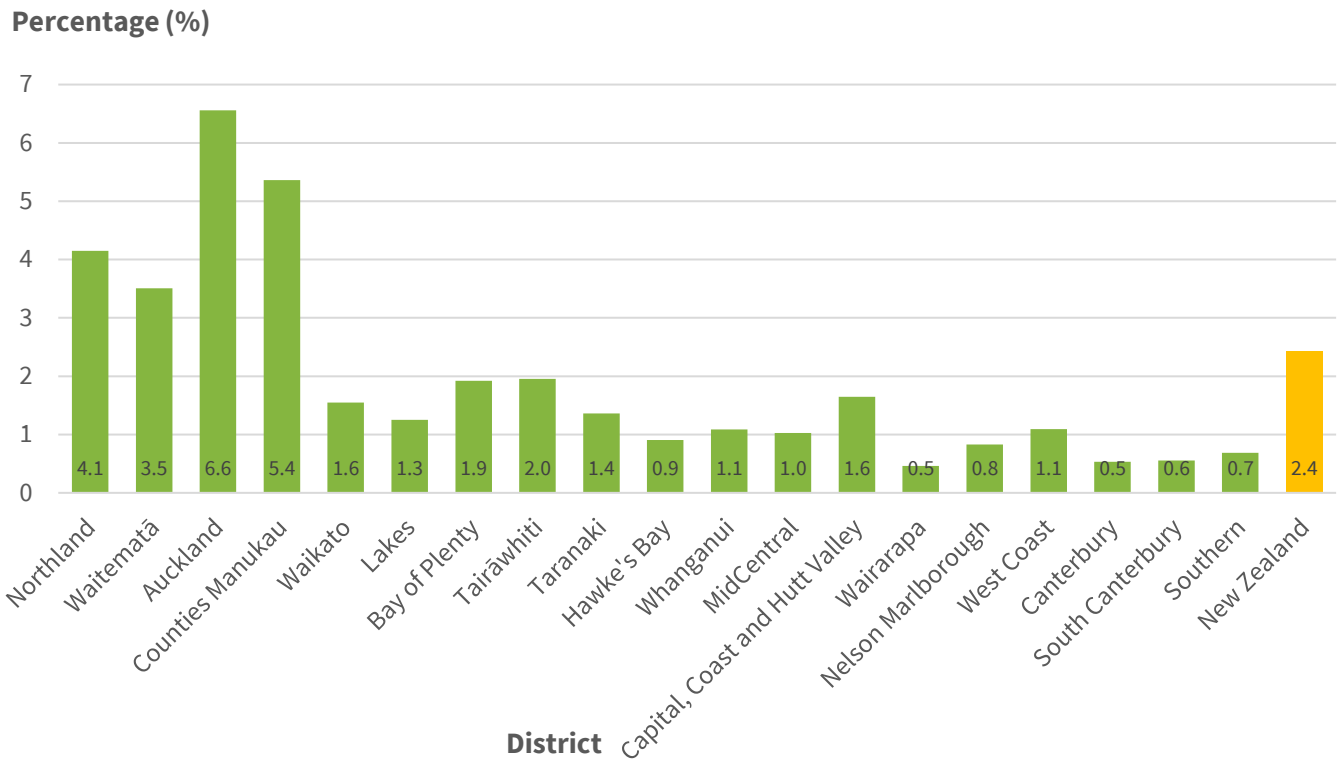
Source: Stats NZ, 2023

Dwellings with no source of heating were more common in the north

In 2023, the Auckland district had the highest percentage of dwellings without a heating source (6.6% of dwellings), about three times notably higher than the national rate of 2.4% (Figure 5). Other districts exceeding the national rate included the Counties Manukau (5.4%), Northland (4.1%), and Waitematā (3.5%) health districts.

In 2023, only 0.6% of homes in the South Island reported no heating source, compared to 3.5% in the North Island. This highlights a clear north-south divide, with the North Island showing a notably higher percentage of unheated dwellings.

Figure 5: Percentage of dwellings without a heating source, by district, 2023



Source: Stats NZ, 2023

Data for this indicator

This surveillance report presents analysis of the main types of heating used in occupied private dwellings, from the 2018 and 2023 New Zealand Census of Population and Dwellings.

The Census question asked about which types of heating were used most often in the dwelling, with the following options: heat pump, electric heater (including bar, panel, oil-filled or fan), fixed gas heater, portable gas heater, wood burner, pellet fire, coal burner, other, don't use any form of heating. Multiple responses were allowed, meaning dwellings could report using more than one type of heating.

There were some missing responses to the Census question. Logical bounds are provided to give the lower and upper logical bounds of what the percentage could be, allowing for the missing data.

For additional information, see the Metadata sheet.

References

Canterbury District Health Board. 2015. *Unflued Gas Heaters: Position statement and background paper for the Canterbury District Health Board.* URL: https://edu.cdhb.health.nz/About-CDHB/corporate-publications/Documents/CDHB%20Unflued%20Gas%20Heaters%20PositionStatement.pdf (accessed 18 July 2025).

Clair, A. and Baker, E. 2022. Cold homes and mental health harm: Evidence from the UK Household Longitudinal Study. *Social Science & Medicine*, 314, p.115461.

Howden-Chapman, P., Pierse, N., Nicholls, S., Gillespie-Bennett, J., Viggers, H., Cunningham, M., Phipps, R., Boulic, M., Fjällström, P., Free, S. and Chapman, R. 2008. Effects of improved home heating on asthma in community dwelling children: randomised controlled trial. *BMJ*, 337.

Janssen, H., Ford, K., Gascoyne, B., Hill, R., Roberts, M., Bellis, M.A. and Azam, S. 2023. Cold indoor temperatures and their association with health and well-being: a systematic literature review. *Public Health*, 224, pp.185-194.

Kuschel G, Metcalfe J, Sridhar S, Davy P, Hastings K, Mason, K, et al. 2022. *Health and air pollution in New Zealand 2016 (HAPINZ 3.0): Volume 1 – Findings and implications.* Report prepared by G Kuschel, J Metcalfe, S Sridhar, P Davy, K Hastings, K Mason, T Denne, J Berentson-Shaw, S Bell, S Hales, J Atkinson and A Woodward for Ministry for the Environment, Ministry of Health, Te Manatū Waka Ministry of Transport and Waka Kotahi NZ Transport Agency.

Liddell, C. and Guiney, C. 2015. Living in a cold and damp home: frameworks for understanding impacts on mental well-being. *Public Health*, 129(3), pp.191-199.

Mahmoud, M., Ramadan, M., Naher, S., Pullen, K. and Olabi, A.G. 2021. The impacts of different heating systems on the environment: A review. *Science of The Total Environment*, 766, p.142625.

Ministry for the Environment & Stats NZ. 2018. *New Zealand's Environmental Reporting Series: Our Air 2018.* Retrieved from www.mfe.govt.nz and www.stats.govt.nz.

Ministry for the Environment & Stats NZ. 2024. *New Zealand's Environmental Reporting Series: Our Air 2024 | Tō tātou hau takiwā.* Retrieved from environment.govt.nz.

WHO. 2013. *Review of evidence on health aspects of air pollution – REVIHAAP Project.* Copenhagen: WHO Regional Office for Europe.

Explore geographic data on interactive dashboards:

Indoor environment domain dashboard

EHINZ dashboard

Previous surveillance reports:

Main types of heating

Other related topics include:

Lower respiratory tract infections

Asthma

Damp and mouldy dwellings

Particulate Matter

Disclaimer

Author

The author of this report is Ahmad Mahmoodjanlou, ehinz@massey.ac.nz

Citation

Environmental Health Intelligence. 2025. *Home heating*. [Surveillance Report]. Wellington: Environmental Health Intelligence NZ, Massey University.

Visit the EHINZ website

Subscribe to our newsletter