Environment and Climate Change Canada
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POPULATION EXPOSURE TO OUTDOOR AIR POLLUTANTS

CANADIAN ENVIRONMENTAL SUSTAINABILITY INDICATORS

Canada

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CANADIAN ENVIRONMENTAL SUSTAINABILITY INDICATORS

POPULATION EXPOSURE TO OUTDOOR AIR POLLUTANTS

July 2020

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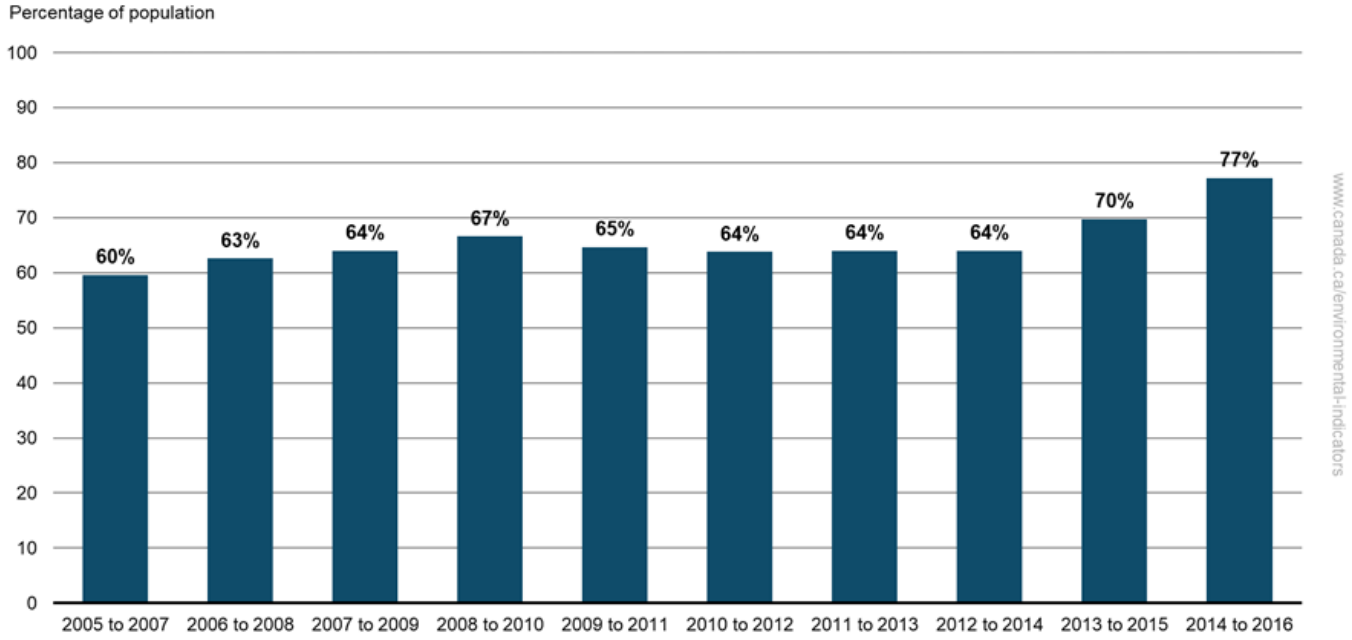
Population exposure to outdoor air pollutants

Breathing in air pollutants every day can contribute to health issues such as asthma and cardiovascular diseases. Overall, Canadians enjoy good outdoor air quality. This indicator tracks the percentage of the population living in areas where outdoor concentrations of air pollutants were below the 2020 Canadian Ambient Air Quality Standards.[1]

Key results

- Between 2005 to 2007 and 2014 to 2016, the percentage of Canadians living in areas where outdoor concentrations of air pollutants were below the 2020 Canadian Ambient Air Quality Standards increased from 60% to 77%
- The percentage remained relatively stable until the 2013 to 2015 period with values varying from 60% to 67%. It then increased to 70% in 2013 to 2015 and reached 77% in the last period. This increase can be attributed to air quality improvements in larger urban areas in Alberta and Quebec

Figure 1. Percentage of Canadians living in areas where measured outdoor concentrations of air pollutants were below the 2020 Canadian Ambient Air Quality Standards, Canada, 2005 to 2016



Data for Figure 1

Note: With the exception of the annual standard for nitrogen dioxide, the 2020 Canadian Ambient Air Quality Standards used in the indicator use 3-year average concentrations. For this reason the bar chart portrays percentage values over 3-year periods.
Source: Environment and Climate Change Canada (2019) Air Quality Research Division. Health Canada (2019) Air Health Effects Assessment Division.

The Canadian Ambient Air Quality Standards are health and environmental-based outdoor air quality objectives for pollutant concentrations in the air. The standards are intended to further protect human health and the environment and to drive continuous improvement in air quality across Canada.

[1] The indicator uses the 2020 standards for comparative purposes only. Provinces and territories are responsible for reporting on achievement of the standards.

Six (6) standards[2] for 4 air pollutants (fine particulate matter [$PM_{2.5}$], ground-level ozone [O_3], nitrogen dioxide [NO_2] and sulphur dioxide [SO_2]) were used to assess whether the population of an area was exposed to air pollutant concentrations below or above the standards. For the population of an area to be exposed to air pollutant concentrations below the standards, all air pollutants had to be below (or equal to) their respective standards.

Between 2005 to 2007 and 2014 to 2016, the 8-hour standard for O_3 was exceeded most often, followed by exceedances of the annual standard for $PM_{2.5}$. In general, there has been a slow decline in exceedances of the 24-hour standard for $PM_{2.5}$, and the annual and 1-hour standards for NO_2. Exceedances of the 1-hour standard for SO_2 had minimal influence on the results because high concentrations of SO_2 tend to be limited to areas near the SO_2 source and impact a smaller population. Despite its minimal influence on the indicator, SO_2 remains a concern because of its health impacts on populations living close to sulphur-emitting facilities. Ontario, Quebec and Alberta recorded the most exceedances of 1 or more of the 6 standards, while Newfoundland and Labrador and Manitoba have never had an exceedance.[3]

Although the O_3 standard was exceeded most often, the proportion of the population living in areas exceeding this standard decreased from 36% in 2005 to 2007 to 20% in 2014 to 2016. The O_3 standard was exceeded most often in southern parts of Ontario, where air quality may be influenced by air pollutant flows from the United States.

Between the last 2 reporting periods (2013 to 2015 and 2014 to 2016), the proportion of the population living in areas exceeding the annual standard for $PM_{2.5}$ decreased from 20% to 5%. This improvement can be attributed to fewer large cities (Montreal, Quebec City and Laval) reporting exceedances for 2014 to 2016.

About the indicator

What the indicator measures

This indicator tracks the proportion of the Canadian population living in areas where outdoor concentrations of air pollutants are below the 2020 Canadian Air Ambient Quality Standards (the standards). The indicator uses the following 2020 standards (see Table 1 for more details).

- fine particulate matter ($PM_{2.5}$): 24-hour and annual
- ground-level ozone (O_3): 8-hour
- nitrogen dioxide (NO_2): 1-hour and annual
- sulphur dioxide (SO_2): 1-hour[4]

Why this indicator is important

Canadians are exposed to air pollutants on a daily basis, and this exposure can result in adverse health and environmental effects. Exposure to some air pollutants, even at low levels, has been linked to increased heart and respiratory problems, increased hospitalization and emergency room visits and premature death. The Government of Canada estimates that each year 41 in 100 000 premature deaths in Canada can be linked to air pollution.[5]

Ground-level O_3 and $PM_{2.5}$ are key components of smog and 2 of the most widespread air pollutants. Exposure to these pollutants, even at very low levels, has been associated with pulmonary, cardiovascular and respiratory health issues. Exposure to O_3 can cause throat irritation, coughing, shortness of breath and reduced lung

[2] The indicator uses the following 2020 Canadian Ambient Air Quality Standards: a 24-hour standard and an annual standard for fine particulate matter, an 8-hour standard for ground-level ozone, a 1-hour standard and an annual standard for nitrogen dioxide and a 1-hour standard for sulphur dioxide.

[3] These results may be influenced by the number and placement of monitoring stations.

[4] The annual standard for sulphur dioxide is not used in this indicator because it is based on environmental effects and not human health-based effects.

[5] Health Canada (2019) Health Impacts of Air Pollution in Canada (PDF; 695 kB). Retrieved on January 15, 2020.

function, and can also aggravate existing conditions, such as asthma or other chronic lung diseases. Exposure to $PM_{2.5}$ can lead to health issues, such as asthma attacks, chronic bronchitis and heart attacks.

Exposure to SO_2 and NO_2 can irritate the lungs, reduce lung function and increase susceptibility to allergens in people with asthma. Long-term exposure to NO_2 may contribute to allergies and asthma development and may increase susceptibility to respiratory infections. Inhalation of NO_2 has also been linked to effects on the cardiovascular system, some reproductive effects and premature death. Like $PM_{2.5}$ and O_3, NO_2 is known to have adverse health effects occurring even at low concentrations.

Besides their direct effects on health, NO_2 and SO_2 contribute to levels of $PM_{2.5}$ and O_3 in air and impact the environment. Nitrogen dioxide (NO_2) contributes to the formation of O_3 and $PM_{2.5}$, and has major impacts on acid deposition (sometimes termed "acid rain") and eutrophication. Similarly, SO_2 is also a major contributor to acid deposition.

Improved air quality reduces heart attacks, hospital visits and allergy and child asthma attacks, and prevents lost school and work days. Cleaner air can also reduce damage to crops, forests, surface waters and infrastructure such as buildings and bridges.[6]

Consult the Air pollution: drivers and impacts web page for information on the impacts of air pollution on human health, the economy and the environment.

Safe and healthy communities

This indicator tracks progress on the 2019 to 2022 Federal Sustainable Development Strategy, supporting the target: Increase the percentage of Canadians living in areas where air quality standards are achieved from 70% in 2015 to 85% in 2030. The most recent data available shows that, between 2005 to 2007 and 2014 to 2016, the percentage of Canadians living in areas where outdoor concentrations of air pollutants were below the 2020 Canadian Ambient Air Quality Standards increased from 60% to 77%.

In addition, the indicator contributes to 2 of the Sustainable Development Goals of the 2030 Agenda for Sustainable Development. It is linked to the 2030 Agenda's Goal 3, Good Health and Well-being and Target 3.9, "By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination" and Goal 11, Sustainable Cities and Communities and Target 11.6, "By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management."

Related indicators

The Air health trends indicator provides an overview of the public health impacts attributable to outdoor air pollution in Canada.

The Air quality indicators track ambient concentrations of $PM_{2.5}$, O_3, SO_2, NO_2 and VOCs at the national and regional level and at local monitoring stations.

The Human exposure to harmful substances indicators track the concentrations of 4 substances (mercury, lead, cadmium and bisphenol A) in Canadians.

[6] Canadian Council of Ministers of the Environment (2017) State of the Air. Retrieved on January 15, 2020.

Data sources and methods

Data sources

The indicator is calculated from air pollutant concentration data and population statistics.

The air pollutant concentration data are taken from Environment and Climate Change Canada's Canada-wide Air Quality Database. The population data were retrieved from Statistics Canada's demographic statistics.

More information

Air pollution concentration data

The Canada-wide Air Quality Database contains data collected through various monitoring networks.

- The National Air Pollution Surveillance Program is a collaboration between Environment and Climate Change Canada, provincial and territorial governments and some municipalities
- For ground-level ozone, the Canadian Air and Precipitation Monitoring Network is operated by Environment and Climate Change Canada
    - Under this network, stations were established to research and monitor air pollution outside urban areas
- Other provincial, territorial and municipal monitoring stations that report their air quality data to the database

Population data

Population statistics for the years 2005 to 2016 used in this indicator were obtained from Statistics Canada in September 2017.

- Census metropolitan area population data were retrieved from the Annual demographic estimates by census metropolitan area, age and sex, based on the Standard Geographical Classification (SGC) 2011
- Census division population data were retrieved from the Annual demographic estimates by census division, age and sex, based on the Standard Geographical Classification (SGC) 2011
- Census subdivision population data and Canadian population data were obtained through Statistics Canada's Census Program and through communications with Statistics Canada's Demography Division

Canadian Ambient Air Quality Standards

In October 2012, the ministers of the Environment of all provinces and territories, except Quebec,[7] agreed to begin implementing the Air Quality Management System. This system provides a comprehensive, cross-Canada framework for collaborative action to further protect human health and the environment through continuous improvement of air quality. Under the system, the Canadian Ambient Air Quality Standards (CAAQS) are drivers for air quality improvement across the country. The CAAQS are health and environmental-based air quality objectives for pollutant concentrations in outdoor air. Together with the management levels,[8] the CAAQS act as a benchmark to support continuous improvement of air quality. The standards are not "pollute-up-to levels" and the Air Quality Management System encourages governments to take action to improve air quality, considering that some pollutants can affect human health even at concentrations below the standards.

[7] Although Quebec supports the general objectives of the Air Quality Management System, it will not implement the system since it includes federal industrial emission requirements that duplicate Quebec's regulations. However, Quebec is collaborating with jurisdictions on developing other elements of the system, notably air zones and airsheds.

[8] Management levels refer to the air zone management framework. More information can be found in the Canadian Council of Ministers of the Environment's Guidance document on air zone management (PDF; 225 kB).

Under the *Canadian Environmental Protection Act, 1999*, the 2020 CAAQS[9] were established:

- for fine particulate matter and ozone in May 2013
- for sulphur dioxide in October 2017
- for nitrogen dioxide in December 2017

Table 1. Canadian Ambient Air Quality Standards for 2020

Pollutant	Averaging time	2020 Standard (numerical value)	Statistical form
Fine particulate matter	24-hour (calendar day)	27 µg/m^3	The 3-year average of the annual 98th percentile of the daily 24-hour average concentrations
Fine particulate matter	Annual (calendar year)	8.8 µg/m^3	The 3-year average of the annual average of the daily 24-hour average concentrations
Ozone	8-hour	62 ppb	The 3-year average of the annual 4th-highest of the daily maximum 8-hour average concentrations
Nitrogen dioxide	1-hour	60 ppb	The 3-year average of the annual 98th percentile of the daily maximum 1-hour average concentrations
Nitrogen dioxide	Annual (calendar year)	17.0 ppb	The arithmetic average over a single calendar year of all 1-hour average concentrations
Sulphur dioxide	1-hour	70 ppb	The 3-year average of the annual 99th percentile of the daily maximum 1-hour average concentrations
Sulphur dioxide[A]	Annual (calendar year)	5.0 ppb	The arithmetic average over a single calendar year of all 1-hour average concentrations

Note: [A] The annual standard for sulphur dioxide is not used in this indicator because it is based on environmental effects and not human health-based effects. Units: µg/m^3 = micrograms per cubic metre, ppb = parts per billion.

Methods

The indicator is calculated by comparing the average pollutant concentration for each geographical area with the respective Canadian Ambient Air Quality Standards (CAAQS). The total population of all geographical areas where the average concentrations for all pollutants are less than or equal to the respective standards are compared to the national population.

More information

Data completeness criteria

Concentration values at monitoring stations are considered to be "valid" and are used in the calculation of the indicator only if they meet the related data completeness criteria specified in Table 2.

[9] More stringent CAAQS for sulphur dioxide, nitrogen dioxide and ozone have been established for 2025. For consistency, this indicator will continue to reference the 2020 CAAQS.

Table 2. Monitoring station data completeness criteria used in the calculation of the indicator

Pollutant	Averaging time	Data completeness and calculation criteria
Fine particulate matter	24-hour (calendar day) [A]	• A daily 24-hour average concentration was considered valid if at least 75% (18 hours) of the 1-hour concentrations were available on a given day • A 98th percentile of the daily average concentration was considered valid if at least 75% of the daily average concentrations were available for the year and at least 60% of the daily average concentrations were available in each quarter[B] of a calendar year • For the 3-year average, at least 2 of the 3 years were needed
Fine particulate matter	Annual (calendar year)	• A daily 24-hour average concentration was considered valid if at least 75% (18 hours) of the 1-hour concentrations were available on a given day • An annual average concentration was considered valid if at least 75% of the daily average concentrations were available for the year and at least 60% of the daily average concentrations were available in each quarter[B] of a calendar year • For the 3-year average, at least 2 of the 3 years were needed
Ozone	8-hour[A]	• Rolling (or moving) 8-hour average concentrations were calculated for each hour of the day from the 1-hour average concentrations, resulting in up to 24 8-hour average concentrations per day • To be valid a rolling 8-hour average concentration must have at least 6 1-hour average concentrations • A daily maximum 8-hour average concentration was considered valid if at least 75% (18) of the 8-hour rolling average concentrations were available in the day • The annual 4th-highest daily maximum 8-hour average concentration was considered valid if there were at least 75% of all daily maximum 8-hour average concentrations in the second and third quarters combined (April 1 to September 30) • For the 3-year average, at least 2 of the 3 years were needed
Sulphur dioxide	1-hour[A]	• The daily maximum 1-hour average concentration was considered valid if at least 75% (18 hours) of the hourly concentrations were available on a given day • The annual 99th percentile of the daily maximum 1-hour average concentrations was considered valid if at least 75% of all the daily maximum 1-hour average concentrations for the year were available and at least 60% in each quarter were available • For the 3-year average, at least 2 of the 3 years were needed
Nitrogen dioxide	1-hour[A]	• The daily maximum 1-hour average concentration was considered valid if at least 75% (18) of the hourly concentrations were available on a given day • The 98th percentile of the daily maximum 1-hour average concentrations was considered valid if at least 75% of the daily maximum 1-hour average concentrations for the year were available and at least 60% in each quarter were available • For the 3-year average, at least 2 of the 3 years were needed
Nitrogen dioxide	Annual (calendar year)	• An annual average concentration was considered valid if at least 75% of all the 1 hour average concentrations were available for the year and at least 60% were available in each quarter

Note: [A] If a monitoring station exceeded the 24-hour standard for fine particulate matter, the 8-hour standard for ozone, the 1-hour standard for sulphur dioxide or the 1-hour standard for nitrogen dioxide, it was included in the results even if the data completeness criteria were not satisfied. [B] The calendar quarters are as follows: quarter 1 from January 1 to March 31; quarter 2 from April 1 to June 30; quarter 3 from July 1 to September 30 and quarter 4 from October 1 to December 31.

Geographical areas

Each air quality monitoring station is assigned to a geographical area. For fine particulate matter, ground-level ozone and nitrogen dioxide, these areas are either a Statistics Canada's census metropolitan area, census division or census subdivision. For each year from 2005 to 2016, population counts are allocated to each geographical area with at least 1 monitoring station.

Because high sulphur dioxide concentrations tend to be localized around point sources, the geographical area for sulphur dioxide was set to a 2 kilometre (km) radius around the station. Only population data within the 2 km boundary of the monitoring station were used. In this case, Statistics Canada's dissemination block data were used to calculate the population within the 2 km boundary of a station.

Refer to Annex B for a list of geographic areas used to calculate the indicator.

Air pollutant concentrations by geographical area

For each air pollutant and averaging time, the following steps were used to assign a concentration value to each geographical area.

1. A concentration value was first calculated for each monitoring station in the area using the data completeness and calculation criteria outlined in Table 2
2. The arithmetic average was calculated from the concentration values of all monitoring stations in the geographical area

For example, Ottawa has 2 monitoring stations with enough data. The annual average concentration of fine particulate matter for Ottawa is calculated by using the following steps.

1. The daily 24-hour average concentration for each monitoring station was calculated
    - if at least 75% (18 hours) of the 1-hour concentrations for the station were available on a given day (from Table 2)
2. An annual average concentration for each monitoring station was then calculated
    - if at least 75% of the daily average concentrations were available for the year and at least 60% of the daily average concentrations were available in each quarter of a calendar year (from Table 2)
3. Finally, the annual average concentration was calculated using the arithmetic average of the annual average concentration of each monitoring station within Ottawa

Comparison with the standards and total population below the standards

The concentration value for each pollutant was then compared to the respective standard to determine if the population in the geographical area was exposed to pollutant levels less than or equal to the corresponding standard. This comparison was done for each pollutant and for each standard. If the concentration value for the area was less than or equal to the respective standard for all 6 CAAQS, the population count was recorded for the geographical area. If at least 1 standard was exceeded, the population for the geographical area was set to 0.The population from all geographical areas with average concentrations less than or equal to all CAAQS were then added together. The sum was then divided by the total Canadian population and multiplied by 100 to produce the percentage of the population that lives in an area where air pollutant concentrations were below the standards. The general formula is as follows:

100 * (sum of the population below all CAAQS ÷ total population of Canada)

Where the population below all CAAQS = the population of Canadians living in geographical areas where ambient concentrations of ozone, fine particulate matter, sulphur dioxide[10] and nitrogen dioxide are all less than or equal to their respective standard.

[10] The annual standard for sulphur dioxide is not used in this indicator because it is based on environmental effects and not human health-based effects.

Caveats and limitations

From 2005 to 2016, approximately 62% of the population lived in areas covered by selected air quality monitoring stations that meet the data completeness criteria. Refer to Annex B for a list of geographical areas used in the indicator. The indicator assumes that the remainder of the population lives in areas where outdoor concentrations of ozone, fine particulate matter, sulphur dioxide and nitrogen dioxide are less than or equal to their standards. Populations in northern regions of the country have less coverage, as monitoring stations tend to be situated near urban areas with a higher population density.

More information

This indicator is used to report the percentage of the Canadian population living in areas where outdoor concentrations of air pollutants were below (or equal to) the 2020 Canadian Ambient Air Quality Standards (CAAQS). The indicator is not used for formally reporting the achievement status of the standards. Under the Air Quality Management System, reporting on achievement of the standards is a provincial and territorial responsibility.

The methods used to calculate the indicator differ from those used to report the achievement status of the CAAQS. For example, for the indicator, the average concentration from all monitoring stations in the geographical area is used to compare against the standard. Whereas, for reporting the CAAQS, the monitoring station with the highest concentration for a geographical area is used. This difference can account for a geographical area exceeding a standard under CAAQS reporting, but not exceeding the standard under the indicator.

Populations not covered by monitoring stations were assumed to be below the standards. While this results in some uncertainty regarding the estimated population below the standards, a sensitivity analysis indicated that this assumption does not result in a large error. Ongoing research and analysis is being conducted on methods that will consider the entire population.

Some data collected at monitoring stations cannot be used in calculating the indicator because the data do not meet the data completeness criteria. The removal of this data can influence the number of geographical areas used per reporting period. Refer to Annex B for a list of geographical areas used in the indicator.

The indicator uses the actual concentrations measured at monitoring stations. Some of these concentrations may have been influenced by pollutant sources in other countries and by smoke from forest fires both within and outside Canada.

Resources

References

Canadian Council of Ministers of the Environment (2012) Guidance document on achievement determination Canadian Ambient Air Quality Standards for fine particulate matter and ozone (PDF; 264 kB). Retrieved on January 15, 2020.

Canadian Council of Ministers of the Environment (2014) Air Quality Management System. Retrieved on January 15, 2020.

Canadian Council of Ministers of the Environment (2017) State of the air. Retrieved on January 15, 2020.

Canadian Council of Ministers of the Environment (2019) Guidance document on air zone management (PDF; 225 kB). Retrieved on January 15, 2020.

Environment and Climate Change Canada (2019) National Air Pollution Surveillance Program. Retrieved on January 15, 2020.

Government of Canada (2019) Health effects of air pollution. Retrieved on January 15, 2020.

Related information

Air pollution: drivers and impacts

Canadian Smog Science Assessment Highlights and Key Messages

Smog: causes and effects

Annexes

Annex A. Data tables for the figures presented in this document

Table A.1. Data for Figure 1. Percentage of Canadians living in areas where measured outdoor concentrations of air pollutants were below the 2020 Canadian Ambient Air Quality Standards, Canada, 2005 to 2016

Period	Proportion of the population where air pollutants were below the standards (percentage)
2005 to 2007	59.6
2006 to 2008	62.6
2007 to 2009	64.0
2008 to 2010	66.6
2009 to 2011	64.7
2010 to 2012	63.8
2011 to 2013	64.0
2012 to 2014	64.0
2013 to 2015	69.8
2014 to 2016	77.2

Note: With the exception of the annual standard for nitrogen dioxide, the 2020 Canadian Ambient Air Quality Standards used in the indicator use 3-year average concentrations. For this reason the table portrays percentage values over 3-year periods.
Source: Environment and Climate Change Canada (2019) Air Quality Research Division. Health Canada (2019) Air Health Effects Assessment Division.

Annex B. Geographical areas used to calculate the indicator

Table B.1. Geographical areas used to calculate the indicator

Census subdivision, census metropolitan area or census division	Province or territory	Community	Reporting periods used
1	Newfoundland and Labrador	St. John's	2005-2007 to 2014-2016
1002005	Newfoundland and Labrador	Burin	2014-2016
1005018	Newfoundland and Labrador	Corner Brook	2005-2007 to 2014-2016
1006017	Newfoundland and Labrador	Grand Falls-Windsor	2005-2007 to 2014-2016
1010032	Newfoundland and Labrador	Labrador City	2014-2016
1207001	Nova Scotia	Kings, Subd. A	2005-2007 to 2013-2015
1209034	Nova Scotia	Halifax	2005-2007 to 2014-2016
1212004	Nova Scotia	Pictou	2005-2007 to 2014-2016
1215002	Nova Scotia	Port Hawkesbury	2005-2007 to 2014-2016
1217030	Nova Scotia	Cape Breton	2005-2007 to 2014-2016
1301006, 310	New Brunswick	Saint John	2005-2007 to 2014-2016
1302026	New Brunswick	Saint Andrews	2005-2007 to 2014-2016
1307022	New Brunswick	Moncton	2005-2007 to 2014-2016
1310032	New Brunswick	Fredericton	2005-2007 to 2014-2016
1315011	New Brunswick	Bathurst	2005-2007 to 2014-2016
2413045	Quebec	Auclair	2005-2007 to 2014-2016
2418040	Quebec	Notre-Dame-du-Rosaire	2005-2007 to 2014-2016
2423027, 2423	Quebec	Québec	2005-2007 to 2014-2016
2429020	Quebec	Saint-Hilaire-de-Dorset	2005-2007 to 2014-2016
2434058	Quebec	Deschambault-Grondines	2005-2007 to 2014-2016
2437067	Quebec	Trois-Rivières	2005-2007 to 2013-2015
2438020	Quebec	Lemieux	2005-2007 to 2014-2016
2439025	Quebec	Tingwick	2005-2007 to 2014-2016
2441027	Quebec	La Patrie	2005-2007 to 2014-2016
2443027	Quebec	Sherbrooke	2005-2007 to 2014-2016
2445093	Quebec	Eastman	2005-2007 to 2014-2016
2450090	Quebec	Saint-Zéphirin-de-Courval	2005-2007 to 2014-2016
2451080	Quebec	Charette	2005-2007 to 2014-2016
2454090	Quebec	Saint-Simon	2005-2007 to 2014-2016
2456083	Quebec	Saint-Jean-sur-Richelieu	2005-2007 to 2014-2016
2458007	Quebec	Brossard	2005-2007 to 2014-2016

Census subdivision, census metropolitan area or census division	Province or territory	Community	Reporting periods used
2458227	Quebec	Longueuil	2005-2007 to 2014-2016
2459020	Quebec	Varennes	2005-2007 to 2014-2016
2460028	Quebec	L'Assomption	2005-2007 to 2014-2016
2465005	Quebec	Laval	2005-2007 to 2014-2016
2466023, 2466	Quebec	Montréal	2005-2007 to 2014-2016
2469070	Quebec	Saint-Anicet	2005-2007 to 2014-2016
2478047	Quebec	Saint-Faustin–Lac-Carré	2005-2007 to 2014-2016
2479097	Quebec	Ferme-Neuve	2005-2007 to 2014-2016
2481017	Quebec	Gatineau	2005-2007 to 2014-2016
2482035	Quebec	La Pêche	2005-2007 to 2014-2016
2485005	Quebec	Témiscaming	2005-2007 to 2013-2015
2486042	Quebec	Rouyn-Noranda	2005-2007 to 2014-2016
2489040	Quebec	Senneterre	2005-2007 to 2014-2016
2490027	Quebec	Lac-Édouard	2005-2007 to 2014-2016
2491050	Quebec	La Doré	2005-2007 to 2014-2016
2494068	Quebec	Saguenay	2005-2007 to 2014-2016
3501012	Ontario	Cornwall	2005-2007 to 2014-2016
3501020	Ontario	South Dundas	2005-2007 to 2013-2015
3506008	Ontario	Ottawa	2005-2007 to 2014-2016
3510010	Ontario	Kingston	2005-2007 to 2014-2016
3512005	Ontario	Belleville	2005-2007 to 2013-2015
3515014	Ontario	Peterborough	2005-2007 to 2014-2016
3518013	Ontario	Oshawa	2005-2007 to 2014-2016
3519048	Ontario	Newmarket	2005-2007 to 2014-2016
3520005	Ontario	Toronto	2005-2007 to 2014-2016
3521005	Ontario	Mississauga	2005-2007 to 2014-2016
3521010	Ontario	Brampton	2005-2007 to 2014-2016
3523008	Ontario	Guelph	2005-2007 to 2014-2016
3524001	Ontario	Oakville	2005-2007 to 2014-2016
3524002	Ontario	Burlington	2005-2007 to 2014-2016
3525005	Ontario	Hamilton	2005-2007 to 2014-2016
3526053	Ontario	St. Catharines	2005-2007 to 2014-2016
3528052	Ontario	Norfolk County	2005-2007 to 2014-2016
3529006	Ontario	Brantford	2005-2007 to 2014-2016
3530013	Ontario	Kitchener	2005-2007 to 2014-2016
3534020	Ontario	Central Elgin	2005-2007 to 2014-2016
3536020	Ontario	Chatham-Kent	2005-2007 to 2014-2016

Census subdivision, census metropolitan area or census division	Province or territory	Community	Reporting periods used
3537016	Ontario	Essex	2005-2007 to 2013-2015
3537039	Ontario	Windsor	2005-2007 to 2014-2016
3538030	Ontario	Sarnia	2005-2007 to 2014-2016
3539036	Ontario	London	2005-2007 to 2014-2016
3540005	Ontario	South Huron	2005-2007 to 2014-2016
3541024	Ontario	Kincardine	2005-2007 to 2014-2016
3543042	Ontario	Barrie	2005-2007 to 2014-2016
3544027	Ontario	Lake of Bays	2005-2007 to 2014-2016
3547090	Ontario	Laurentian Hills	2005-2007 to 2014-2016
3548044	Ontario	North Bay	2005-2007 to 2014-2016
3549032	Ontario	Parry Sound	2005-2007 to 2014-2016
3553005	Ontario	Greater Sudbury	2005-2007 to 2014-2016
3557061	Ontario	Sault Ste. Marie	2005-2007 to 2014-2016
3558004	Ontario	Thunder Bay	2005-2007 to 2014-2016
4607062	Manitoba	Brandon	2005-2007 to 2014-2016
4611040, 602	Manitoba	Winnipeg	2005-2007 to 2014-2016
4706027	Saskatchewan	Regina	2005-2007 to 2014-2016
4711066	Saskatchewan	Saskatoon	2005-2007 to 2014-2016
4715066	Saskatchewan	Prince Albert	2005-2007 to 2014-2016
4801006	Alberta	Medicine Hat	2005-2007 to 2014-2016
4802012	Alberta	Lethbridge	2005-2007 to 2014-2016
825	Alberta	Calgary	2005-2007 to 2014-2016
4808011	Alberta	Red Deer	2005-2007 to 2014-2016
4809002	Alberta	Clearwater County	2005-2007 to 2014-2016
4810058	Alberta	Lamont County	2005-2007 to 2014-2016
4810068	Alberta	Improvement District No. 13 Elk Island	2005-2007 to 2013-2015
4811061, 835	Alberta	Edmonton	2005-2007 to 2014-2016
4812002	Alberta	Cold Lake	2005-2007 to 2014-2016
4812014	Alberta	St. Paul County No. 19	2005-2007 to 2014-2016
4814003	Alberta	Yellowhead County	2005-2007 to 2013-2015
4814019	Alberta	Hinton	2005-2007 to 2014-2016
4814024	Alberta	Edson	2005-2007 to 2014-2016
860	Alberta	Wood Buffalo	2005-2007 to 2014-2016
4818015	Alberta	Greenview No. 16	2005-2007 to 2013-2015
4819006	Alberta	Grande Prairie County No. 1	2005-2007 to 2014-2016
4819012	Alberta	Grande Prairie	2005-2007 to 2014-2016

Census subdivision, census metropolitan area or census division	Province or territory	Community	Reporting periods used
5903045	British Columbia	Castlegar	2014-2016
5909009	British Columbia	Hope	2005-2007 to 2014-2016
5909020	British Columbia	Chilliwack	2005-2007 to 2014-2016
932	British Columbia	Abbotsford	2005-2007 to 2014-2016
933	British Columbia	Vancouver	2005-2007 to 2014-2016
5909032	British Columbia	Kent	2014-2016
935	British Columbia	Victoria	2005-2007 to 2014-2016
5919012	British Columbia	Duncan	2005-2007 to 2014-2016
5921007	British Columbia	Nanaimo	2005-2007 to 2014-2016
5923019	British Columbia	Ucluelet	2014-2016
5924034	British Columbia	Campbell River	2005-2007 to 2013-2015
5926010	British Columbia	Courtenay	2005-2007 to 2014-2016
5931006	British Columbia	Squamish	2005-2007 to 2014-2016
5931020	British Columbia	Whistler	2005-2007 to 2014-2016
5933042	British Columbia	Kamloops	2005-2007 to 2014-2016
5935010	British Columbia	Kelowna	2005-2007 to 2014-2016
5937014	British Columbia	Vernon	2005-2007 to 2014-2016
5941009	British Columbia	Williams Lake	2005-2007 to 2014-2016
5941013	British Columbia	Quesnel	2005-2007 to 2014-2016
5949011	British Columbia	Terrace	2014-2016
5951043	British Columbia	Smithers	2005-2007 to 2014-2016
5953023	British Columbia	Prince George	2005-2007 to 2014-2016
6001009	Yukon	Whitehorse	2005-2007 to 2013-2015
6101017	Northwest Territories	Inuvik	2005-2007 to 2014-2016
6102007	Northwest Territories	Norman Wells	2005-2007 to 2014-2016
6106023	Northwest Territories	Yellowknife	2005-2007 to 2014-2016

Additional information can be obtained at:

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