

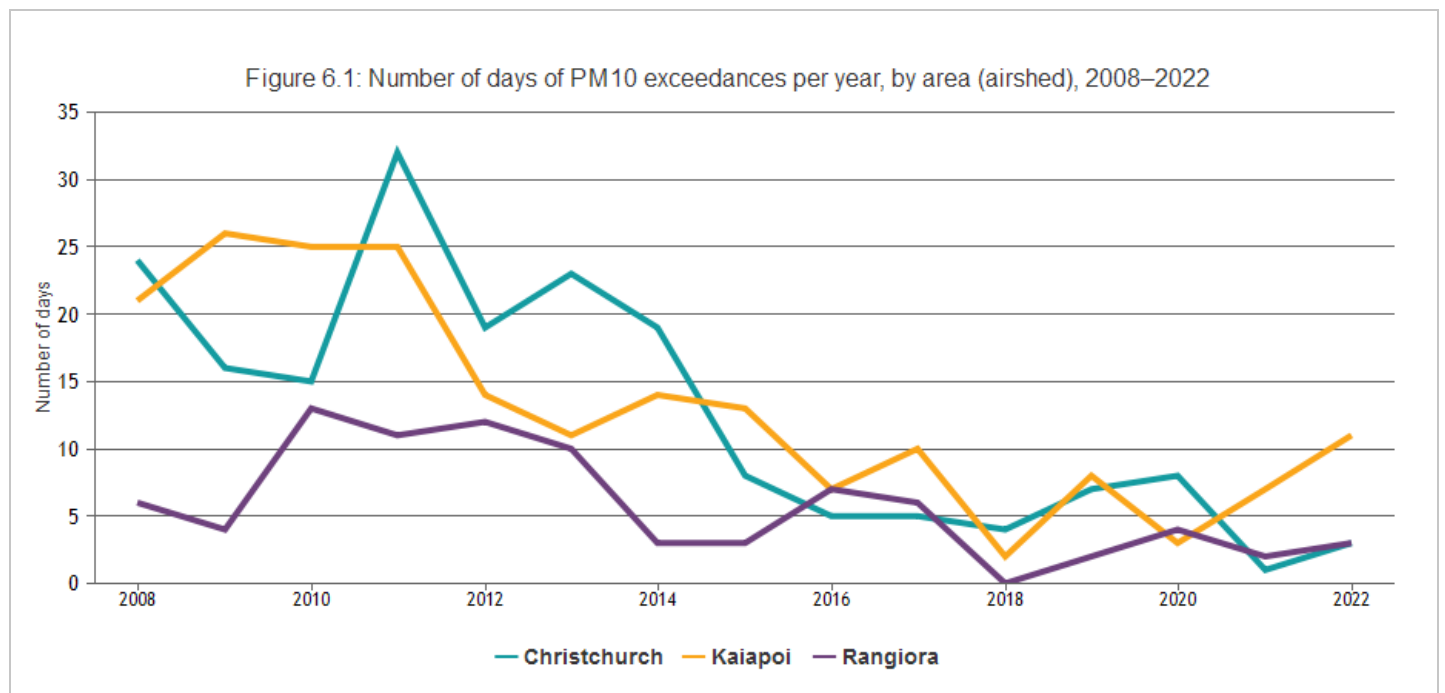
## Environment: Air quality

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The main air pollutant in Canterbury is particulate matter smaller than 10 micrometres (PM<sub>10</sub>). Environment Canterbury monitors PM<sub>10</sub> concentrations daily (in real time) across eight geographical areas in the region (known as airsheds) and reports on high pollution nights, or exceedances [26]. This allows Environment Canterbury to compare concentrations with national standards, assess variations over time and understand impacts of local weather conditions [26]. Particulate matter is emitted from the combustion of fuels, such as wood and coal (from home heating and industry) and petrol and diesel from vehicles. PM<sub>10</sub> is associated with serious health outcomes such as cancer, respiratory problems, and cardiovascular disease [27].

The Government's National Environmental Standards for Air Quality set different targets for different airsheds (based on the World Health Organization's guideline) [28]. To meet the standard, the Christchurch City and Kaiapoi airsheds must experience no more than three exceedances per year, while the Rangiora airshed must experience no more than one exceedance per year. From 2021 the target for each airshed will become no more than one exceedance per year. Exceedances are when the daily average of PM<sub>10</sub> is over 50 micrograms per cubic metre of air.

This indicator presents the number of PM<sub>10</sub> exceedances per year for Christchurch City, Kaiapoi, and Rangiora.



The figure shows substantial improvements in air quality for all three airsheds since 2008, although some variability is apparent from year to year. Provisional data for the current (2022) reporting year indicate 3 exceedances for both Christchurch and Rangiora, and 11 exceedances for the Kaiapoi airshed, up from 7 exceedances in 2021. (Note the type of instrument used to measure PM<sub>10</sub> in the Kaiapoi airshed changed from 2021, see additional notes in the Metadata).

From 2021, the National Environmental Standards for Air Quality target for each airshed changed to 'no more than one exceedance per year', therefore none of the airsheds met the standard in 2022. Some unusual winter weather patterns in 2018 resulted in unusually low PM<sub>10</sub> concentrations that year.

## Data Sources

**Source:** Environment Canterbury.

**Survey/data set:** Air quality monitoring data. Access publicly available data at the Environment Canterbury website [www.ecan.govt.nz/data/air-quality-data/](http://www.ecan.govt.nz/data/air-quality-data/)

**Source data frequency:** Data collected daily and reported annually in December.

Metadata for this indicator is available at <https://www.canterburywellbeing.org.nz/our-wellbeing/index-data>

## REFERENCES

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This is the full reference list for **Environment**.

- 1 Handy SL, Boarnet MG, Ewing R, Killingsworth RE (2002) How the built environment affects physical activity. *American Journal of Preventive Medicine* 23: 64-73.
- 2 Perdue WC, Stone LA, Gostin LO (2003) The built environment and its relationship to the public's health: The legal framework. *American Journal of Public Health* 93: 1390-1394.
- 3 Sallis JF, Spoon C, Cavill N, Engelberg JK, Gebel K, et al. (2015) Co-benefits of designing communities for active living: An exploration of literature. *International Journal of Behavioral Nutrition and Physical Activity* 12: 30.
- 4 Björk J, Albin M, Grahn P, Jacobsson H, Ardö J, et al. (2008) Recreational values of the natural environment in relation to neighbourhood satisfaction, physical activity, obesity and wellbeing. *Journal of Epidemiology and Community Health* 62: e2.
- 5 Blaschke P (2013) Health and wellbeing benefits of conservation in New Zealand. *Science for Conservation* 321.
- 6 de Dios Ortúzar J, Willumsen LG (2011) *Modelling Transport*. New York: Wiley.
- 7 Bennett H, Jones R, Keating G, Woodward A, Hales S, et al. (2014) Health and equity impacts of climate change in Aotearoa-New Zealand, and health gains from climate action. *New Zealand Medical Journal* 127.
- 8 Royal Society Te Apārangi (2017) *Human Health Impacts of Climate Change for New Zealand: Evidence Summary* Wellington.
- 9 Canterbury Earthquake Recovery Authority (2012) *CERA Wellbeing Survey 2012 Report, prepared by AC Nielsen for the Canterbury Earthquake Recovery Authority*. AC Nielsen and the Canterbury Earthquake Recovery Authority.
- 10 Cameron MP, Cochrane W, McNeill K, Melbourne P, Morrison SL, et al. (2012) Alcohol outlet density is related to police events and motor vehicle accidents in Manukau City, New Zealand. *Aust N Z J Public Health* 36: 537-542.
- 11 Livingston M, Chikritzhs T, Room R (2007) Changing the density of alcohol outlets to reduce alcohol-related problems. *Drug and Alcohol Review* 26: 557-566.
- 12 Popova S, Giesbrecht N, Bekmuradov D, Patra J (2009) Hours and days of sale and density of alcohol outlets: Impacts on alcohol consumption and damage: A systematic review. *Alcohol and Alcoholism* 44: 500-516.
- 13 Cameron MP, Cochrane W, Gordon C, Livingston M (2013) *The locally-specific impacts of alcohol outlet density in the North Island of New Zealand, 2006-2011. Research report commissioned by the Health Promotion Agency*. Wellington: Health Promotion Agency.
- 14 Browne M, Bellringer M, Greer N, Kolandai-Matchett K, Langham E, et al. (2017) *Measuring the burden of gambling harm in New Zealand*: Central Queensland University and Auckland University of Technology.
- 15 Abbott M, Bellringer M, Garrett N (2018) *New Zealand National Gambling Study: Wave 4 (2015). Report number 6*. Auckland, New Zealand: Auckland University of Technology, Gambling & Addictions Research Centre.
- 16 Rook H, Rippon R, Pauls R, Doust E, Prince J (2018) *Gambling harm reduction needs assessment*. Wellington, New Zealand: Sapere Research Group.
- 17 Kristiansen S, Trabjerg Camilla M (2016) Legal gambling availability and youth gambling behaviour: A qualitative longitudinal study. *International Journal of Social Welfare* 26: 218-229.
- 18 Welte JW, Barnes GM, Tidwell M-CO, Hoffman JH (2009) Legal gambling availability and problem gambling among adolescents and young adults. *International Gambling Studies* 9: 89-99.
- 19 Pearce J, Mason K, Hiscock R, Day P (2008) A national study of neighbourhood access to gambling opportunities and individual gambling behaviour. *Journal of Epidemiology and Community Health* 62: 862-868.
- 20 Binde P (2013) Why people gamble: A model with five motivational dimensions. *International Gambling Studies* 13: 81-97.
- 21 Wardle H, Keily R, Astbury G, Reith G (2014) 'Risky places?': Mapping gambling machine density and socio-economic deprivation. *J Gambl Stud* 30: 201-212.
- 22 Beckert J, Lutter M (2009) The inequality of fair play: Lottery gambling and social stratification in Germany. *European Sociological Review* 25: 475-488.
- 23 Orford J, Wardle H, Griffiths M, Sproston K, Erens B (2010) The role of social factors in gambling: Evidence from the 2007 British Gambling Prevalence Survey. *Community, Work & Family* 13: 257-271.

- 24 Abbott M, Binde P, Hodgins D, Korn D, Pereira A, et al. (2013) *Conceptual Framework of Harmful Gambling: An International Collaboration*. Guelph, Ontario: Problem Gambling Research Centre (OPGRC).
- 25 Easton B (2002) Gambling in New Zealand: An economic overview. In: Curtis, B, editor. *Gambling in New Zealand*. Palmerston North: Dunmore Press. pp. 45-58.
- 26 Department of Internal Affairs Gambling in Pubs and Clubs (Class 4). Wellington: The Department of Internal Affairs.
- 27 Canterbury DHB (2019) *Canterbury Wellbeing Survey, June 2019: Report prepared by Nielsen for the Canterbury District Health Board and partnering agencies*. Christchurch: Canterbury District Health Board.
- 28 Environment Canterbury Regional Council (2018) *Air Quality in the Canterbury Region- Winter 2018 Update: Environment Canterbury Environmental Snapshot Report*. Christchurch: Environment Canterbury Regional Council.
- 29 World Health Organization (2013) *Health effects of particulate matter*. Copenhagen: World Health Organization.
- 30 World Health Organization (2005) *WHO Air quality guidelines for particulate matter, ozone, nitrogen dioxide and sulfur dioxide: Global update 2005, Summary of risk assessment*.
- 31 McNamara KE, Buggy L (2017) Community-based climate change adaptation: a review of academic literature. *Local Environment* 22: 443-460.
- 32 Ebi KL, Semenza JC (2008) Community-based adaptation to the health impacts of climate change. *American Journal of Preventive Medicine* 35: 501-507.