

December 15, 2019 to January 4, 2020 (weeks 51 to 01)

Overall Summary

- Influenza activity continued to increase during this three-week period.
- Influenza A(H3N2), A(H1N1) and B continue to co-circulate. Although influenza A remains the predominant circulating type, influenza B continues to circulate at higher levels than usual. In addition, while A(H3N2) remains the predominant subtype for the season to date, the proportion of A(H1N1) appears to be increasing.
- Differences in the predominant circulating type/subtype by age-group are observed. The majority (90%) of sentinel site hospitalizations among adults are associated with influenza A, while pediatric sentinel hospitalizations are a mix of influenza A (46%) and B (54%).

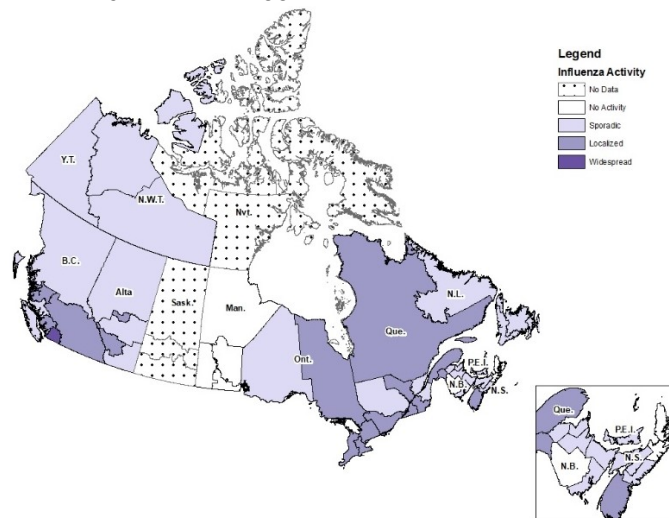
Influenza/Influenza-like Illness (ILI) Activity (geographic spread)

During week 01, influenza activity was reported in 11 provinces and territories (Figure 1).

- 87% of regions reported influenza activity; among these 56% reported sporadic activity, 41% reported localized activity, and 2% (1 region) reported widespread activity.

Figure 1 – Map of influenza/ILI activity by province and territory, Canada, week 2019-01

Number of Regions Reporting in Week 01: 47 out of 53



Laboratory-Confirmed Influenza Detections

The percentage of laboratory tests positive for influenza increased in weeks 51 and 52, and decreased slightly in week 01. The proportion of influenza A detections increased over these three weeks, a change to the trend observed in weeks 44 through 50 when the proportion of detections of influenza B was increasing. The proportion of A(H1N1) among subtyped influenza A detections increased during this three-week period.

The following results were reported from sentinel laboratories across Canada (Figures 2 and 3):

- The percentage of tests positive for influenza increased from 21% in week 51 to 28% in week 52, then decreased slightly to 27% in week 01. This is higher than the average (23%) for week 01 over the past five seasons.
- A total of 9,119 laboratory detections of influenza were reported during this three-week period, of which 56% (5,104) were influenza A. The proportion of detections that were influenza A decreased from 85% in week 44 to 50% in week 50, then increased in recent weeks to 60% in week 01.
- The percentage of tests positive for influenza B (10.6% in week 01) continues to be almost 5 times greater than the average (2.6%) for this time of year.
- Among subtyped influenza A detections, a mix of A(H1N1) and A(H3N2) continued to be detected over this three-week period. The proportion of A(H1N1) increased from 53% in week 51 to 66% in week 01.

To date this season (weeks 35 to 01), 12,547 laboratory detections of influenza were reported:

- 57% (7,184) were influenza A. The percentage of tests positive for influenza B to date this season continues to follow a similar trend to the 2017-18 season, when influenza A and B circulated in almost equal proportions.
- Among subtyped influenza A detections (2,159), a slight majority (53%) have been influenza A(H3N2).

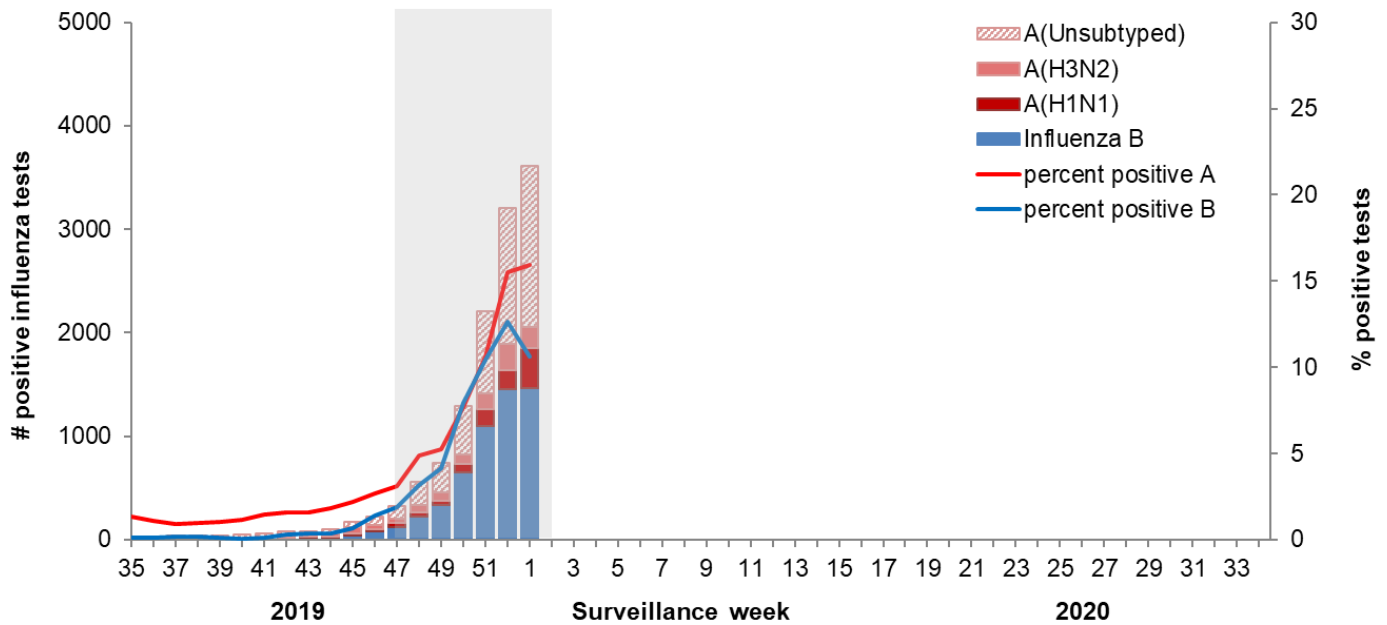
Detailed information on age and type/subtype has been received for 10,404 laboratory-confirmed influenza cases (Table 1). To date this season (weeks 35 to 01):

- Among cases of influenza A(H3N2) (1,083), the largest proportion were in adults 65 years of age and older (46%).
- Cases of influenza B (4,397) were primarily in younger age groups; 59% of cases were under 20 years of age and 30% between 20 and 44 years of age.
- Among cases of influenza A(H1N1) (800), nearly equal proportions of cases were in adults 20-44 years, 45-64 years, and 65 years of age and older (approximately 28% of cases were in each age-group).

For more detailed weekly and cumulative influenza data, see the text descriptions for [Figures 2 and 3](#) or the [Respiratory Virus Detections in Canada Report](#).

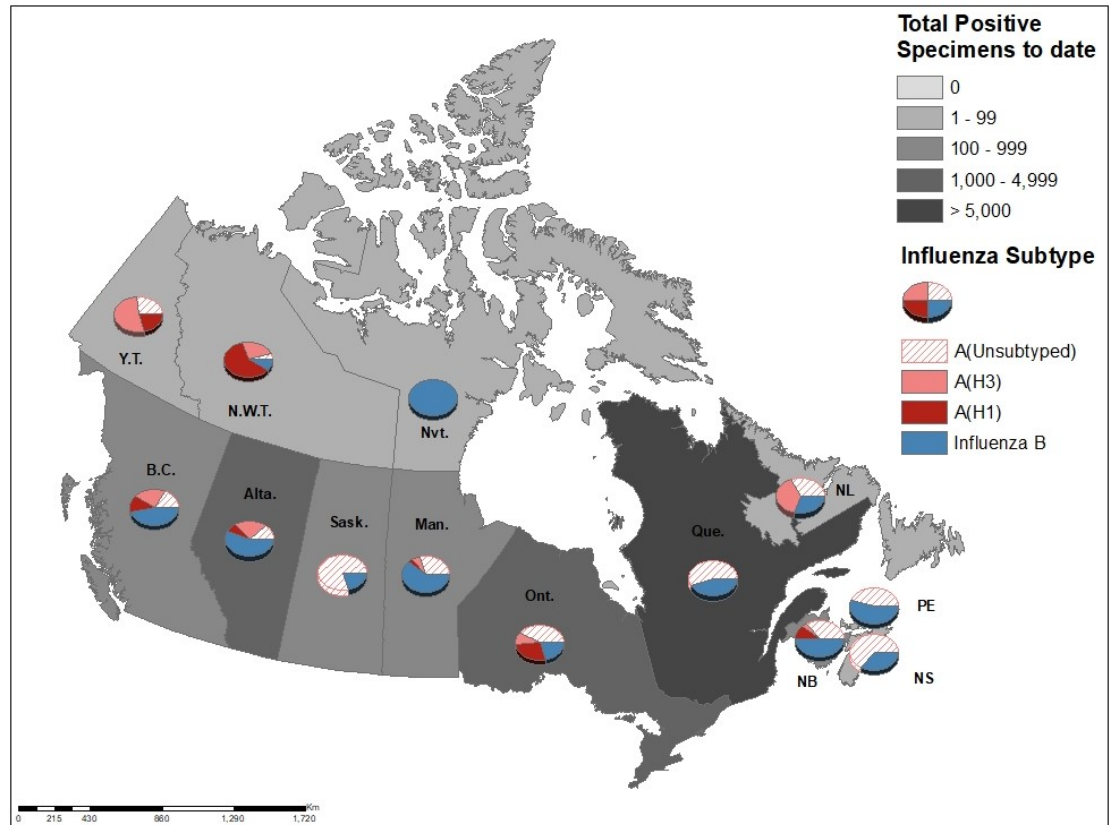
Figure 2 – Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, weeks 2019-35 to 2020-01

Number of Laboratories Reporting in Week 01: 35 out of 36



The shaded area indicates weeks where the positivity rate was at least 5% and a minimum of 15 positive tests were observed, signalling the period of [seasonal influenza activity](#).

Figure 3 – Distribution of positive influenza specimens by type/subtype and province/territory*, Canada, weeks 2019-35 to 2020-01



* Specimens from NWT, YT, and Nvt are sent to reference laboratories in other provinces.

Table 1 – Cumulative number of positive influenza specimens by type, subtype and age group reported through case-based laboratory reporting, Canada, weeks 2019-35 to 2020-01

Age groups (years)	Cumulative (August 25, 2019 to January 4, 2020)						
	Influenza A				B	Influenza A and B	
	A Total	A(H1N1)	A(H3N2)	A (Un subtyped) ¹	Total	#	%
0-4	773	84	112	577	836	1609	15%
5-19	595	49	133	413	1742	2337	22%
20-44	1105	222	172	711	1332	2437	23%
45-64	1201	213	170	818	209	1410	14%
65+	2333	232	496	1605	278	2611	25%
Total	6007	800	1083	4124	4397	10404	100%

¹Unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

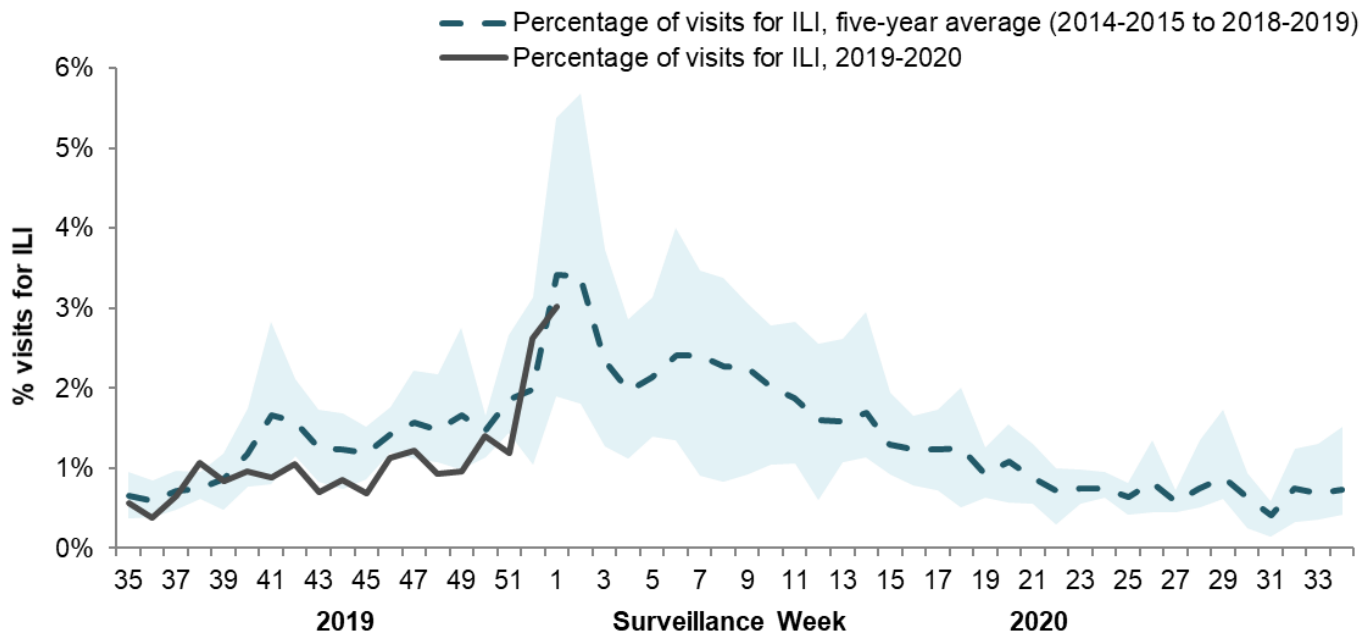
Syndromic / Influenza-like Illness Surveillance

Healthcare Practitioners Sentinel Syndromic Surveillance

Over the three-week period of weeks 51, 52, and 01, the percentage of visits to healthcare professionals due to influenza-like illness (ILI) continued to increase to 3.0% in week 01 which is slightly below the average for this time of year (3.4%) (Figure 4).

Figure 4 – Percentage of visits for ILI reported by sentinels by report week, Canada, weeks 2019-35 to 2020-01

Number of Sentinels Reporting in Week 01: 75



The shaded area represents the maximum and minimum percentage of visits for ILI reported by week from seasons 2014-2015 to 2018-2019

FluWatchers

The proportion of FluWatchers participants reporting symptoms of cough and fever increased from weeks 51 to 52 and was similar in week 01. In week 01, 3,231 participants reported to FluWatchers, of which 4.2% (135) reported symptoms of cough and fever (Figure 5).

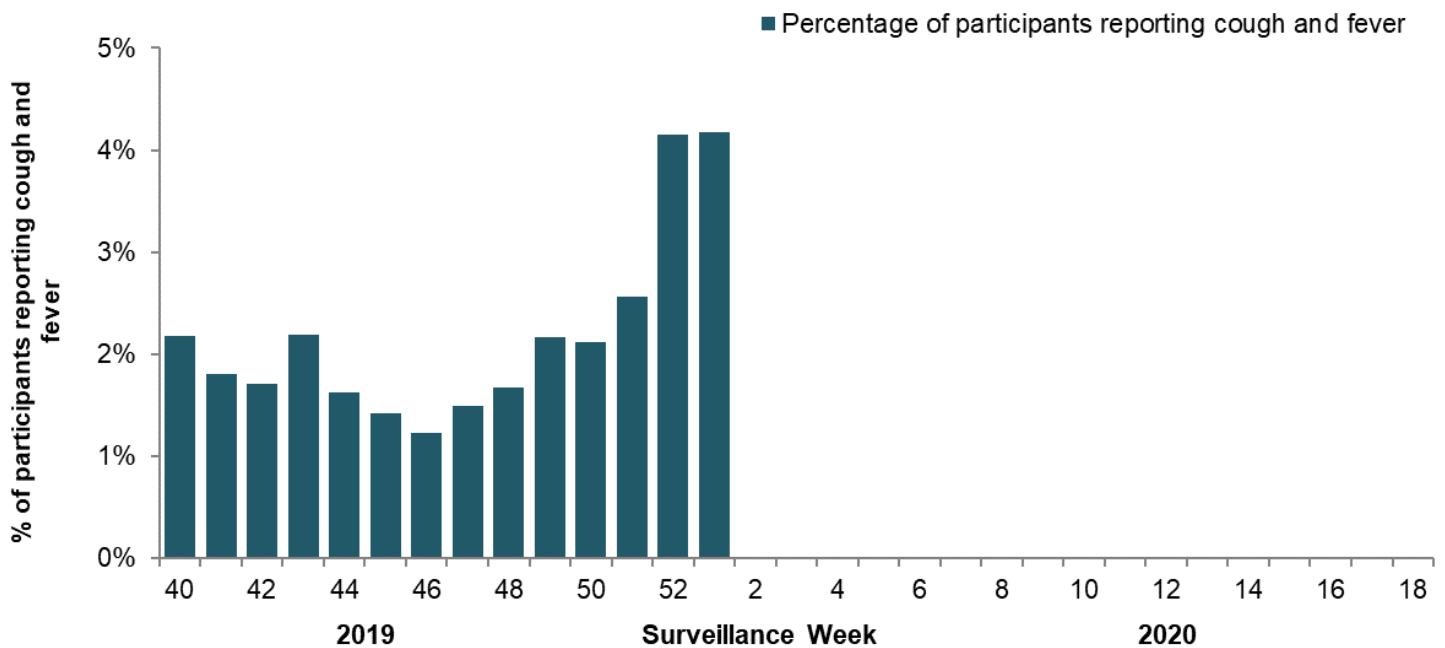
Among the 135 participants who reported cough and fever:

- 19% consulted a healthcare professional;
- 75% reported days missed from work or school, resulting in a combined total of 333 missed days of work or school.
- 71% reported having been vaccinated for influenza this season.

If you are interested in becoming a [FluWatcher](#), [sign up today](#).

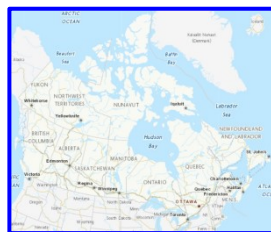
Figure 5 – Percentage of FluWatchers participants reporting cough and fever, Canada, weeks 2019-40 to 2020-01

Number of Participants Reporting in Week 01: 3,231



Online Figure – Geographic distribution of FluWatchers participants reporting cough and fever, Canada, week 2020-01

Click on the map to access the link



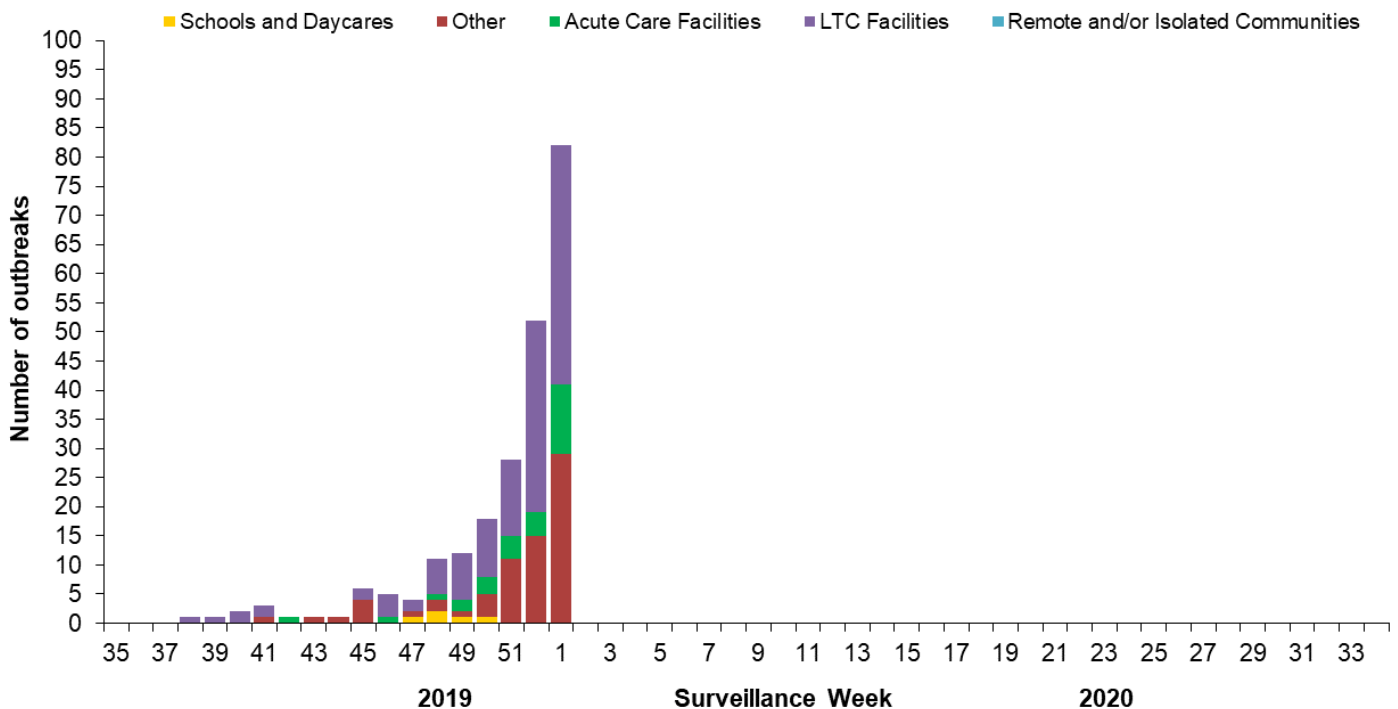
Influenza Outbreak Surveillance

Over the three-week period of weeks 51, 52, and 01, the number of new laboratory-confirmed influenza outbreaks continued to increase. A total of 162 outbreaks were reported: 87 in long term care facilities, 20 in acute care facilities, and 55 in facilities [categorized as 'other'](#), which includes facilities such as private personal care homes, correctional facilities, and colleges/universities (Figure 6).

To date this season, a total of 228 laboratory-confirmed influenza outbreaks have been reported; 55% (125) in long-term care facilities, 31% (70) in facilities categorized as 'other', 12% (28) in acute care facilities, and 2% (5) in schools/daycares. Of the outbreaks where influenza type was reported (217), 91% (198) were due to influenza A. Among the 101 outbreaks for which the influenza A subtype was reported, 75% (76) were associated with A(H3N2). Four ILI outbreaks in schools/daycares have also been reported.

Figure 6 – Number of new outbreaks of laboratory-confirmed influenza by report week, Canada, weeks 2019-35 to 2020-01

Number of provinces and territories reporting in week 01: 11 out of 13



Severe Outcomes Influenza Surveillance

Provincial/Territorial Influenza Hospitalizations and Deaths

To date this season, 560 influenza-associated hospitalizations were reported by participating provinces and territories¹.

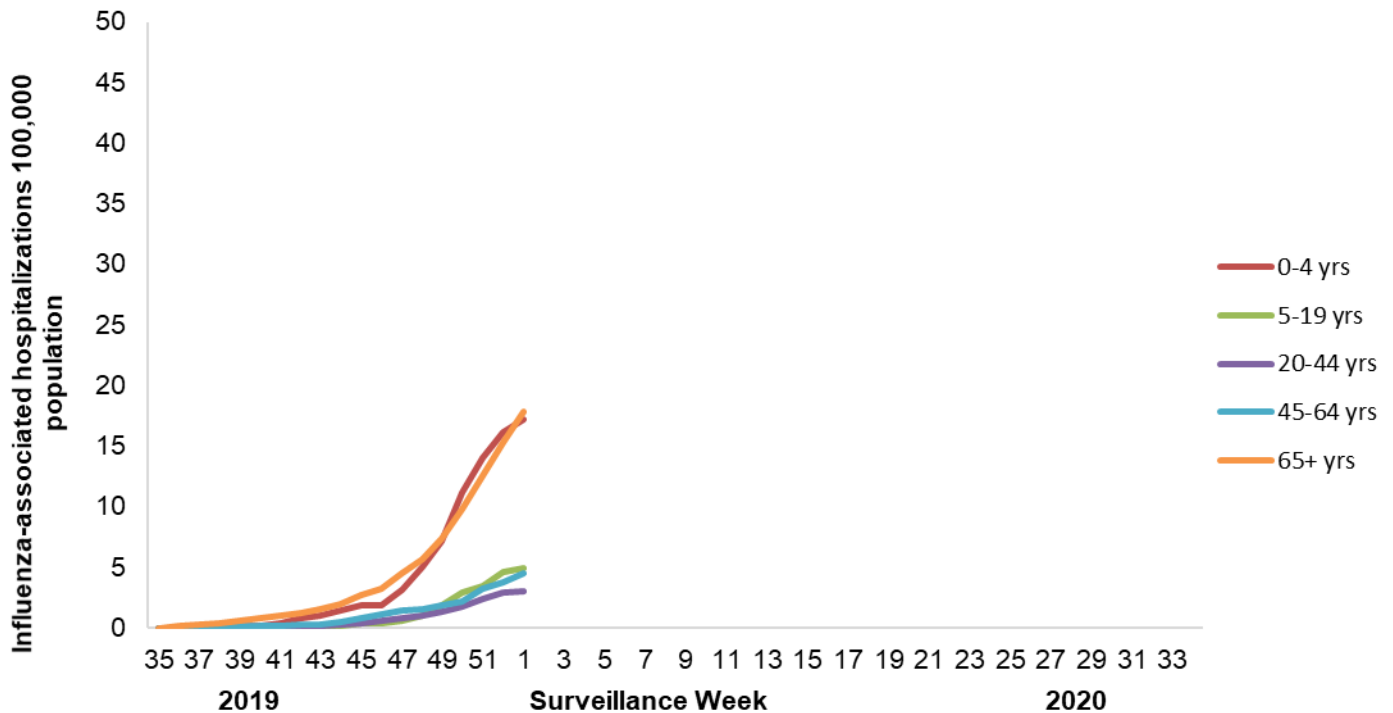
- 69% of the cases were associated with influenza A.
- Of the cases for which subtype was reported (333), 80% were associated with influenza A(H3N2).
- The highest cumulative hospitalization rates up to week 01 were among children under 5 years of age (17.2/100,000 population) and adults 65 years of age and older (17.8/100,000 population).

Sixty ICU admissions and ten deaths have been reported.

- 62% of the ICU admissions and 80% of the deaths were associated with influenza A.

Figure 7 – Cumulative rates of influenza-associated hospitalization by age group and epidemiological week, Canada, participating provinces and territories¹ weeks 2019-35 to 2020-01

Number of provinces and territories reporting in week 01: 9 out of 9



¹Influenza-associated hospitalizations are reported by Alberta, Manitoba, New Brunswick, Newfoundland and Labrador, Northwest Territories, Nova Scotia, Prince Edward Island and Yukon. Only hospitalizations that require intensive medical care are reported by Saskatchewan.

Pediatric Influenza Hospitalizations and Deaths

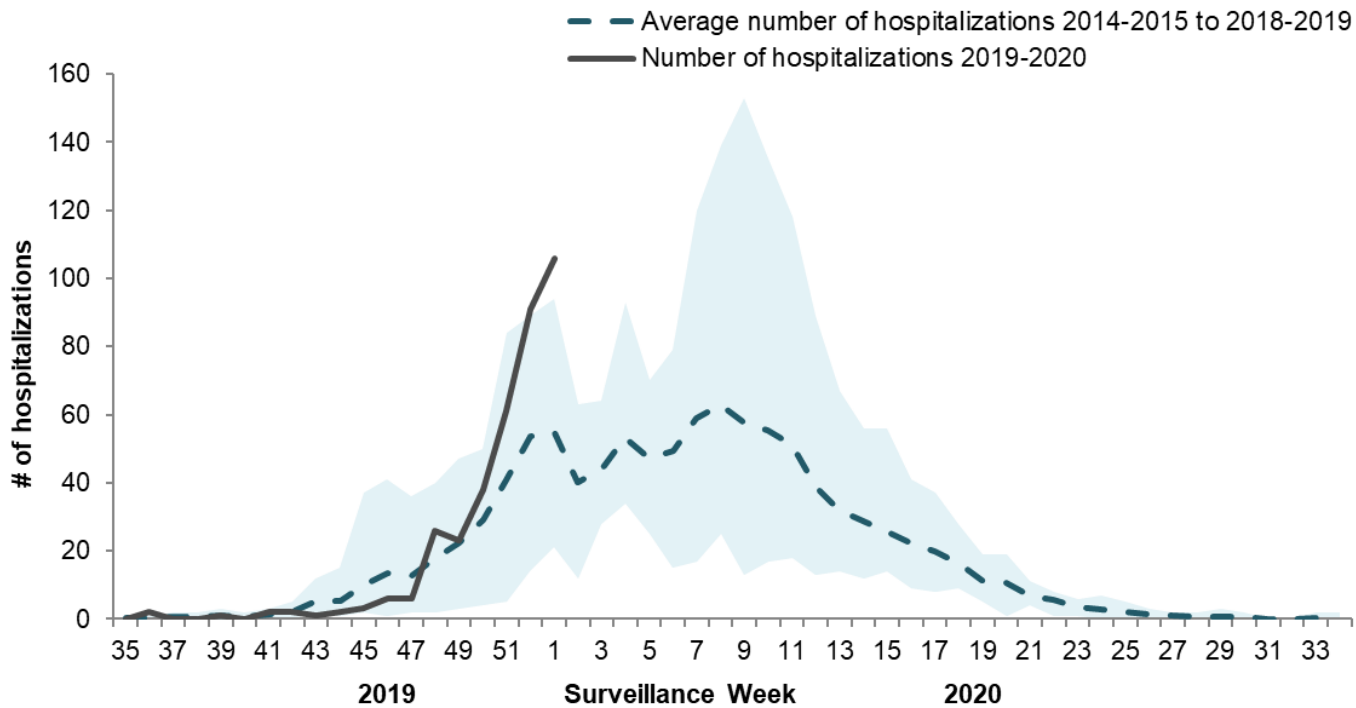
Over the three-week period of weeks 51, 52 and 01, 258 pediatric (≤ 16 years of age) laboratory-confirmed influenza-associated hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network (Figure 8). The weekly number of cases in this period is above the average over the previous five seasons, and above the 5-year maximum in week 52 and week 01.

The sharp increase in the number of cases in recent weeks is likely due to the concurrent circulation of influenza A and B this season. The number of influenza A-associated pediatric hospitalizations is similar to the average for this time of year. Influenza B usually circulates later in the season, in February or March. However, this season, the number of hospitalizations with influenza B is well above average compared to previous seasons, and occurring earlier in the season.

To date this season (weeks 35 to 01):

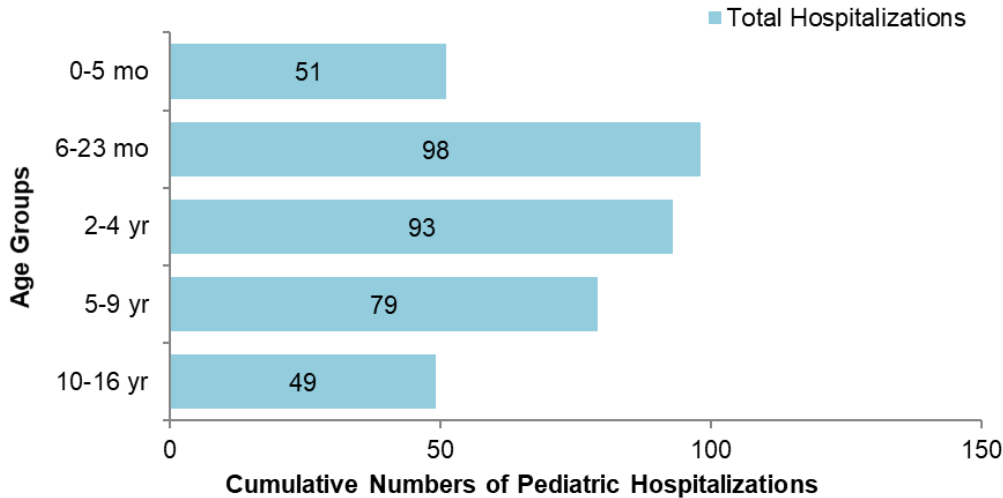
- 370 pediatric hospitalizations have been reported by the IMPACT network, of which 54% (201) were associated with influenza B and 46% (169) with influenza A.
- The largest proportion of hospitalizations (65%) were among children under 5 years of age (Figure 9). Among cases in children under 5 years of age (242), 53% of cases were associated with influenza A, compared to cases in children 5 to 16 years of age (128), in whom 68% of cases were associated with influenza B.
- 39 ICU admissions were reported, of which 59% (23) were associated with influenza A.
- No pediatric deaths have been reported.

Figure 8 – Number of pediatric (≤ 16 years of age) hospitalizations reported by the IMPACT network, by week, Canada, weeks 2019-35 to 2020-01



The shaded area represents the maximum and minimum number of cases reported by week from seasons 2014-15 to 2018-19

Figure 9 – Cumulative number of pediatric hospitalizations (≤16 years of age) with influenza by age-group reported by the IMPACT network, Canada, weeks 2019-35 to 2020-01



Adult Influenza Hospitalizations and Deaths

Surveillance of laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations by the Canadian Immunization Research Network (CIRN) Serious Outcomes Surveillance (SOS) network began on November 1st for the 2019-20 season. To date this season, 230 hospitalizations, seven intensive care unit admissions, and less than five deaths have been reported (Figure 10). The majority of hospitalizations have been due to influenza A (90%), and among those subtyped (68) 87% were influenza A(H1N1). The largest proportion of hospitalizations are in adults 65-79 years of age (33%) and adults 80 years of age and older (31%) (Figure 11).

Figure 10 - Number of adult hospitalizations (≥16 years of age) with influenza reported by the CIRN-SOS network, by week, Canada, weeks 2019-35 to 2020-01

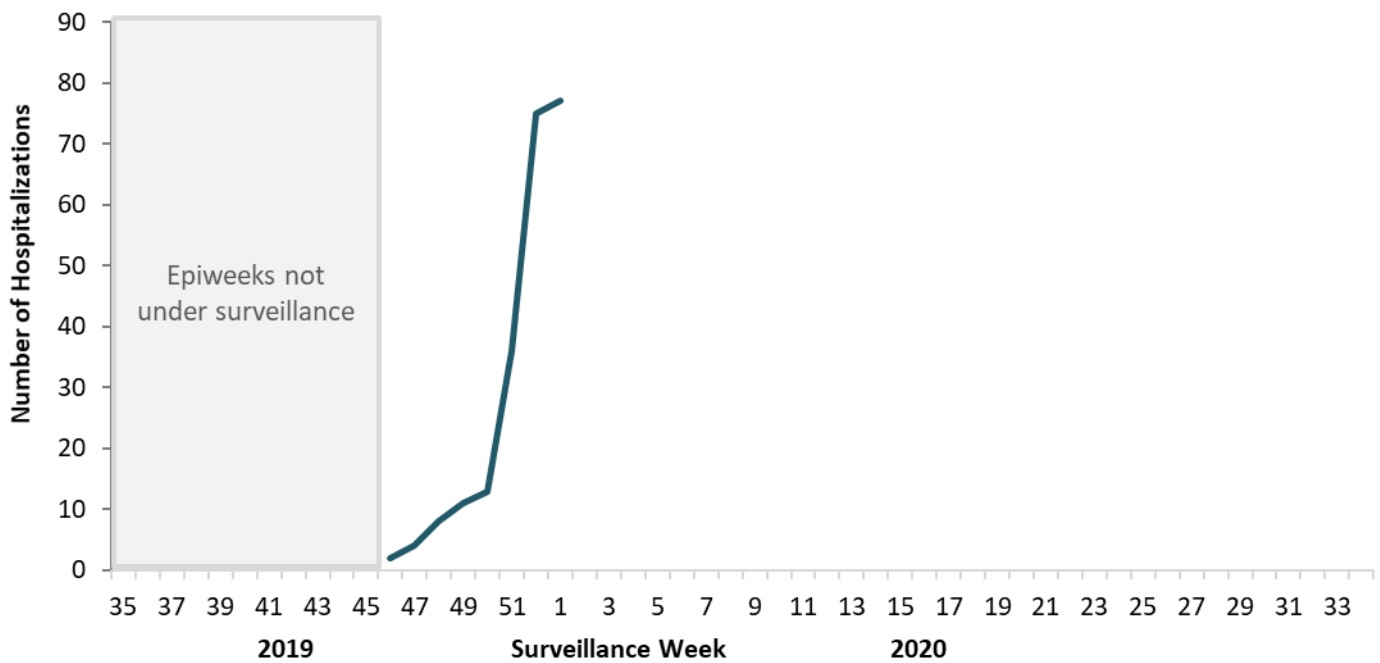
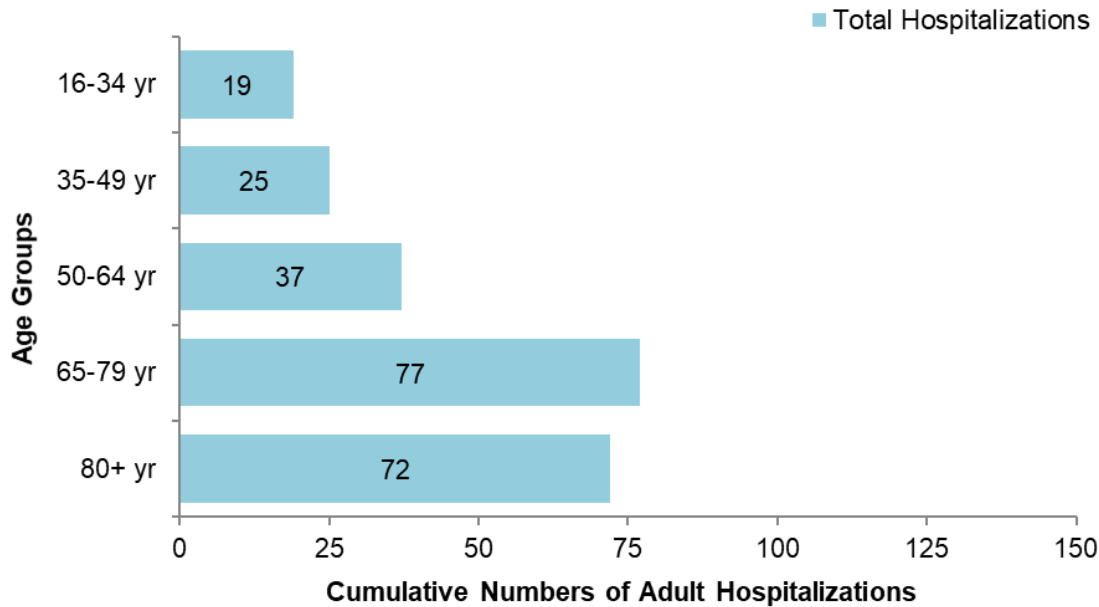


Figure 11 - Cumulative numbers of adult hospitalizations (≥16 years of age) with influenza by age-group reported by the CIRN-SOS network, Canada, weeks 2019-35 to 2020-01



Influenza Strain Characterizations

From September 1, 2019 to January 9, 2020, the National Microbiology Laboratory (NML) has characterized 287 influenza viruses (127 A(H3N2), 62 A(H1N1) and 98 influenza B) that were received from Canadian laboratories.

Influenza A(H3N2)

Over recent years, circulating strains of A(H3N2) have evolved, and are increasingly difficult to characterize by hemagglutination inhibition (HI) assay. Genetic characterization is established by sequencing the hemagglutinin (HA) gene of the influenza viruses to compare their genetic properties.

Antigenic Characterization:

Among the 28 influenza A(H3N2) viruses antigenically characterized to date, the majority (89%) showed reduced titer by HI assay to A/Kansas/14/2017 using antiserum raised against egg-propagated A/Kansas/14/2017. Three viruses were characterized as A/Kansas/14/2017-like (Figure 12a).

Genetic Characterization:

Nearly all (98%) of the 127 A(H3N2) viruses genetically characterized this season belonged to genetic group 3C.2a1b based on sequence analysis of the HA gene. Three viruses belonged to the genetic group 3C.3a (Figure 13).

Group 3C.2a1b viruses analysed represent:

- 89% (25 out of 28) viruses that were also antigenically characterized.
- 100% (99 out of 99) viruses which did not grow to sufficient hemagglutination titer for antigenic characterization by HI assay.

A/Kansas/14/2017 belongs to genetic group 3C.3a and is the influenza A(H3N2) component of the 2019-20 Northern Hemisphere influenza vaccine.

Influenza A(H1N1)

Among the 62 A(H1N1) viruses characterized to date, 95% were antigenically similar to A/Brisbane/02/2018 by HI testing using antiserum raised against egg-propagated A/Brisbane/02/2018 (Figure 12b).

A/Brisbane/02/2018 is the influenza A(H1N1) component of the 2019-20 Northern Hemisphere influenza vaccine.

Influenza B

Among the 98 influenza B viruses antigenically characterized this season, the vast majority (97) belonged to the B/Victoria lineage. One virus was antigenically characterized as similar to B/Phuket/3073/2013.

The majority (89%) of B/Victoria lineage viruses showed reduced titer by HI assay to B/Colorado/06/2017 using antiserum raised against cell culture-propagated B/Colorado/06/2017 (Figure 12c).

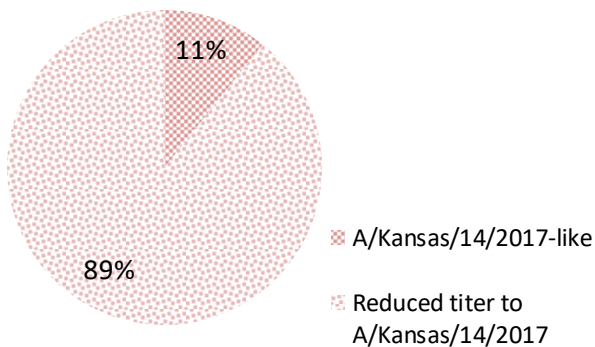
Sequence analysis showed that 100% (86) of the B/Victoria lineage viruses showing reduced titre to B/Colorado/06/2017 had a three amino acid deletion (162-164) in the HA gene.

The recommended influenza B components for the 2019-20 Northern Hemisphere influenza vaccine are B/Colorado/06/2017 (Victoria lineage) and B/Phuket/3073/2013 (Yamagata lineage). B/Phuket/3073/2013 is included in the quadrivalent influenza vaccine.

Figure 12 – Distribution of antigenic phenotypes among characterized influenza viruses, Canada, September 1, 2019 to January 9, 2020

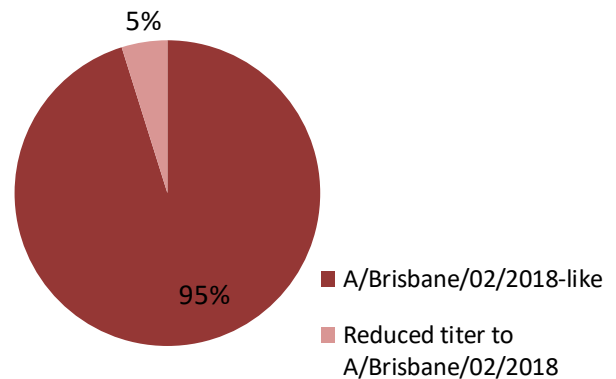
A) A(H3N2) viruses

Number of viruses characterized: 28



B) A(H1N1) viruses

Number of viruses characterized: 62



C) B viruses

Number of viruses characterized: 98

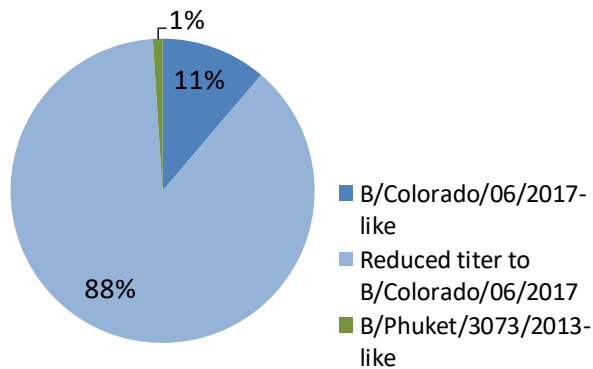
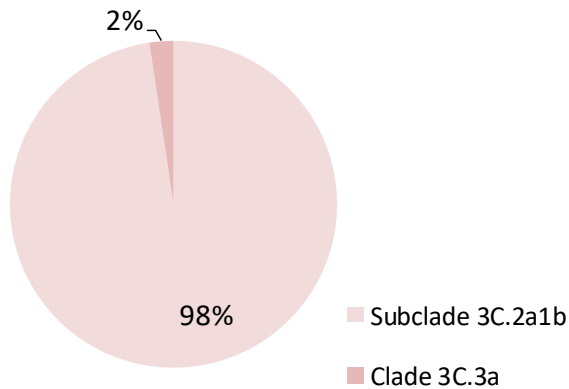


Figure 13 – Distribution of genetic clades among characterized A(H3N2) influenza viruses, Canada, September 1, 2019 to January 9, 2020

Number of viruses sequenced: 127



Antiviral Resistance

The National Microbiology Laboratory (NML) also tests influenza viruses received from Canadian laboratories for antiviral resistance. From September 1, 2019 to January 9, 2020, the following results were reported:

Oseltamivir:

188 influenza viruses (86 A(H3N2), 45 A(H1N1) and 57 B) were tested for resistance to oseltamivir:

- All influenza viruses tested were sensitive to oseltamivir.

Zanamivir:

187 influenza viruses (86 A(H3N2), 45 A(H1N1) and 56 B) were tested for resistance to zanamivir:

- All influenza viruses tested were sensitive to zanamivir.

Amantadine:

High levels of resistance to amantadine persist among influenza A(H1N1) and influenza A(H3N2) viruses. All viruses tested this season were resistant.

Vaccine Monitoring

Vaccine monitoring refers to activities related to the monitoring of influenza vaccine coverage and effectiveness.

Vaccine Coverage

Influenza vaccine coverage estimates for the 2019-20 season are anticipated to be available in February or March 2020.

Vaccine Effectiveness

Influenza vaccine effectiveness estimates for the 2019-20 season are anticipated to be available in February or March 2020.

Provincial and International Surveillance Links

- British Columbia – [Influenza Surveillance; Vaccine Effectiveness Monitoring](#)
- Alberta – [Respiratory Virus Surveillance](#)
- Saskatchewan – [Influenza Reports](#)
- Manitoba – [Seasonal Influenza Reports](#)
- Ontario – [Ontario Respiratory Pathogen Bulletin](#)
- Québec – [Système de surveillance de la grippe](#) (available in French only)
- New Brunswick – [Influenza Surveillance Reports](#)
- Prince Edward Island – [Influenza Summary](#)
- Nova Scotia – [Respiratory Watch Report](#)
- Newfoundland and Labrador – [Surveillance and Disease Reports](#)
- Yukon – [Information on Pandemic, Influenza, Seasonal Flu, Avian Flu and H1N1](#)
- Northwest Territories – [Influenza/ Flu Information](#)
- Nunavut – [Influenza Information](#)
- World Health Organization – [FluNet \(Global Influenza Surveillance Network\)](#)
- Pan American Health Organization – [Influenza situation report](#)
- U.S. Centers for Disease Prevention & Control (CDC) - [Weekly Influenza Summary Update](#)
- ECDC – [Surveillance reports and disease data on seasonal influenza](#)
- United Kingdom – [Weekly Influenza Activity Reports](#)
- Hong Kong Centre for Health Protection - [Flu Express](#)
- Australia – [Influenza Surveillance Report and Activity Updates](#)
- New Zealand – [Influenza Weekly Update](#)

Notes

The data in the FluWatch report represent surveillance data available at the time of writing. All data are preliminary and may change as more reports are received.

To learn more about the FluWatch program, see the [Overview of influenza monitoring in Canada](#) page.

For more information on the flu, see our [Flu \(influenza\)](#) web page.

We would like to thank all the Fluwatch surveillance partners participating in this year's influenza surveillance program.

This [report](#) is available on the Government of Canada Influenza webpage.

Ce [rapport](#) est disponible dans les deux langues officielles.