

April 5 to May 9, 2020 (weeks 15-19)

## Overall Summary

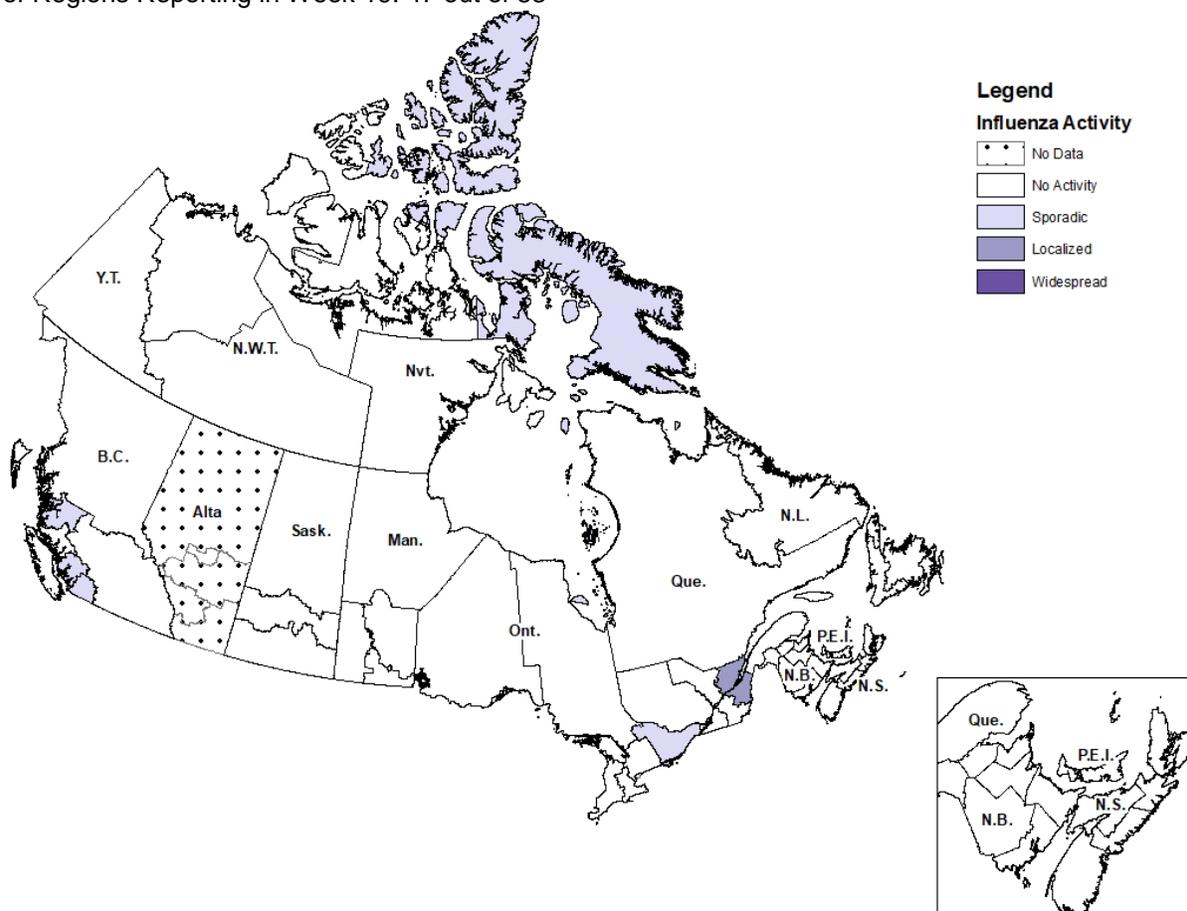
- In weeks 15 to 19, exceptionally low levels of influenza activity were reported across Canada.
- The 2019-20 influenza season ended abruptly in week 12. During weeks 15 to 19, the percentage of tests positive for influenza (0.13%) remained at the lowest level recorded for the past nine seasons. The proportion of primary care visits for ILI were lower than average, and very few influenza-related hospitalizations or outbreaks were reported.
- Many influenza surveillance indicators may be influenced by the COVID-19 pandemic, including changes in healthcare-seeking behaviour, and testing capacity. Current data should be interpreted with consideration for this context.
- The next monthly FluWatch report will be published on June 19, 2020. Weekly reporting of laboratory detections of respiratory viruses will continue via our Respiratory Virus Detections Surveillance System.

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

During week 19, influenza activity was reported in 5 regions across 4 provinces and territories. Among the regions reporting influenza activity, 80% reported sporadic activity and 20% (1 region) reported localized activity (Figure 1).

**Figure 1 – Map of influenza/ILI activity by province and territory, Canada, week 2020-19**

Number of Regions Reporting in Week 19: 47 out of 53



## Laboratory-Confirmed Influenza Detections

In weeks 15 to 19, the percentage of laboratory tests positive for influenza remained at the lowest level observed compared the past 9 seasons. The average percentage of tests positive for influenza during this 5-week period was 0.13% compared to 12.6% during the past 5 seasons (Figure 2).

The percentage of positive tests crossed the seasonal threshold of 5% in week 12 (mid-March), indicating the end of the influenza season at the national level, 9 weeks earlier than average compared to the past 5 seasons.

In weeks 15-19, an average of 14,824 tests for influenza were performed at reporting laboratories, which is similar to the number of tests performed in the peak period of the influenza season (weeks 1-9).

Testing for influenza and other respiratory viruses has been influenced by the current COVID-19 pandemic. Changes in laboratory testing practices in March and April may affect the comparability of data to previous weeks or previous seasons.

To date this season (weeks 35 to 19), all influenza types and subtypes have circulated (Figure 3). Among the 55,312 laboratory detections of influenza reported:

- 59% (32,663) were influenza A.
- Among subtyped influenza A detections (7,326), A(H1N1) is the predominant subtype this season (68%).

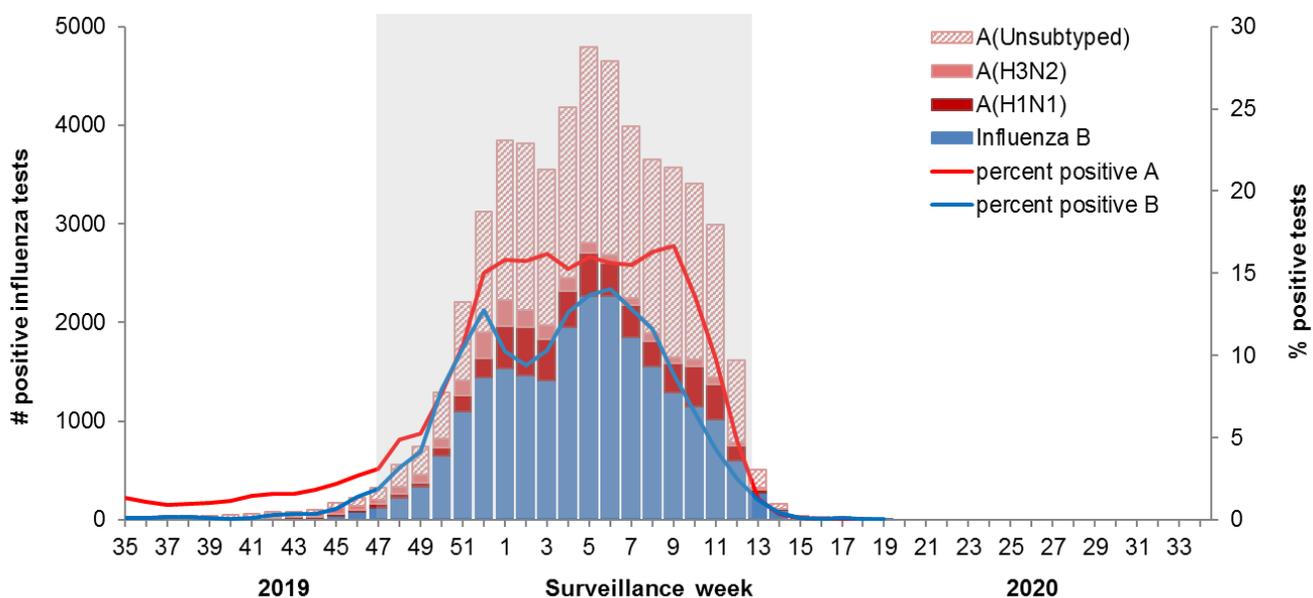
Detailed information on age and type/subtype has been received for 42,526 laboratory-confirmed influenza cases (Table 1). To date this season (weeks 35 to 19):

- Cases of influenza A(H1N1) (3,737) were primarily in adults; 26% 20-44 years, 26% 45-64 years and 28% 65 years of age and older.
- Among cases of influenza A(H3N2) (2,057), the largest proportion of cases was in adults 65 years of age and older (46%).
- Cases of influenza B (18,187) were primarily in younger age groups; 22% under 5 years of age, 33% 5-19 years and 31% between 20 and 44 years of age.

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](#).

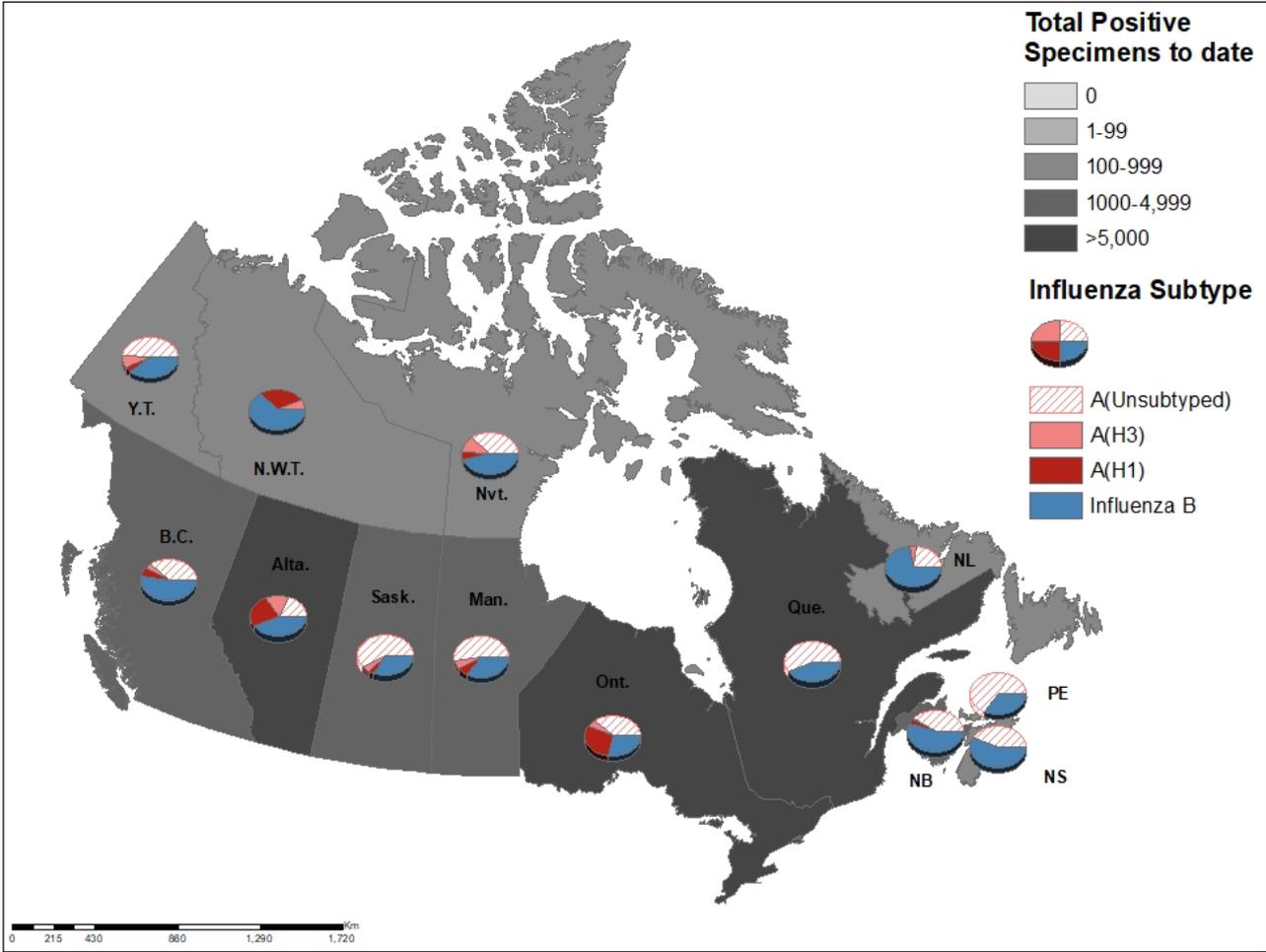
**Figure 2 – Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, weeks 2019-35 to 2020-19**

Number of Laboratories Reporting in Week 19: 34 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 2020-19**



\* 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 2020-19**

Age groups (years)	Cumulative (August 25, 2019 to May 9, 2020)						
	Influenza A				B	Influenza A and B	
	A Total	A(H1N1)	A(H3N2)	A (Unsubtyped)	Total	#	%
0-4	3798	441	213	3144	4049	7847	18%
5-19	2745	298	261	2186	5991	8736	21%
20-44	5226	960	331	3935	5581	10807	25%
45-64	5031	983	304	3744	1159	6190	15%
65+	7539	1055	948	5536	1407	8946	21%
<b>Total</b>	<b>24339</b>	<b>3737</b>	<b>2057</b>	<b>18545</b>	<b>18187</b>	<b>42526</b>	<b>100%</b>

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

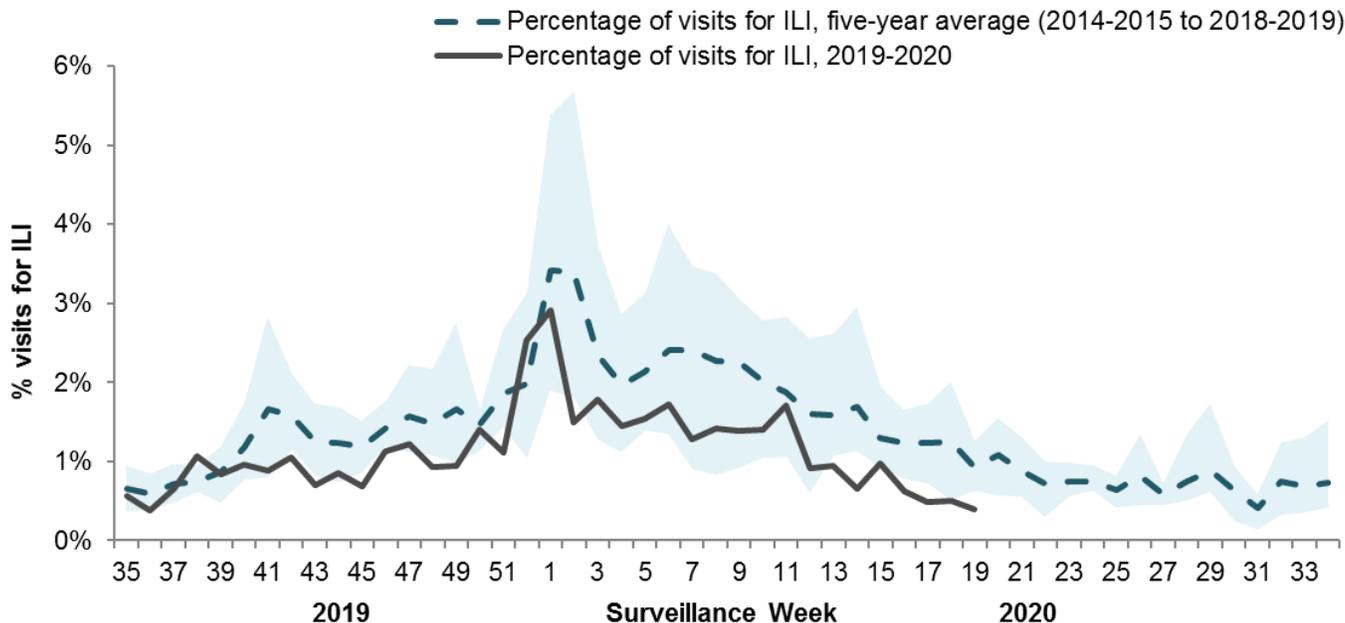
## Syndromic / Influenza-like Illness Surveillance

### Healthcare Practitioners Sentinel Syndromic Surveillance

In weeks 15 to 19, an average of 0.6% of visits to healthcare professionals were due to influenza-like illness (ILI) which continues to follow the downward trend observed since mid-March. In four out of these five weeks, the proportion of visits for ILI was the lowest observed for this period compared to the past 5 seasons (Figure 4). This trend should be interpreted with caution as there have been changes in healthcare seeking behavior of individuals and a decreasing number of sentinels reporting in recent weeks. Given the evolving Canadian situation with COVID-19, we will continue to monitor this indicator closely.

**Figure 4 – Percentage of visits for ILI reported by sentinels by report week, Canada, weeks 2019-35 to 2020-19**

Number of Sentinels Reporting in Week 19: 70



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

### FluWatchers

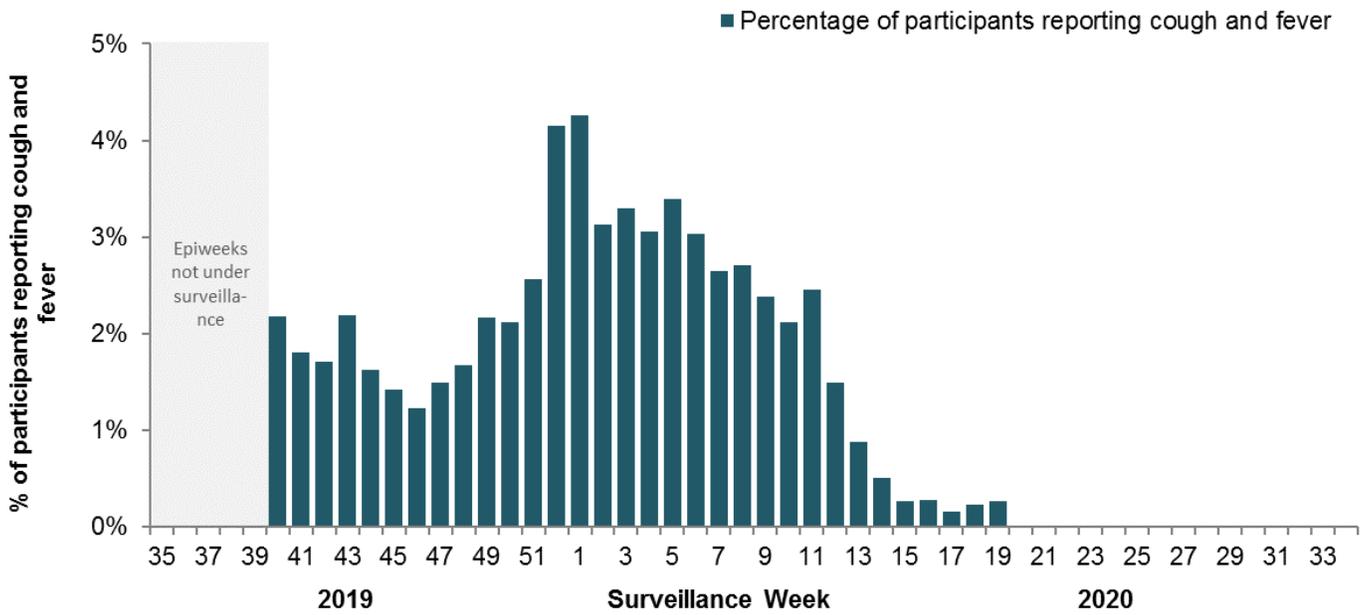
In week 19, 10,795 participants reported to FluWatchers. During weeks 15 to 19, the proportion of participants reporting symptoms of cough and fever was stable at an average of 0.24% (Figure 5). The percentage of participants reporting cough and fever are at the lowest levels ever observed. This may be due to social distancing measures implemented in March and April. Given the evolving Canadian situation with COVID-19, we will continue to monitor this indicator closely.

Among the 28 participants who reported cough and fever in week 19, 40% (11) consulted a healthcare professional, a smaller proportion than in previous weeks..

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 2020-19**

Number of Participants Reporting in Week 19: 10,795



**Online Figure – Geographic distribution of FluWatchers participants reporting cough and fever, Canada, week 2020-19**

Click on the map to access the link



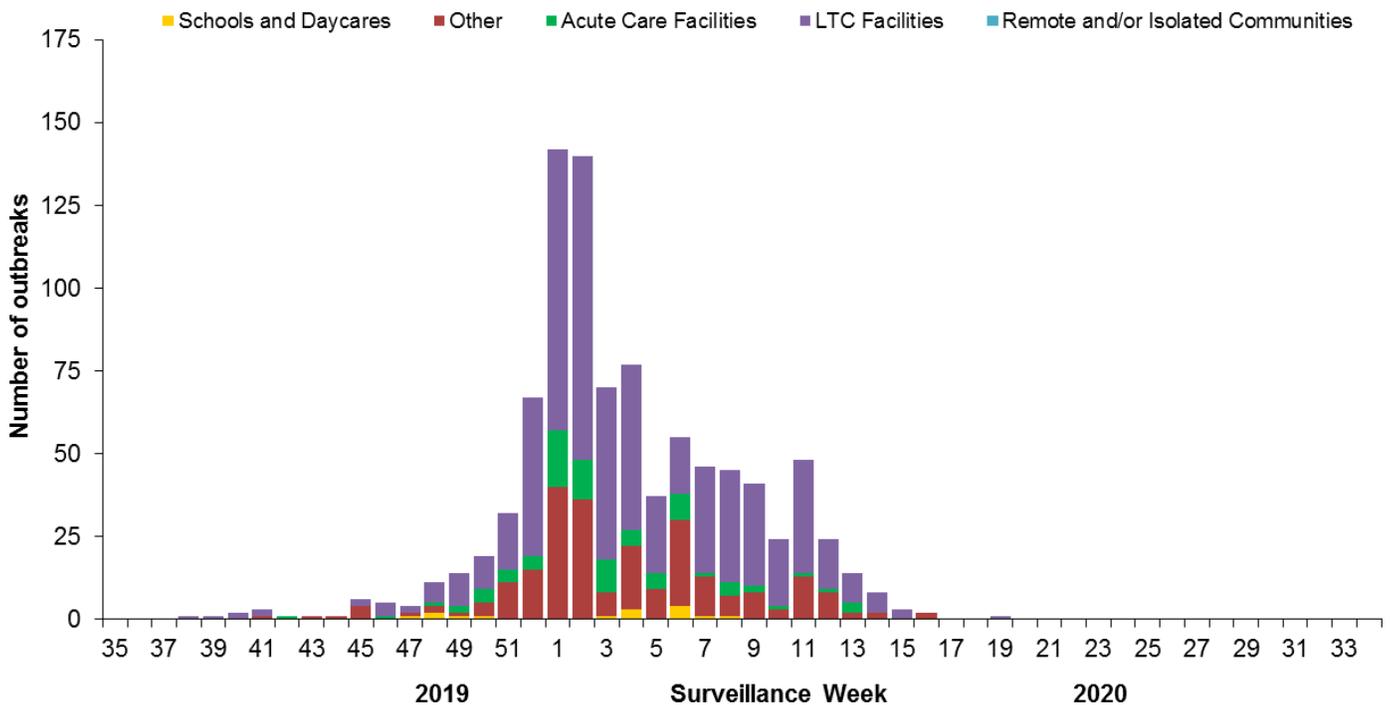
## Influenza Outbreak Surveillance

In weeks 15 to 19, a total of 6 outbreaks were reported: 4 in long term care facilities and 2 in facilities categorized as 'other' (Figure 6). One outbreak of influenza-like illness was reported in a facility categorized as 'other'.

To date this season, a total of 945 laboratory-confirmed influenza outbreaks have been reported; 64% (609) in long-term care facilities, 25% (234) in facilities categorized as 'other', 9% (87) in acute care facilities, and 2% (15) in schools/daycares. Of the 897 outbreaks where influenza type was reported, 86% (774) were due to influenza A. Among the 318 outbreaks for which the influenza A subtype was reported, 53% were associated with A(H1N1) and 47% with A(H3N2). To date this season, 176 ILI outbreaks have also been reported; 98% (173) in schools/daycares and 2% (3) in facilities categorized as 'other'.

**Figure 6 – Number of new outbreaks of laboratory-confirmed influenza by report week, Canada, weeks 2019-35 to 2020-19**

Number of provinces and territories reporting in week 19: 12 out of 13



## Severe Outcomes Influenza Surveillance

### Provincial/Territorial Influenza Hospitalizations and Deaths

To date this season, 2,421 influenza-associated hospitalizations were reported by participating provinces and territories<sup>1</sup>.

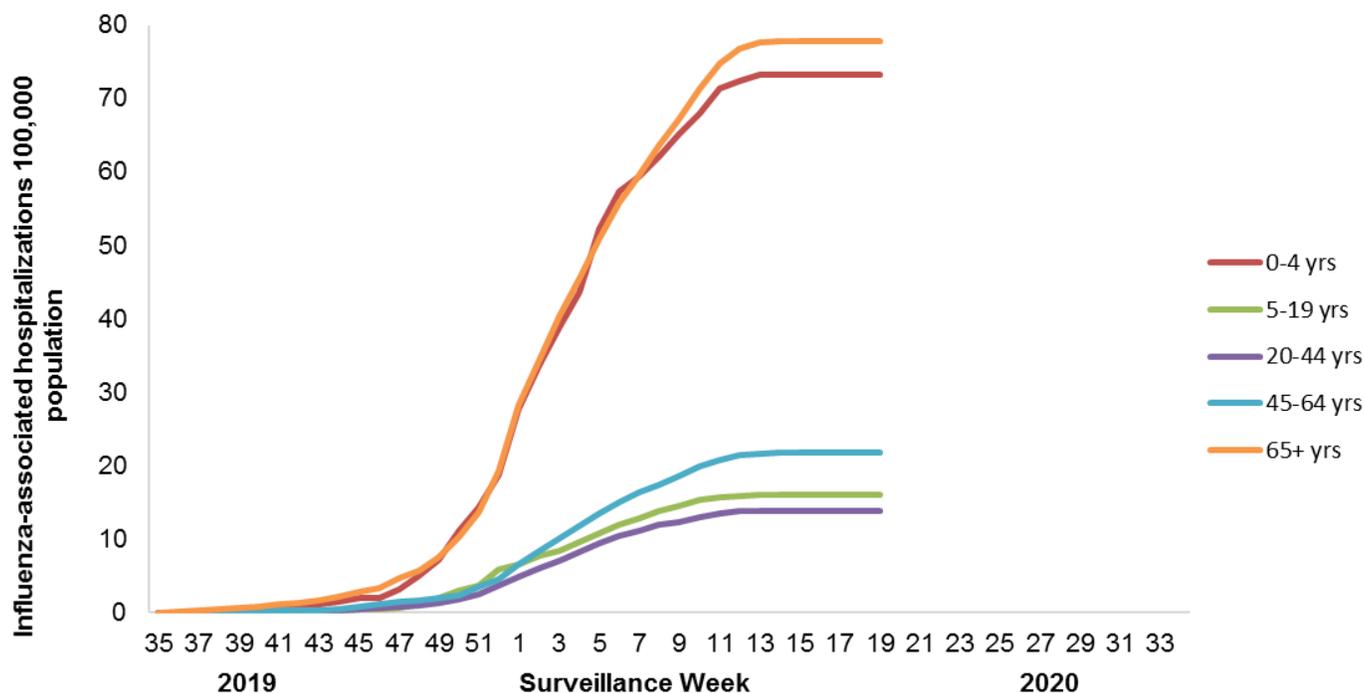
- 69% of the cases were associated with influenza A.
- Of the 1,063 cases for which subtype was reported, 51% were associated with influenza A(H3N2).
- The highest cumulative hospitalization rates up to week 19 were among adults 65 years of age and older (78/100,000 population) and children under 5 years of age (73/100,000 population).

300 ICU admissions and 111 deaths have been reported.

- 69% of the ICU admissions and 73% 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 territories<sup>1</sup> weeks 2019-35 to 2020-19**

Number of provinces and territories reporting in week 19: 8 out of 9



<sup>1</sup>Influenza-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.

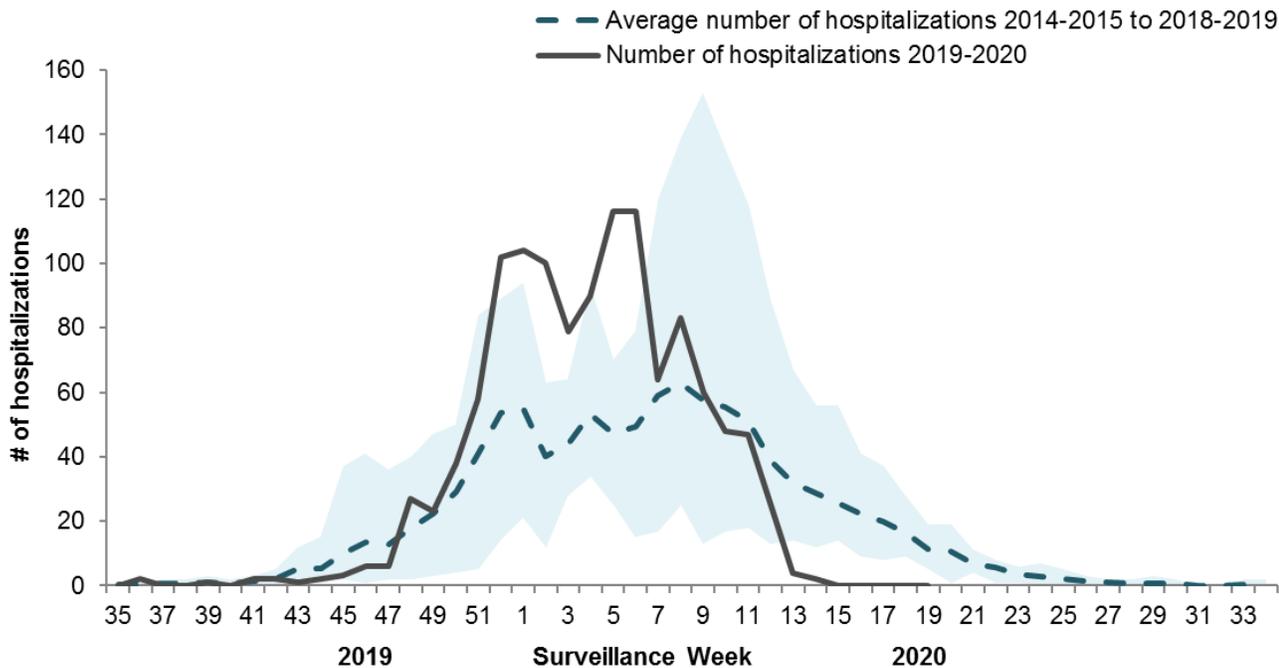
## Pediatric Influenza Hospitalizations and Deaths

In weeks 15 to 19, no pediatric ( $\leq 16$  years of age) laboratory-confirmed influenza-associated hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network (Figure 8). Since the end of March, the weekly number of reported cases has been at the lowest level observed during this period over the past 5 seasons.

To date this season (weeks 35 to 19):

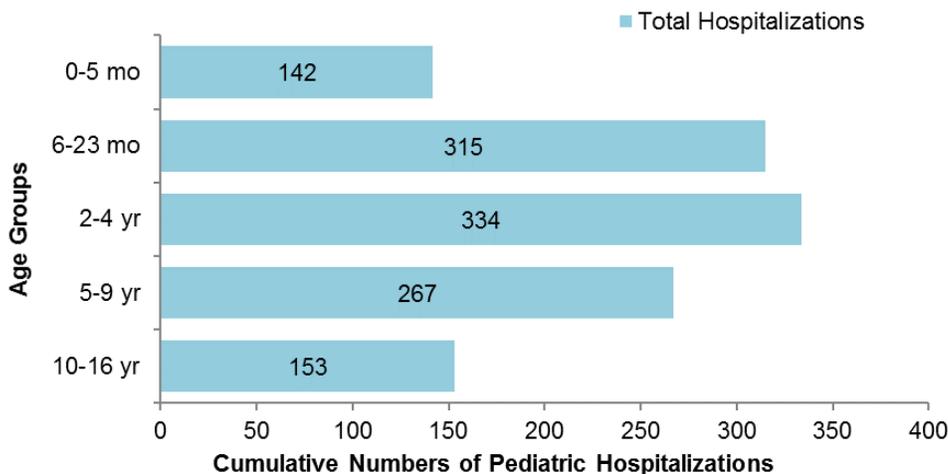
- 1,211 pediatric hospitalizations have been reported by the IMPACT network, of which 52% (626) were associated with influenza A and 48% (585) with influenza B.
- The largest proportion of hospitalizations (65%) were among children under 5 years of age (Figure 9).
- 206 ICU admissions were reported, of which 56% were associated with influenza A, and 80% were among children under 5 years of age.
- Seven pediatric deaths have been reported.

**Figure 8 – Number of pediatric ( $\leq 16$  years of age) hospitalizations reported by the IMPACT network, by week, Canada, weeks 2019-35 to 2020-19**



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 ( $\leq 16$  years of age) with influenza by age-group reported by the IMPACT network, Canada, weeks 2019-35 to 2020-19**



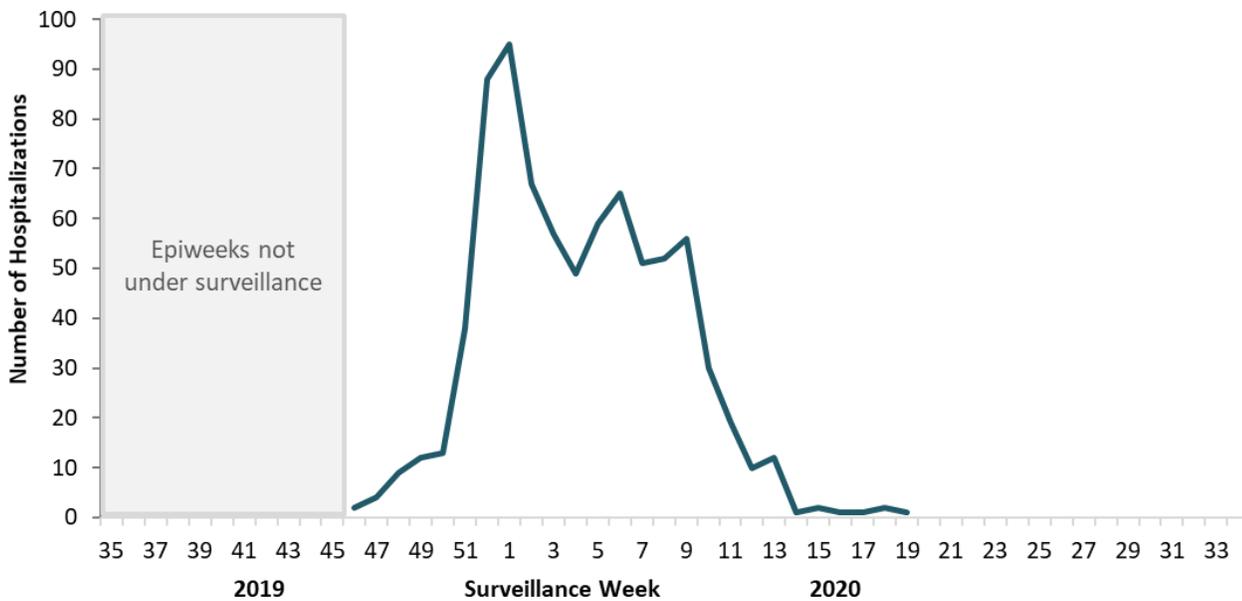
## Adult Influenza Hospitalizations and Deaths

Surveillance of laboratory-confirmed influenza-associated adult ( $\geq 16$  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.

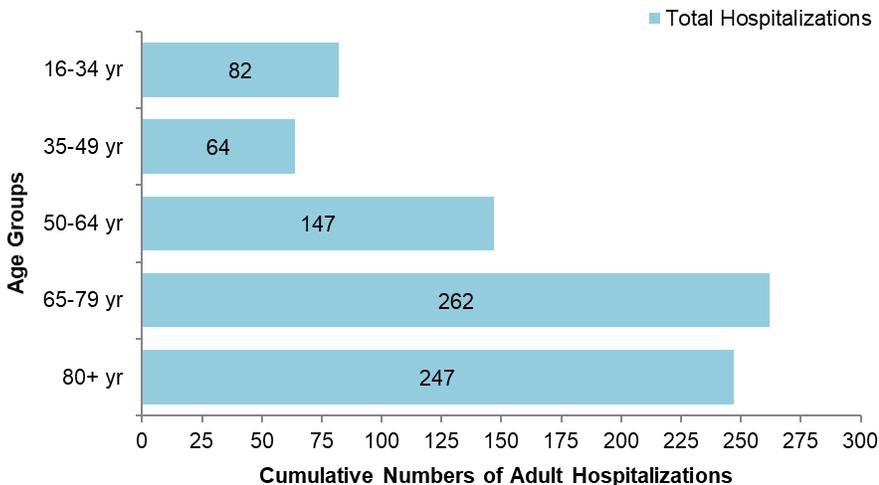
To date this season, 802 hospitalizations, 89 intensive care unit admissions, and 44 deaths have been reported (Figure 10).

- The majority of hospitalizations have been due to influenza A (78%), and among those subtyped (171) 92% were influenza A(H1N1).
- Among the 629 cases with influenza A, the largest proportion of hospitalizations were in adults 65 years of age and older (66%). Among the 170 cases with influenza B, 52% were in adults 65 years of age and older, and 26% of cases were between 16 and 34 years of age (Figure 11).
- 90% of hospitalized cases reported at least one type of comorbid condition.

**Figure 10 - Number of adult hospitalizations ( $\geq 16$  years of age) with influenza reported by the CIRN-SOS network, by week, Canada, weeks 2019-45 to 2020-19**



**Figure 11 - Cumulative numbers of adult hospitalizations ( $\geq 16$  years of age) with influenza by age-group reported by the CIRN-SOS network, Canada, weeks 2019-45 to 2020-19**



## Influenza Strain Characterizations

From September 1, 2019 to May 14, 2020, the National Microbiology Laboratory (NML) has characterized 1,640 influenza viruses (663 A(H1N1), 312 A(H3N2) and 665 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 92 influenza A(H3N2) viruses antigenically characterized to date, the majority (78%) showed reduced titer by HI assay to A/Kansas/14/2017 using antiserum raised against egg-propagated A/Kansas/14/2017. Twenty viruses were characterized as A/Kansas/14/2017-like (Figure 12a).

#### **Genetic Characterization:**

Nearly all (97%) of the 296 A(H3N2) viruses genetically characterized this season belonged to genetic group 3C.2a1b based on sequence analysis of the HA gene. Nine viruses belonged to the genetic group 3C.3a (Figure 13).

Group 3C.2a1b viruses analysed represent:

- 88% (67 out of 76) viruses that were also antigenically characterized.
- 100% (220 out of 220) 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 663 A(H1N1) viruses characterized to date, 48% 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**

#### **Antigenic Characterization:**

Among the 184 influenza B viruses antigenically characterized this season, the vast majority (181) belonged to the B/Victoria lineage. Three viruses were antigenically characterized as similar to B/Phuket/3073/2013 (B/Yamagata lineage).

The majority (90%, 162) 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 of 161 B/Victoria lineage viruses with reduced titre to B/Colorado/06/2017 showed that 100% had a three amino acid deletion (162-164) in the HA gene and belong to the genetic subclade V1A.3 (3Del). Sequencing is pending for the remaining viruses.

#### **Genetic Characterization:**

Genetic characterization was also performed on 481 B/Victoria lineage viruses. All of these viruses had a three amino acid deletion (162-164) in the HA gene and belong to the genetic subclade V1A.3 (3Del).

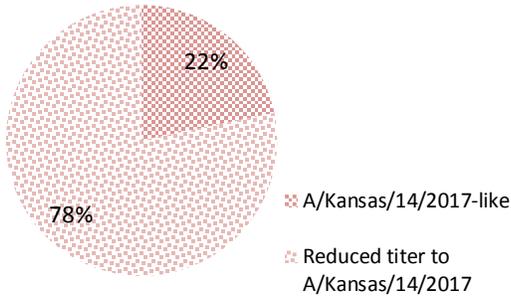
To date, 100% (642) of influenza B/Victoria viruses genetically characterized belong to the genetic subclade V1A.3 (3Del) (Fig 13b). Viruses in this genetic subclade are antigenically distinct from the vaccine strain B/Colorado/06/2017, which belongs to genetic subclade V1A.1 (2Del).

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. The vaccine strain B/Colorado/06/2017 belongs to genetic subclade V1A.1 (2Del).

**Figure 12 – Distribution of antigenic phenotypes among characterized influenza viruses, Canada, September 1, 2019 to May 14, 2020**

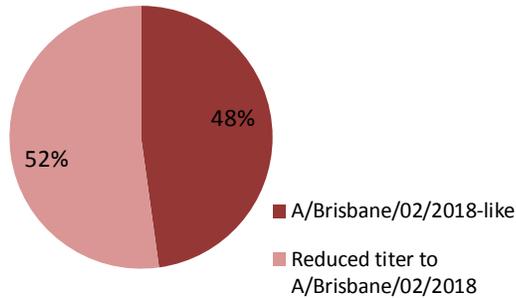
**A) A(H3N2) viruses**

Number of viruses characterized: 92



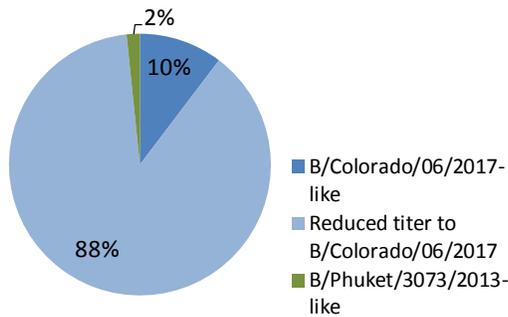
**B) A(H1N1) viruses**

Number of viruses characterized: 663



**C) B viruses**

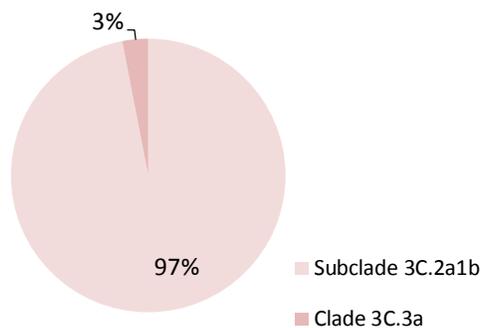
Number of viruses characterized: 184



**Figure 13 – Distribution of genetic clades among characterized influenza viruses, Canada, September 1, 2019 to May 14, 2020**

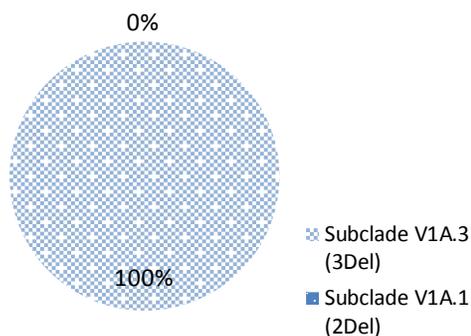
**A) A(H3N2) viruses**

Number of viruses sequenced: 296



**B) B/Victoria viruses**

Number of viruses sequenced: 642



## Antiviral Resistance

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

### Oseltamivir:

733 influenza viruses (164 A(H3N2), 283 A(H1N1) and 286 B) were tested for resistance to oseltamivir:

- All influenza A(H3N2) and B viruses were sensitive to oseltamivir.
- Among the A(H1N1) viruses tested, 282 (99.6%) were sensitive to oseltamivir and one virus was resistant to oseltamivir with the H275Y mutation in the neuraminidase gene.

### Zanamivir:

733 influenza viruses (164 A(H3N2), 283 A(H1N1) and 286 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

The Seasonal Influenza Immunization Coverage Survey is an annual telephone survey conducted between January and February that collects information from Canadians on whether they received the annual seasonal influenza vaccine that season. Vaccine coverage is measured as the percentage of people who received the influenza vaccine in a specific influenza season.

In the 2019-20 influenza season, coverage was similar to the 2018-19 season, at:

- 34% among adults aged 18 to 64 years.
  - 30% among adults aged 18-64 without chronic diseases.
  - 44% among adults aged 18 to 64 years with chronic diseases.
- 70% among seniors (aged 65 years and older).

**Table 2 – Influenza vaccine coverage among adults (n=3,026)\* by age group gender‡ and medical conditions†, Seasonal Influenza Vaccination Coverage Survey, Canada, September 2019 – February 2020**

Age group (years)	All		Male		Female	
	N	Vaccine Coverage % (95% CI)	N	Vaccine Coverage % (95% CI)	N	Vaccine Coverage % (95% CI)
All adults (≥18)	3023	41.8 (39.7-43.9)	1320	37.2 (34.1-40.2)	1691	46.1 (43.2-49.0)
18-64	2234	34.1 (31.8-36.5)	1005	29.8 (26.5-33.1)	1218	38.4 (35.1-41.7)
with chronic diseases	668	43.6 (39.0-48.1)	268	38.3 (31.5-45.2)	397	47.9 (41.7-54.0)
without chronic diseases	1558	30.0 (27.3-32.7)	732	26.7 (22.9-30.5)	818	33.5 (29.6-37.3)
≥65	789	70.3 (66.7-73.8)	315	67.2 (61.5-72.9)	473	72.7 (68.3-77.1)

\*3 people did not recall whether they had received the influenza vaccine and were excluded from coverage estimates.

‡4 people did not disclose their gender and 8 people did not identify themselves as male nor female. They were excluded from stratified analysis.

†8 people who were 18-64 years old did not disclose whether they had any chronic medical conditions (CMC) and were excluded from stratified analysis.

## Vaccine Effectiveness

The Canadian Sentinel Practitioner Surveillance Network (SPSN) provides estimates of the effectiveness of the seasonal influenza vaccine in preventing medically-attended illness due to laboratory-confirmed influenza among Canadians.

Based on data collected between November 1, 2019 and February 1, 2020, vaccine effectiveness (VE) was estimated to be 58% for any influenza, 44% for influenza A(H1N1), 62% for influenza A(H3N2), and 69% for influenza B. Substantial protection was observed among children 1 to 19 years of age against both influenza A and B. A good level of protection was also observed among working age adults (20-64 yrs) across all influenza types (Table 2). VE among adults 65 years and older, although imprecise due to small numbers, was lower at 18% (95% CI -59 to 58). The SPSN interim estimates are published and [available online](#).

More information on the network and past VE findings can be viewed on [the SPSN website](#).

Updated influenza vaccine effectiveness estimates will be published at the end of the 2019/2020 influenza season. At that time, sufficient data will likely be available to estimate VE by age-group, including adults 65 years and older with greater precision, as well as for influenza A subtypes.

**Table 3 – Vaccine effectiveness estimates against medically-attended influenza illness, SPSN, November 1, 2019, to February 1, 2020**

	All ages		1-19 years	20-64 years
	VE(%) (95% CI)*	N	VE(%) (95% CI)*	VE(%) (95% CI)*
All Influenza	58 (47, 66)	2808	74 (59, 84)	55 (41, 66)
Influenza A	49 (34, 60)	2128	70 (44, 84)	45 (25, 59)
Influenza A(H1N1)	44 (26, 58)	1948		
Influenza A(H3N2)	62 (37, 77)	1561		
Influenza B	69 (57, 77)	2080	77 (59, 87)	68 (51, 79)

CI: 95% confidence interval

\*adjusted for age group, province, specimen collection interval and calendar time

## 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.