

Ontario Respiratory Virus Bulletin | 2014-2015

SURVEILLANCE WEEK 49 (November 30, 2014 – December 6, 2014)

This issue of the Ontario Respiratory Virus Bulletin provides information on the surveillance period from November 30 to December 6, 2014 (Week 49). Unless otherwise specified, **data presented in this issue of the bulletin are for Week 49** and data extraction occurred on Wednesday, December 10, 2014.

Assessment of Influenza Activity in Ontario

Measure of activity	Assessment of measure compared to the previous week (Lower, Similar, Higher)	Reasoning behind assessment
Laboratory-confirmed influenza cases ¹	Higher	There were 138 influenza cases (135 influenza A and three influenza B) reported ¹ in Week 49, which was higher than the 66 influenza cases reported in Week 48 (64 influenza A and two influenza B).
Respiratory sample percent positivity for influenza ²	Higher	Percent positivity ² of laboratory tests for all influenza types in Week 49 was 9.6%, which was higher than the percent positivity in Week 48 (6.3%).
Influenza outbreaks ³	Similar	There were eight new influenza outbreaks reported in Week 49 which was similar to the number of influenza outbreaks reported in Week 48 (7).
Influenza activity levels reported by health units	Higher	In Week 49, ten health units reported 'localized' activity, six reported 'sporadic activity' and 15 reported 'no activity'. In Week 48, six health units reported 'localized' activity, four reported 'sporadic activity' and 26 reported 'no activity'.
OVERALL ASSESSMENT	Higher	Overall, the indicators show that influenza activity for Week 49 was higher than Week 48.
Measures of severity for influenza		
Hospitalizations among laboratory-confirmed cases of influenza ¹	Similar	There were 35 hospitalized cases reported in Week 49, which was similar to the 38 hospitalized cases reported in Week 48.
Deaths among laboratory-confirmed cases of influenza ¹	Similar	There were three deaths reported in Week 49, which was similar to the five deaths reported in Week 48.

¹ The number of **reported** cases needs to be interpreted with caution because there is a lag between the onset of illness, hospital admission or death and when this information is reported to public health. ² Positivity among specimens submitted for testing to Ontario laboratories reporting to the Centre for Immunization and Respiratory Infectious Diseases (CIRID). ³ The number of new outbreaks reported for the current week is based on the onset date of illness for the first case in an outbreak meeting the provincial outbreak definition, as reported in iPHIS.

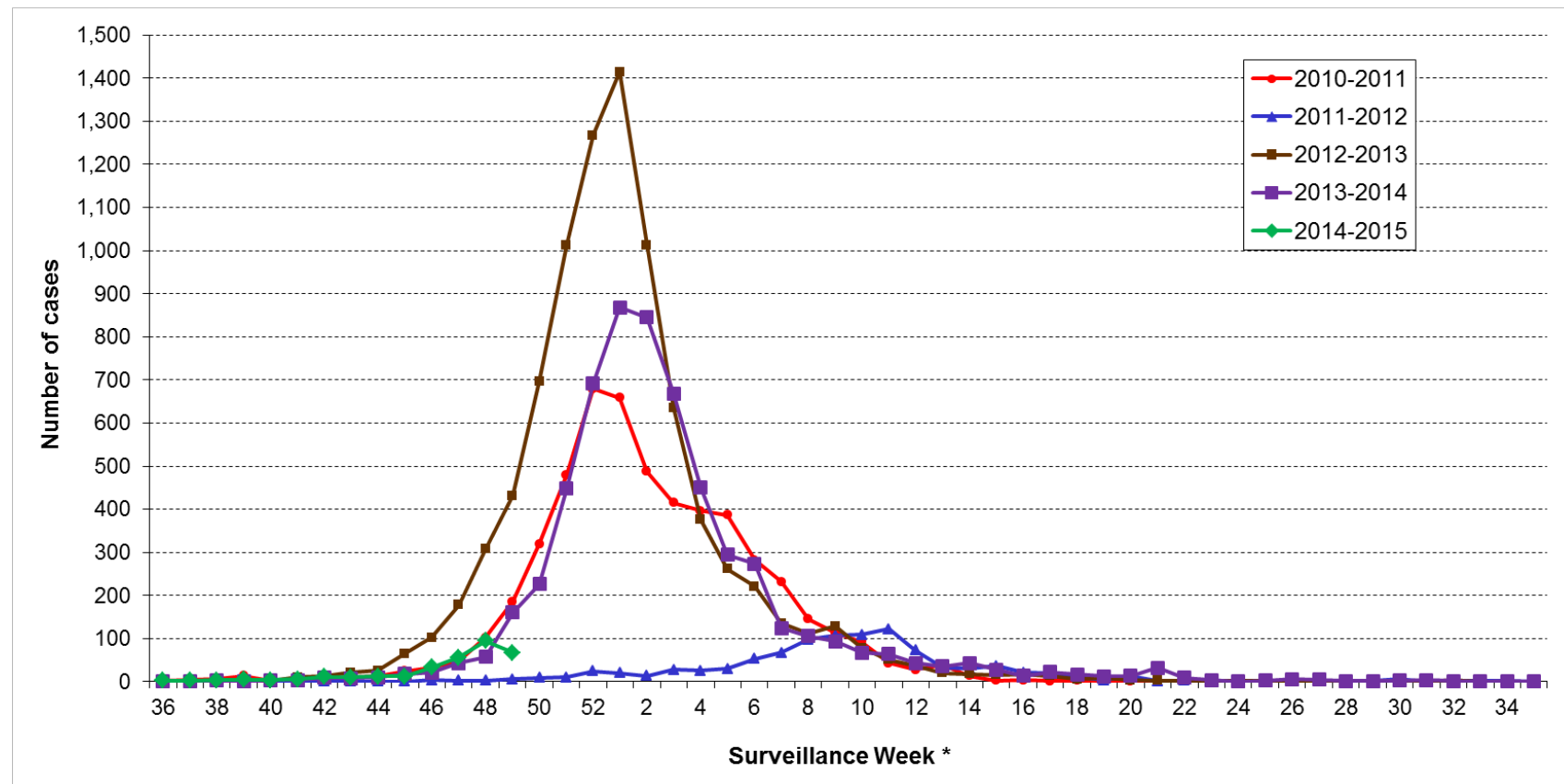
Summary of current and season-to-date respiratory virus activity in Ontario

Influenza activity in Ontario during week 49 was higher than the previous week. With the exception of northern Ontario, Influenza A related activity has been increasing across Ontario over the past three weeks, particularly in Toronto.

- Influenza A percent positivity was 9.5% in Week 49, which was higher than Week 48 (6.2%); Influenza B percent positivity was 0.1% in Week 49, which was the same as Week 48 (0.1%).¹
 - For the 2014-2015 surveillance season to date, 342 laboratory-confirmed influenza cases have been reported. Among these cases, the majority (93.9%, 321/342) were influenza A (Table 1). Of the 215 influenza A cases with subtype available, 99.1% (213/215) were H3N2. Forty percent (138/342) of influenza cases for this season to date were reported in week 49, another indication of increased influenza activity in Ontario.
 - Of the 200 institutional respiratory infection outbreaks reported to date in the 2014-2015 season, influenza was detected in 37; 36 were influenza A (of those with subtype information 100%, 20/20 were H3) and one was influenza B.
 - In the season to date, 120 hospitalizations and 12 deaths have been reported among laboratory-confirmed influenza cases. The majority of hospitalizations (96.7%, 116/120) and all of the deaths occurred in influenza A cases. Additionally, all of the deaths and 69.2% (83/120) of the hospitalizations were in individuals 65 years of age and older.
- Among other circulating non-influenza respiratory viruses identified through laboratory testing:
 - Rhinovirus was the most common circulating non-influenza virus in Week 49; the percent positivity for rhinovirus was 9.0% in Week 49 compared to 14.8% in Week 48. Of all institutional respiratory infection outbreaks reported to date, 48.0% (96/200) were identified as enterovirus/rhinovirus.
 - Respiratory syncytial virus (RSV) was the second most common circulating non-influenza virus in Week 49; the percent positivity for RSV was 7.8% in Week 49 compared to 6.1% in Week 48.

¹ Based on percent positivity among specimens submitted for testing to laboratories reporting to the Public Health Agency of Canada's Centre for Immunization and Respiratory Infectious Diseases (CIRID).

Figure 1. Number of reported confirmed cases of **influenza A** by surveillance week: Ontario, September 1, 2010 to December 6, 2014



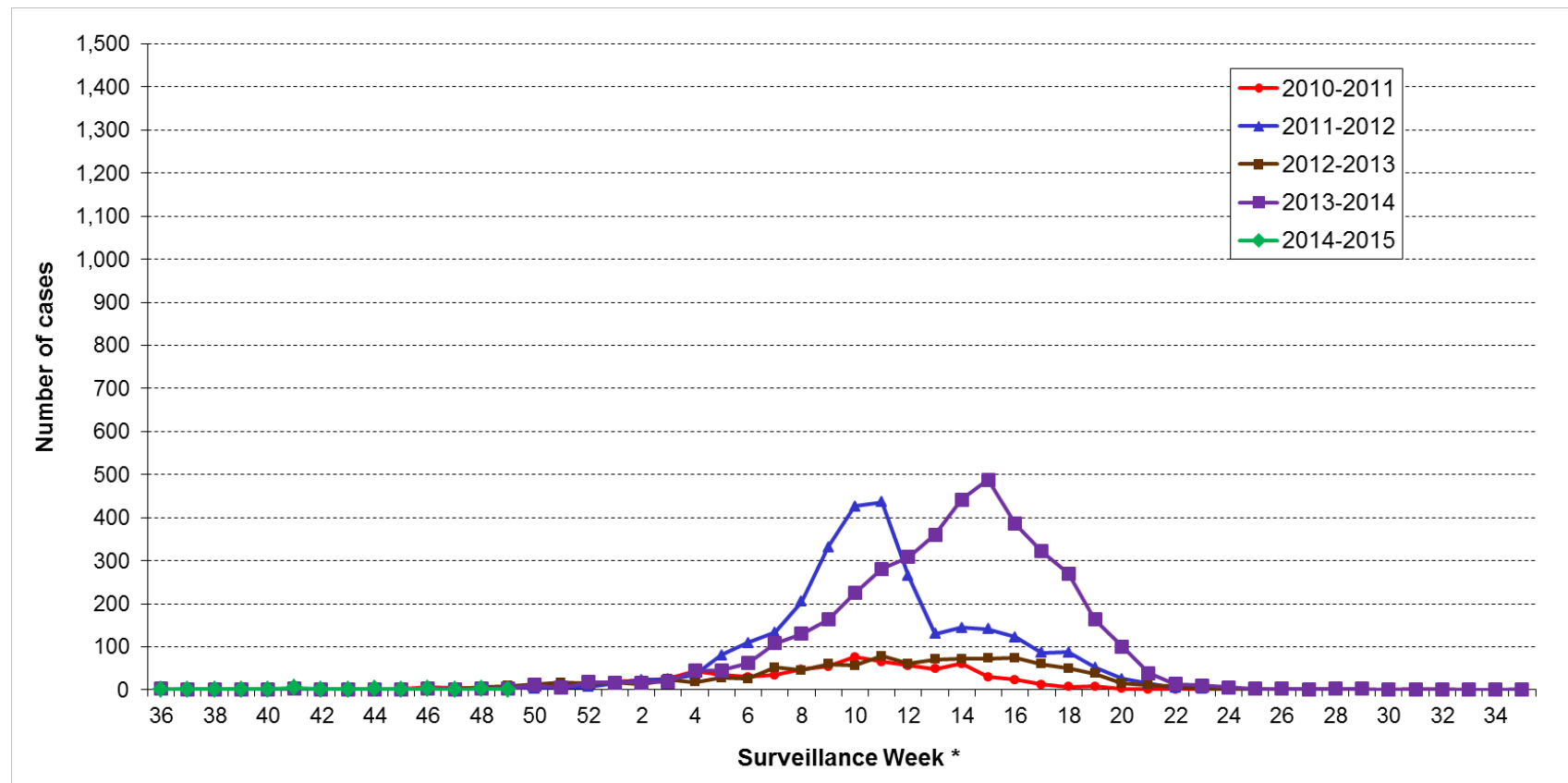
Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2014/12/10].

Notes:

Interpret most recent case counts for the current season with caution due to reporting lags.

*Case counts above are based on 'Reported Date', which was the date the health unit was notified of the case; however, cases are assigned to a particular surveillance week based on the episode date entered in iPHIS for the case. Episode date for a case corresponds to the earliest date on record for the case according to the iPHIS hierarchy (Symptom Date > Clinical Diagnosis Date > Specimen Collection Date > Lab Test Date > Reported Date). Cases are excluded from these counts if the episode date is based on reported date, and the reported date occurs after the latest surveillance week.

Figure 2. Number of reported confirmed cases of **influenza B** by surveillance week: Ontario, September 1, 2010 to December 6, 2014



Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2014/12/10].

Notes:

Interpret most recent case counts for the current season with caution due to reporting lags.

*Case counts above are based on 'Reported Date', which was the date the health unit was notified of the case; however, cases are assigned to a particular reporting week based on the episode date entered in iPHIS for the case. Episode date for a case corresponds to the earliest date on record for the case according to the iPHIS hierarchy (Symptom Date > Clinical Diagnosis Date > Specimen Collection Date > Lab Test Date > Reported Date). Cases are excluded from these counts if the episode date is based on reported date, and the reported date occurs after the latest surveillance week.

Table 1. Number of reported confirmed influenza cases by health unit and health region: Ontario, Week 49 and cumulative total (in parentheses) for the 2014-2015 season

Health Unit and Region	Influenza A				Influenza A & B	Influenza B	TOTAL
	(H1N1) pdm09	H3	Other *	No subtype available			
Northwestern	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Thunder Bay District	0 (0)	0 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (1)
TOTAL NORTH WEST	0 (0)	0 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (1)
Algoma	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
North Bay Parry Sound District	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Porcupine	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Sudbury & District	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Timiskaming	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
TOTAL NORTH EAST	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
City of Ottawa	0 (0)	0 (1)	0 (0)	4 (7)	0 (0)	0 (0)	4 (8)
Eastern Ontario	0 (0)	0 (0)	0 (0)	1 (1)	0 (0)	0 (0)	1 (1)
Hastings & Prince Edward Counties	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Kingston, Frontenac, Lennox & Addington	0 (0)	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)
Leeds, Grenville And Lanark District	0 (0)	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)
Renfrew County And District	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
TOTAL EASTERN	0 (0)	2 (3)	0 (0)	5 (8)	0 (0)	0 (0)	7 (11)
Durham Region	0 (0)	1 (2)	0 (0)	3 (3)	0 (0)	0 (0)	4 (5)
Haliburton, Kawartha, Pine Ridge	0 (0)	2 (2)	0 (0)	0 (0)	0 (0)	0 (0)	2 (2)
Peel Region	0 (0)	5 (17)	0 (0)	13 (21)	0 (0)	0 (3)	18 (41)
Peterborough County-City	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Simcoe Muskoka District	0 (0)	2 (2)	0 (0)	2 (5)	0 (0)	0 (2)	4 (9)
York Region	0 (0)	0 (14)	0 (0)	0 (2)	0 (0)	0 (1)	0 (17)
TOTAL CENTRAL EAST	0 (0)	10 (37)	0 (0)	18 (31)	0 (0)	0 (6)	28 (74)
Toronto	0 (2)	58 (141)	0 (0)	20 (39)	0 (1)	0 (7)	78 (190)
TOTAL TORONTO	0 (2)	58 (141)	0 (0)	20 (39)	0 (1)	0 (7)	78 (190)
Chatham-Kent	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Elgin-St. Thomas	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Grey Bruce	0 (0)	1 (2)	0 (0)	2 (2)	0 (0)	0 (1)	3 (5)
Huron County	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Lambton County	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Middlesex-London	0 (0)	2 (5)	0 (0)	0 (2)	0 (0)	0 (0)	2 (7)
Oxford County	0 (0)	0 (2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (2)
Perth District	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Windsor-Essex County	0 (0)	3 (3)	0 (0)	1 (1)	0 (0)	0 (0)	4 (4)
TOTAL SOUTH WEST	0 (0)	6 (12)	0 (0)	3 (5)	0 (0)	0 (1)	9 (18)
Brant County	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)
City Of Hamilton	0 (0)	0 (10)	0 (0)	4 (15)	0 (0)	1 (1)	5 (26)
Haldimand-Norfolk	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Halton Region	0 (0)	2 (4)	0 (0)	5 (5)	0 (0)	0 (1)	7 (10)
Niagara Region	0 (0)	0 (0)	0 (0)	0 (1)	0 (0)	1 (1)	1 (2)
Waterloo Region	0 (0)	1 (1)	0 (0)	0 (2)	0 (0)	0 (2)	1 (5)
Wellington-Dufferin-Guelph	0 (0)	0 (1)	0 (0)	0 (0)	0 (0)	1 (1)	1 (2)
TOTAL CENTRAL WEST	0 (0)	4 (19)	0 (0)	9 (23)	0 (0)	3 (6)	16 (48)
TOTAL ONTARIO	0 (2)	80 (213)	0 (0)	55 (106)	0 (1)	3 (20)	138 (342)

Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2014/12/10].

Notes: Case counts above are based on 'Reported Date', which was the date the health unit was notified of the case. The cumulative count (in parentheses) includes laboratory-confirmed cases with a 'Reported Date' between September 1, 2014 and the last day of the current surveillance week.

* The 'Other' influenza A category includes any other influenza A subtypes identified; 'No subtype available' includes influenza A isolates that were classified as not subtyped, untypeable, or indeterminate.

Table 2. Hospitalizations and deaths among confirmed influenza cases by age group: Ontario, Week 49 and cumulative for the 2014-2015 influenza season

Age Group	HOSPITALIZATIONS		DEATHS	
	Weekly Count	Cumulative count (rate per 100,000)	Weekly count	Cumulative count (rate per 100,000)
<1	1	2 (1.4)	0	0 (0)
1 – 4	2	7 (1.2)	0	0 (0)
5 – 14	2	10 (0.7)	0	0 (0)
15 – 24	0	0 (0)	0	0 (0)
25 – 44	2	4 (0.1)	0	0 (0)
45 – 64	5	14 (0.4)	0	0 (0)
65+	23	83 (4)	3	12 (0.6)
Total	35	120 (0.9)	3	12 (0.1)

Sources:

Case data: Ontario Ministry of Health and Long-Term Care (MOHLTC), integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2014/12/10].

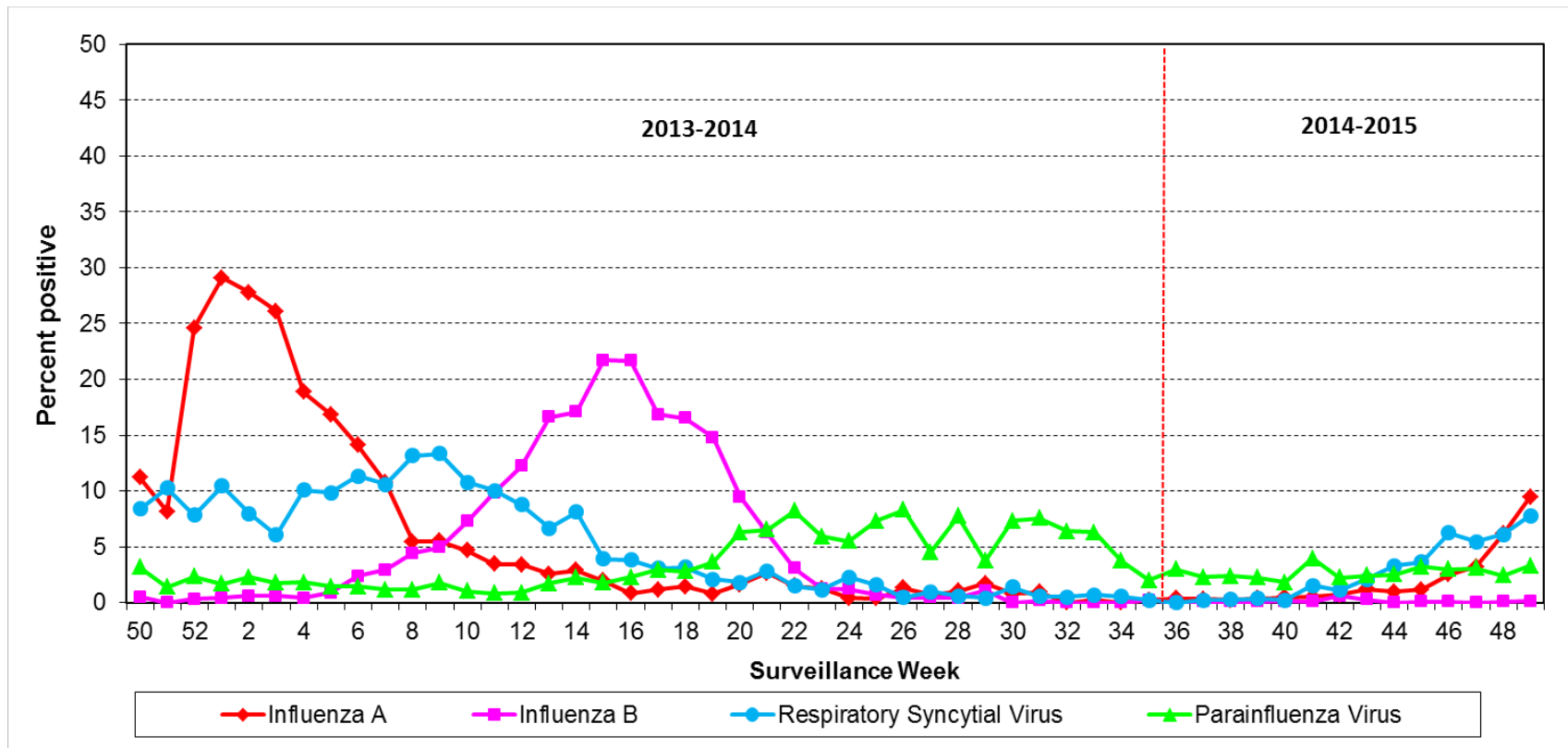
Population data: Population Estimates 2013, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, extracted by Public Health Ontario [2014/07/03].

Notes:

The numbers of hospitalizations and deaths provided in iPHIS need to be interpreted with caution due to delays between the onset of illness, hospital admission or death, and when this information is reported to public health. During periods of increased influenza activity, there may be additional delays in the reporting of hospitalizations and deaths beyond the expected reporting time lag.

Deaths in any influenza case are included; death attribution is not considered. In addition, the numbers of hospitalizations and deaths reported in iPHIS are believed to be an underestimation of the true experience in the Ontario population for many reasons, including underreporting because of ill persons not seeking medical care and therefore not getting tested

Figure 3. Percentage of respiratory viral pathogens (influenza A, influenza B, respiratory syncytial virus, and parainfluenza virus) detected among specimens tested by all methods: Ontario, December 8, 2013 to December 6, 2014



Source: These data have been obtained from the Public Health Agency of Canada's (PHAC) Centre for Immunization and Respiratory Infectious Diseases (CIRID) respiratory virus detection tables as of December 10, 2014; they are based on data submitted to PHAC from 16 laboratories in Ontario.

Notes:

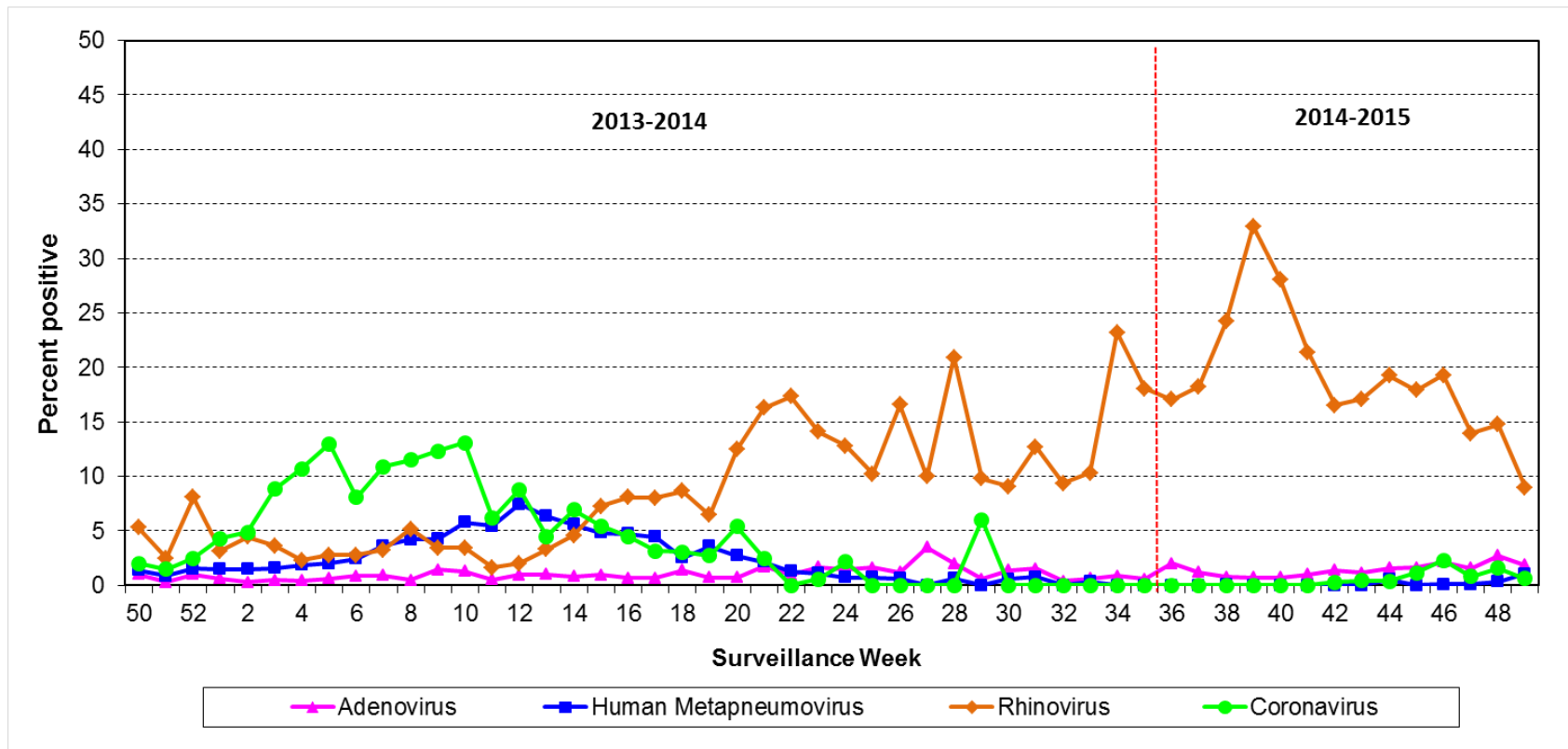
The numbers reported in this figure represent results submitted to the CIRID by 16 participating laboratories in Ontario, including 11 Public Health Ontario Laboratories (PHOLs) and five hospital-based laboratories.

Interpret results for Week 51 with caution as only four laboratories in Ontario, three of which were hospital-based laboratories, submitted results to the CIRID.

Results above are assigned to a particular surveillance week based on when test results are reported to PHAC; these data are not updated when results are submitted late for previous surveillance weeks. These data represent the number of specimens tested, which may not necessarily correspond with the number of patients as more than one specimen may have been submitted per patient.

Cumulative numbers for the season to date are also available through FluWatch: <http://www.phac-aspc.gc.ca/fluwatch/>

Figure 4. Percentage of respiratory viral pathogens (adenovirus, human metapneumovirus, rhinovirus and coronavirus) detected among specimens tested by all methods: Ontario, December 8, 2013 to December 6, 2014



Source: These data have been obtained from the Public Health Agency of Canada's (PHAC) Centre for Immunization and Respiratory Infectious Diseases (CIRID) respiratory virus detection tables as of December 10, 2014; they are based on data submitted to PHAC from 16 laboratories in Ontario.

Notes:

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Cumulative numbers for the season to date are also available through FluWatch: <http://www.phac-aspc.gc.ca/fluwatch/>

Table 3. Number and percent positivity of respiratory specimens tested by all methods for influenza and other respiratory viruses: Ontario, Week 49 and cumulative for the 2014-2015 season

Detected viruses	Current Surveillance Week			Cumulative for Season*		
	Number positive	Number tested	Percent positive	Number positive	Number tested	Percent positive
Influenza (All)	134	1,394	9.6%	358	16,177	2.2%
<i>Influenza A</i>	132	1,394	9.5%	340	16,177	2.1%
<i>Influenza B</i>	2	1,394	0.1%	18	16,177	0.1%
Parainfluenza virus	35	1,065	3.3%	341	13,643	2.5%
Adenovirus	20	1,065	1.9%	179	13,641	1.3%
Respiratory syncytial virus	98	1,258	7.8%	587	15,719	3.7%
Rhinovirus	33	367	9.0%	1,008	6,377	15.8%
Human metapneumovirus	11	1,030	1.1%	23	13,051	0.2%
Coronavirus	2	315	0.6%	19	3,659	0.5%

Source: These data have been obtained from the Public Health Agency of Canada's (PHAC) Centre for Immunization and Respiratory Infectious Diseases (CIRID) respiratory virus detection tables as of December 10, 2014; they are based on data submitted to PHAC from 16 participating laboratories in Ontario.

Notes:

*Cumulative numbers include counts from August 24, 2014 (surveillance week 35) because PHAC's CIRID data include Week 35 as part of the 2014-2015 season.

The data in this table are based on the date on which test results are reported. Cumulative counts reported include late reports from previous weeks; however, the current week will not include data from laboratories that submit late reports. Therefore, weekly counts from previous weeks may not equal the cumulative count.

These data represent the number of specimens tested, which may not necessarily correspond with the number of patients as more than one specimen may have been submitted per patient.

Cumulative numbers for the season to date are also available through FluWatch: <http://www.phac-aspc.gc.ca/fluwatch/>

Table 4. Institutional respiratory infection outbreaks: Ontario, Week 49 and total for the 2014-2015 season to date¹

Institutional Respiratory Infection Outbreaks		
New outbreaks (current week) ²	Number of outbreaks	Percentage (%) of total
Influenza A	8	47.1
Influenza B	0	0.0
Influenza A and B	0	0.0
Enterovirus/rhinovirus	0	0.0
Parainfluenza (all types)	1	5.9
Respiratory Syncytial Virus (RSV)	2	11.8
Combined outbreaks ³	0	0.0
Other organisms ⁴	0	0.0
No organism identified	6	35.3
TOTAL	17	100.0
Cumulative outbreaks (season to date) ¹	N	
Influenza A	36	18.0
Influenza B	1	0.5
Influenza A and B	0	0.0
Enterovirus/rhinovirus	96	48.0
Parainfluenza (All types)	7	3.5
Respiratory Syncytial Virus (RSV)	2	1.0
Combined outbreaks ³	4	2.0
Other organisms ⁴	3	1.5
No organism identified	51	25.5
TOTAL	200	100.0
Types of institutions for cumulative outbreaks		
Long-Term Care Homes	139	69.5
Hospitals	13	6.5
Retirement Homes	17	8.5
Other ⁵	1	0.5
Unknown	30	15.0
TOTAL	200	100.0

Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2014/12/10].

Notes:

¹ Season to date includes all outbreaks in which the date of onset of illness for the first case associated with the outbreak occurred between September 1, 2014 (Week 36) and the current reporting week, as well as outbreaks in which the date of onset of illness for the first case is missing.

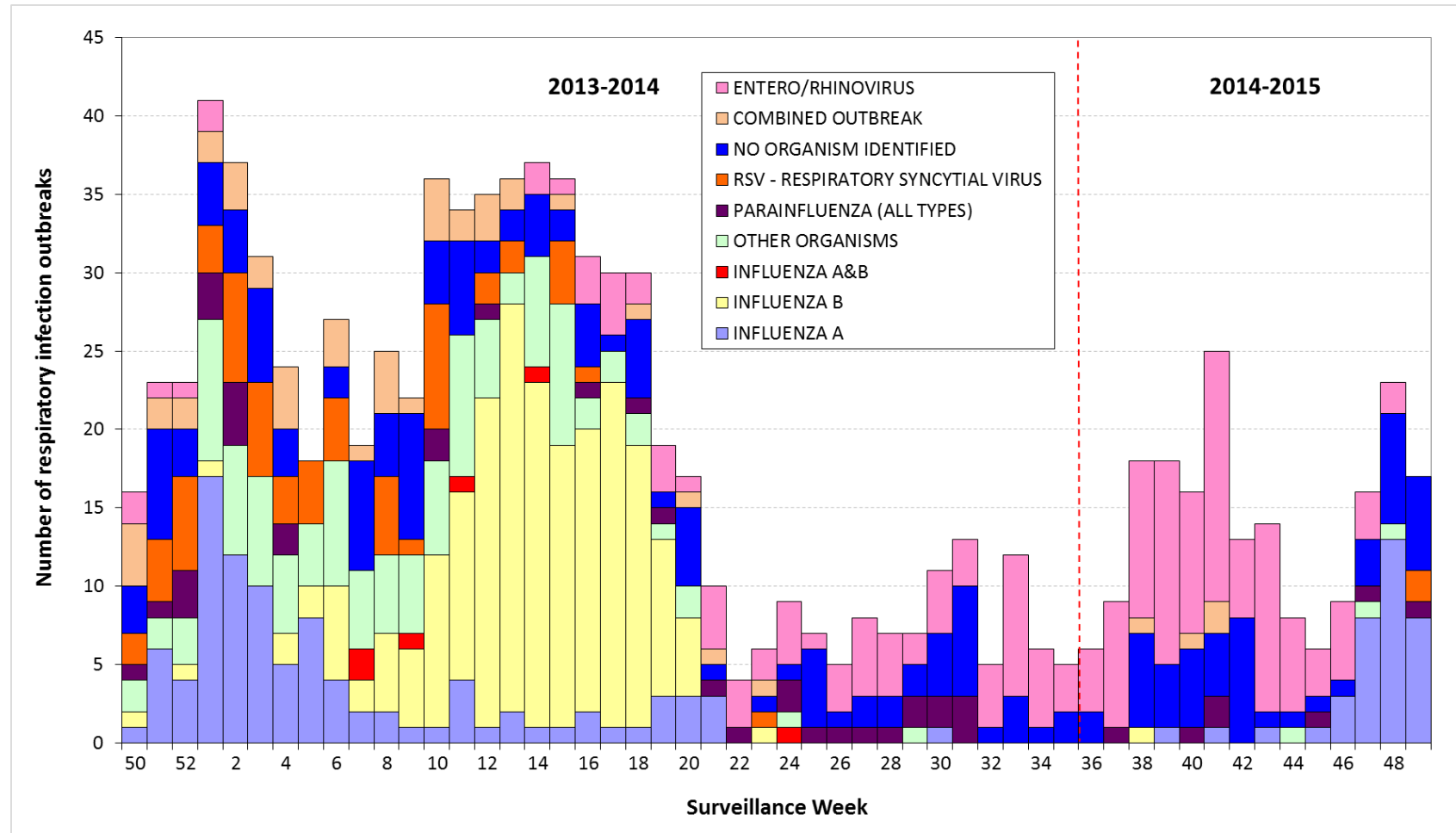
² New outbreaks are those in which the date of onset of illness in the first case occurred and was recorded in iPHIS in the current surveillance period; i.e. November 30 – December 6, 2014 (Week 49).

³ Combined outbreaks include outbreaks in which more than one non-influenza organism has been identified (e.g. RSV, parainfluenza, rhinovirus, etc.).

⁴ Other organisms include outbreaks involving other aetiological agents, such as human metapneumovirus, adenovirus, and coronavirus.

⁵ Other types of institutions include: correctional facilities, group homes, shelters, and facilities operating under the *Developmental Services Act*. Note that school-based and child care centre respiratory outbreaks are not captured in this table.

Figure 5. Institutional respiratory infection outbreaks by week of illness onset in the first case: Ontario, December 8, 2013 to December 6, 2014

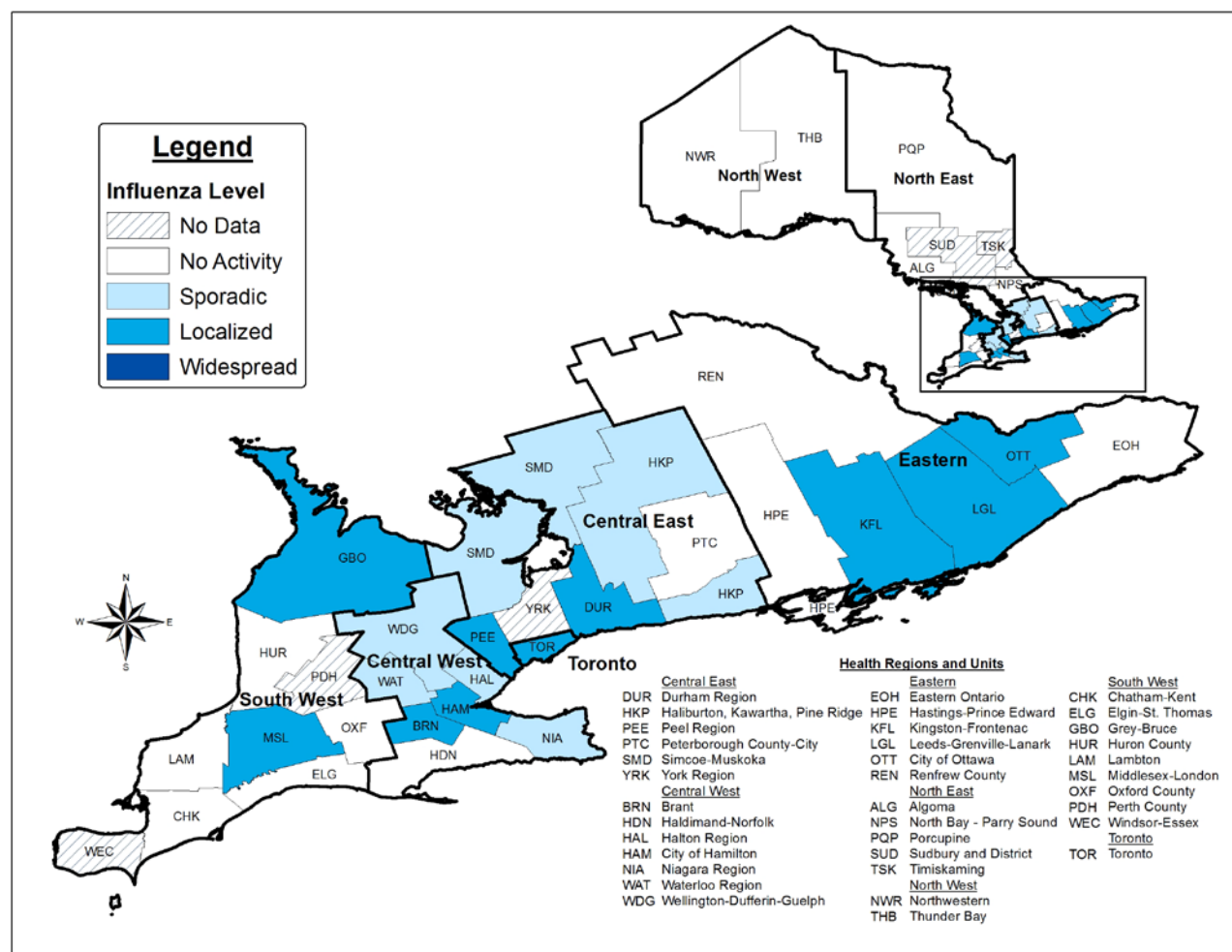


Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2014/12/10].

Notes:

Institutional respiratory infection outbreaks for which the date of onset of illness for the first case is missing are excluded in this figure. However, these outbreaks are counted in the cumulative outbreaks section of Table 3.

Figure 6. Influenza activity levels reported by public health units: Ontario, November 30, 2014 to December 6, 2014 (Week 49)



Source: Public Health Ontario [Provincial Influenza Activity Report (Appendix C) Database]

Notes:

Influenza activity levels are assigned by local public health units and reported to Public Health Ontario by the Tuesday following the end of each surveillance week at 4:00 p.m. Activity levels are assigned based on laboratory confirmations, ILI reports from various sources, and laboratory-confirmed institutional respiratory infection outbreaks. Please refer to the [detailed definitions for the 2014-2015 season for more information](#).

Activity levels reported for a particular surveillance week may not necessarily correspond to the number of new outbreaks reported in the same week in Table 3 because ongoing outbreaks from previous weeks, as well as laboratory confirmed outbreaks in schools, may be included in the assessment of the activity level.

Due to low numbers of sentinels reporting data on influenza-like-illness (ILI), consultation rates reported by sentinels will no longer appear in the bulletin

APPENDIX**Table I.** Strain characterization completed on influenza isolates at the National Microbiology Laboratory: Ontario and Canada, September 1, 2014 to December 11, 2014

Influenza strains	Ontario	Canada
Influenza A (H3N2) A/Texas/50/2012-like	1	11*
Influenza A (H1N1)pdm09 A/California/07/2009-like	0	0
Influenza B B/Massachusetts/02/2012-like	4	14**

Source: Influenza and Respiratory Viruses Section, National Microbiology Laboratory (NML).

Notes:

*Of the 11 influenza A (H3N2) viruses characterized, two were antigenically similar to A/Texas/50/2012, which is the influenza A/H3N2 component recommended for the 2014-15 influenza vaccine. Nine viruses showed reduced titres with antiserum produced against A/Texas/50/2012.

**Of the 14 influenza B viruses characterized, 11 viruses were antigenically similar to the vaccine strain B/Massachusetts/2/2012. Three viruses showed reduced titres with antiserum produced against B/Massachusetts/2/2012.

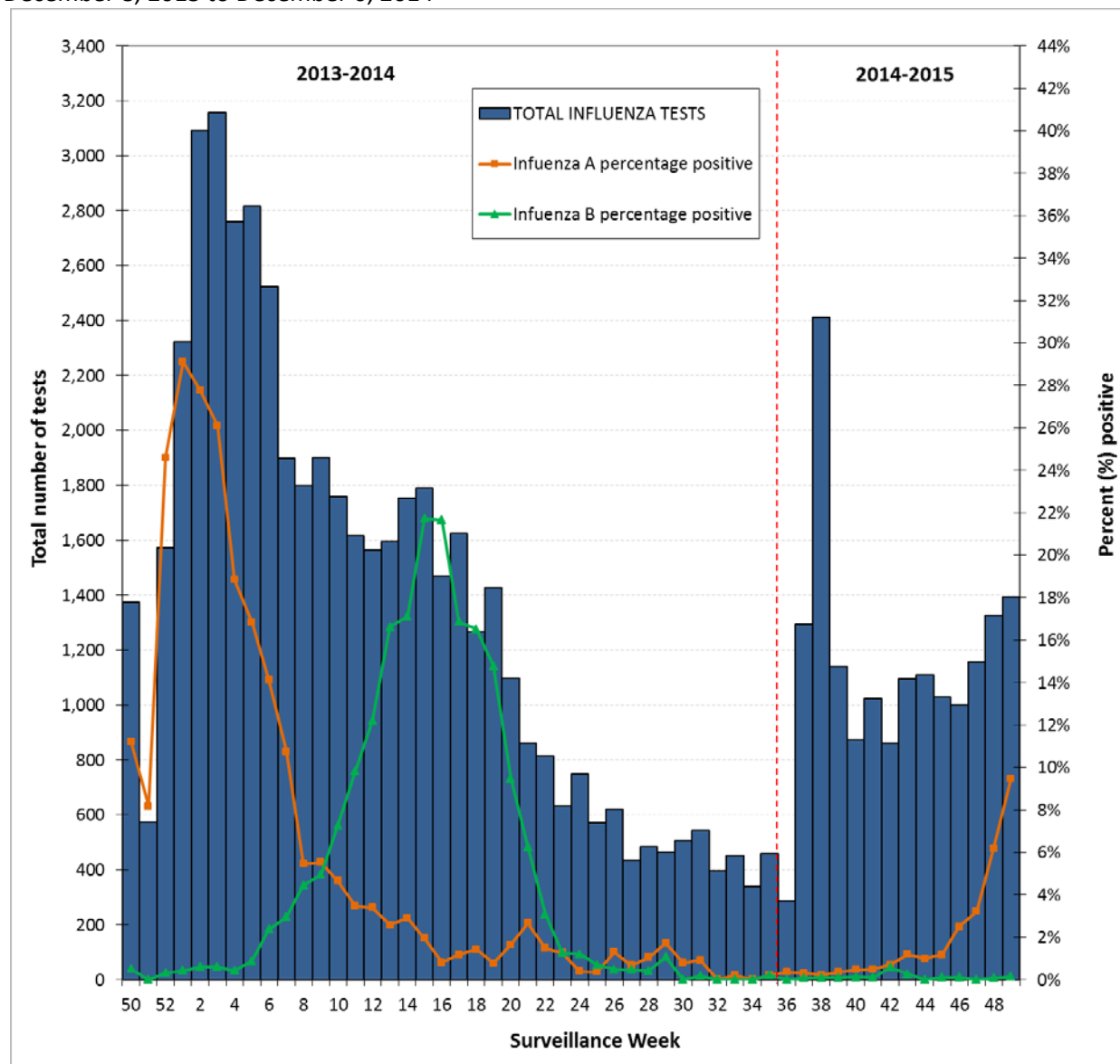
The WHO recommended influenza strains for the [2014-2015](#) trivalent influenza vaccine for the northern hemisphere are: an A/California/7/2009 (H1N1)pdm09-like virus, an A/Texas/50/2012 (H3N2)-like virus, and a B/Massachusetts/2/2012-like virus. WHO also recommends that quadrivalent vaccines containing two influenza B viruses include a B/Brisbane/60/2008-like virus.

Table II. Amantadine, oseltamivir and zanamivir susceptibility assays completed on influenza isolates at the National Microbiology Laboratory: Ontario and Canada, September 1, 2014 to December 11, 2014

Influenza strains	Amantadine				Oseltamivir				Zanamivir			
	ONTARIO		CANADA		ONTARIO		CANADA		ONTARIO		CANADA	
	R	S	R	S	R	S	R	S	R	S	R	S
Influenza A (H3N2)	10	0	70	0	0	14	0	60	0	14	0	60
Influenza A (H1N1)pdm09	0	0	0	0	0	0	0	0	0	0	0	0
Influenza B	NA	NA	NA	NA	0	4	0	14	0	4	0	14

(R = Resistant, S = Susceptible, NA = Not Applicable)

Source: Influenza and Respiratory Viruses Section, National Microbiology Laboratory (NML).

Figure I. Total number of influenza tests performed and percent of positive tests by report week: Ontario, December 8, 2013 to December 6, 2014

Source: These data have been obtained from the Public Health Agency of Canada's (PHAC) Centre for Immunization and Respiratory Infectious Diseases (CIRID) respiratory virus detection tables as of December 10, 2014; they are based on data submitted to PHAC from 16 laboratories in Ontario.

Notes:

The numbers reported in this figure represent results submitted to the CIRID by 16 participating laboratories in Ontario, including 11 Public Health Ontario Laboratories and five hospital-based laboratories.

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