



Ohio Department of Health Seasonal Influenza Activity Summary

MMWR Week 1

December 31st – January 6th, 2017

Current Influenza Activity:

Current Ohio Activity Level (Geographic Spread) – *Widespread*

Definition: Increased ILI in at least half of the regions AND recent (within the past 3 weeks) lab confirmed influenza in the state.

During MMWR Week 1, public health surveillance data sources indicate increasing influenza-like illness (ILI) activity in outpatient settings reported by Ohio’s sentinel ILINet providers. Outpatient medical claims related to influenza-like illness are above seasonal threshold levels but decreased for the first time in several weeks during MMWR Week 1. The percentage of emergency department visits with patients exhibiting constitutional symptoms and fever and ILI specified ED visits are above baseline levels. Reported cases of influenza-associated hospitalizations are above the seasonal threshold*. There were 1750 influenza-associated hospitalizations reported.

Ohio Weekly Influenza-associated Hospitalizations by Ohio Public Health Region

Central	206
East Central	371
Northeast	292
Northwest	183
Southeast	154
Southwest	273
West Central	271
Total	1750

Ohio Influenza Activity Summary Dashboard:

Data Source	Current week value	Percent Change from last week ¹	# of weeks ²	Trend Chart ³
Influenza-like Illness (ILI) Outpatient Data (ILINet Sentinel Provider Visits)	4.57%	5.54%	↑ 5	
Thermometer Sales (National Retail Data Monitor)	2594	8.90%	↑ 4	
Fever and ILI Specified ED Visits (EpiCenter)	3.30%	-8.84%	↓ 1	
Constitutional ED Visits (EpiCenter)	14.45%	-0.14%	↓ 1	
Confirmed Influenza-associated Hospitalizations (Ohio Disease Reporting System)	1750	89.19%	↑ 8	
Outpatient Medical Claims Data⁴	2.60%	-10.03%	↓ 1	

¹Interpret percent changes with caution. Large variability may be exhibited in data sources with low weekly values.

²Number of weeks that the % change is increasing or decreasing.

³Black lines represent current week's data; red lines represent baseline averages

⁴Medical Claims Data provided by athenahealth®

*The seasonal threshold is 25 cases of influenza-associated hospitalizations; historical data demonstrate that once the weekly count exceeds 25 cases, the number of weekly cases thereafter will likely not decrease until after the peak of influenza activity for the season

2017-2018 Influenza Vaccine Components:

A/B	Virus	Trivalent	Quadrivalent
A	Michigan/45/2015 (H1N1)pdm09-like	X	X
A	Hong Kong/4801/2014 (H3N2)-like	X	X
B	Brisbane/60/2008-like (B/Victoria lineage)	X	X
B	Phuket/3073/2013-like (B/Yamagata lineage)		X

Influenza Virus Characterization:

CDC has antigenically or genetically characterized 686 influenza viruses collected during October 1 – December 30, 2017, and submitted by U.S. laboratories, including 100 influenza A(H1N1)pdm09 viruses, 410 influenza A(H3N2) viruses, and 176 influenza B viruses.

- **A (H1N1)pdm09:** Phylogenetic analysis of the HA genes from 100 A(H1N1)pdm09 viruses showed that all belonged to clade 6B.1. Sixty-seven A(H1N1)pdm09 viruses were antigenically characterized, and all were antigenically similar (analyzed using HI with ferret antisera) to the reference 6B.1 virus A/Michigan/45/2015, representing the recommended influenza A(H1N1)pdm09 reference virus for the 2017–18 Northern Hemisphere influenza vaccines.
- **A (H3N2):** Phylogenetic analysis of the HA genes from 410 A(H3N2) viruses revealed extensive genetic diversity with multiple clades/subclades co-circulating. The HA genes of circulating viruses belonged to clade 3C.2a (n=326), subclade 3C.2a1 (n=80) or clade 3C.3a (n=4). One hundred sixty one influenza A(H3N2) viruses were antigenically characterized, and 159 (99.2%) A(H3N2) viruses tested were well-inhibited (reacting at titers that were within fourfold of the homologous virus titer) by ferret antisera raised against A/Michigan/15/2014 (3C.2a), a cell propagated A/Hong Kong/4801/2014-like reference virus representing the A(H3N2) component of 2017–18 Northern Hemisphere influenza vaccines.

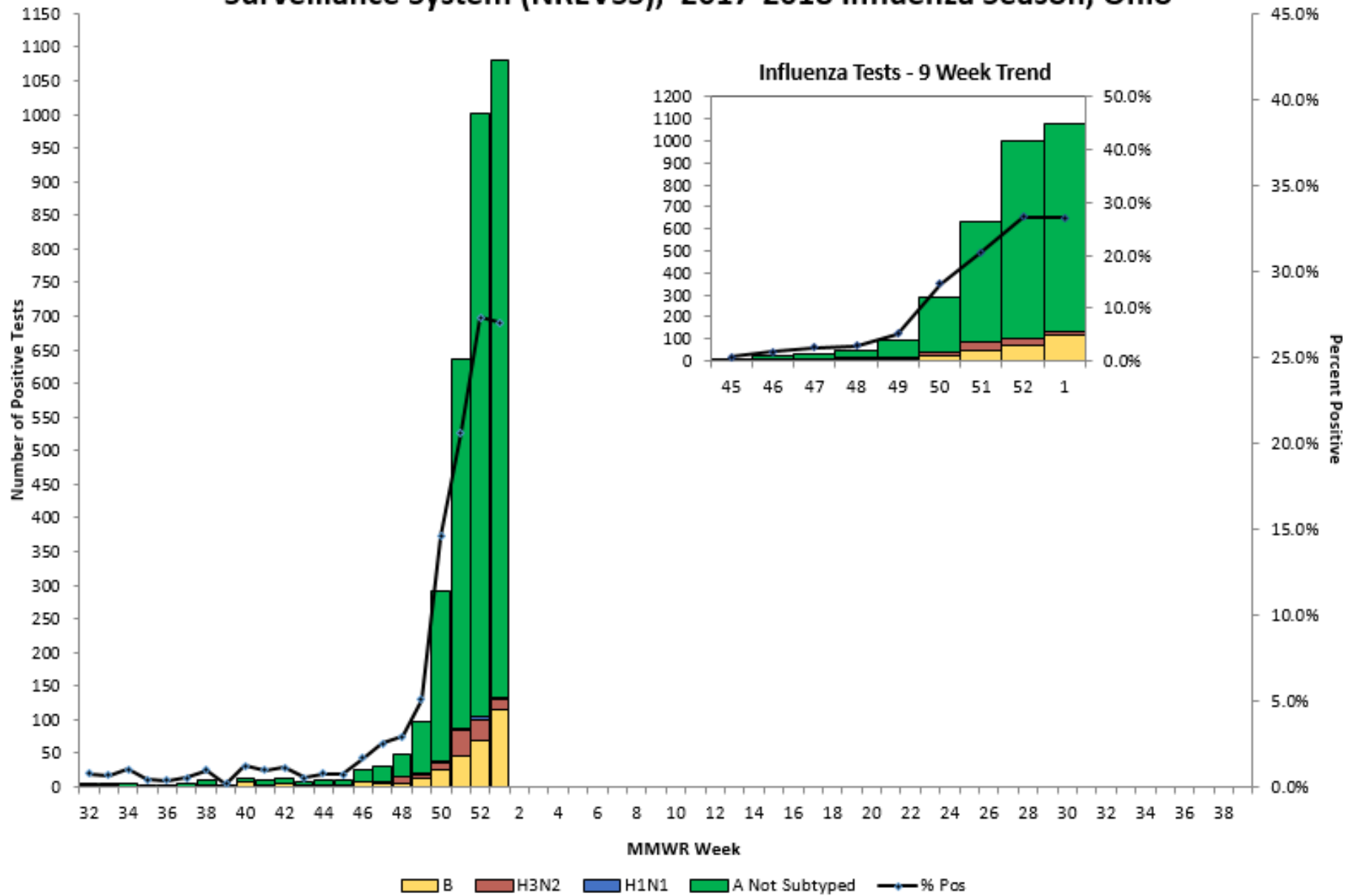
Influenza B Viruses

- **B/Victoria:** Phylogenetic analysis of 20 B/Victoria-lineage viruses indicate that all HA genes belonged to genetic clade V1A, the same genetic clade as the vaccine reference virus, B/Brisbane/60/2008. However, a small number of viruses identified in 2017 had a 6-nucleotide deletion (encoding amino acids 162 and 163) in the HA (abbreviated as V1A-2Del). Four (57.1%) B/Victoria lineage viruses were well-inhibited by ferret antisera raised against cell -propagated B/Brisbane/60/2008 reference virus, representing a recommended B virus component of 2017–18 Northern Hemisphere influenza vaccines. Three (42.9%) B/Victoria lineage viruses reacted poorly (at titers that were 8-fold or greater reduced compared with the homologous virus titer) with ferret antisera raised against cell-propagated B/Brisbane/60/2008, and these viruses had the V1A-2Del HA.
- **B/Yamagata:** Phylogenetic analysis of 156 influenza B/Yamagata-lineage viruses indicate that the HA genes belonged to clade Y3. A total of 71 influenza B/Yamagata-lineage viruses were antigenically characterized, and all were antigenically similar to cell propagated B/Phuket/3073/2013, the reference vaccine virus representing the influenza B/Yamagata-lineage component of the 2017–18 Northern Hemisphere quadrivalent vaccines.

National activity levels and more information can be found at the following CDC pages:

- <http://www.cdc.gov/flu/weekly/usmap.htm>
- <http://www.cdc.gov/flu/>

Positive Influenza Tests (PCR), National Respiratory and Enteric Virus Surveillance System (NREVSS), 2017-2018 Influenza Season, Ohio



**Influenza-Associated Hospitalizations, Ohio
2017-2018 Season***

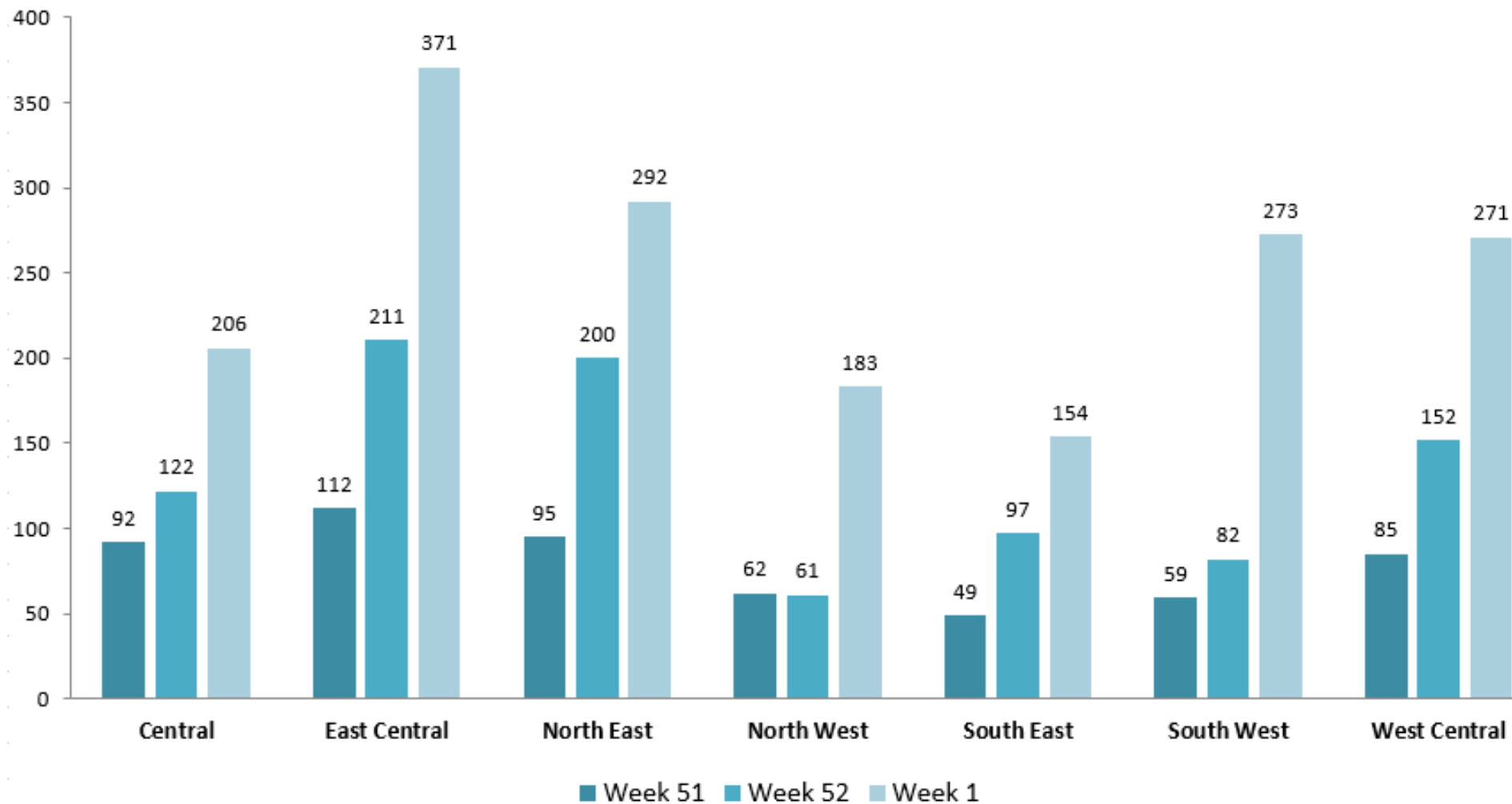
County	Influenza-Associated Hospitalizations	Percent of All Influenza-Associated Hospitalizations	Rate per 100,000 Population†	County	Influenza-Associated Hospitalizations	Percent of All Influenza-Associated Hospitalizations	Rate per 100,000 Population†
ADAMS	2	0.1%	7.01	LOGAN	5	0.1%	10.90
ALLEN	47	1.2%	44.20	LORAIN	65	1.7%	21.57
ASHLAND	8	0.2%	15.05	LUCAS	140	3.6%	31.69
ASHTABULA	8	0.2%	7.88	MADISON	24	0.6%	55.25
ATHENS	14	0.4%	21.62	MAHONING	73	1.9%	30.57
AUGLAIZE	10	0.3%	21.76	MARION	36	0.9%	54.13
BELMONT	3	0.1%	4.26	MEDINA	59	1.5%	34.24
BROWN	3	0.1%	6.69	MEIGS	4	0.1%	16.83
BUTLER	101	2.6%	27.44	MERCER	16	0.4%	39.20
CARROLL	16	0.4%	55.49	MIAMI	33	0.9%	32.19
CHAMPAIGN	15	0.4%	37.41	MONROE	0	0.0%	0.00
CLARK	83	2.2%	60.00	MONTGOMERY	378	9.8%	70.63
CLERMONT	71	1.8%	35.97	MORGAN	1	0.0%	6.64
CLINTON	13	0.3%	30.92	MORROW	6	0.2%	17.23
COLUMBIANA	23	0.6%	21.33	MUSKINGUM	54	1.4%	62.74
COSHOCTON	5	0.1%	13.55	NOBLE	7	0.2%	47.80
CRAWFORD	7	0.2%	15.99	OTTAWA	10	0.3%	24.14
CUYAHOGA	522	13.5%	40.78	PAULDING	11	0.3%	56.08
DARKE	10	0.3%	18.88	PERRY	8	0.2%	22.19
DEFIANCE	9	0.2%	23.06	PICKAWAY	13	0.3%	23.34
DELAWARE	35	0.9%	20.09	PIKE	9	0.2%	31.35
ERIE	10	0.3%	12.97	PORTAGE	38	1.0%	23.54
FAIRFIELD	14	0.4%	9.58	PREBLE	14	0.4%	33.12
FAYETTE	5	0.1%	17.22	PUTNAM	9	0.2%	26.09
FRANKLIN	315	8.2%	27.08	RICHLAND	6	0.2%	4.82
FULTON	10	0.3%	23.42	ROSS	13	0.3%	16.65
GALLIA	13	0.3%	42.02	SANDUSKY	14	0.4%	22.97
GEAUGA	41	1.1%	43.90	SCIOTO	36	0.9%	45.28
GREENE	72	1.9%	44.56	SENECA	7	0.2%	12.34
GUERNSEY	28	0.7%	69.85	SHELBY	9	0.2%	18.21
HAMILTON	207	5.4%	25.80	STARK	213	5.5%	56.71
HANCOCK	20	0.5%	26.74	SUMMIT	295	7.6%	54.45
HARDIN	8	0.2%	24.95	TRUMBULL	38	1.0%	18.07
HARRISON	4	0.1%	25.21	TUSCARAWAS	31	0.8%	33.48
HENRY	4	0.1%	14.18	UNION	12	0.3%	22.94
HIGHLAND	12	0.3%	27.53	VAN WERT	2	0.1%	6.96
HOCKING	8	0.2%	27.23	VINTON	5	0.1%	37.22
HOLMES	5	0.1%	11.80	WARREN	69	1.8%	32.44
HURON	12	0.3%	20.13	WASHINGTON	48	1.2%	77.70
JACKSON	23	0.6%	69.22	WAYNE	47	1.2%	41.04
JEFFERSON	59	1.5%	84.64	WILLIAMS	7	0.2%	18.60
KNOX	2	0.1%	3.28	WOOD	38	1.0%	30.28
LAKE	42	1.1%	18.26	WYANDOT	2	0.1%	8.84
LAWRENCE	11	0.3%	17.61	UNKNOWN	0	0.0%	*
LICKING	22	0.6%	13.21	TOTAL	3857	100%	33.43

*2017-2018 Season 10/1/2017 thru 9/30/2018

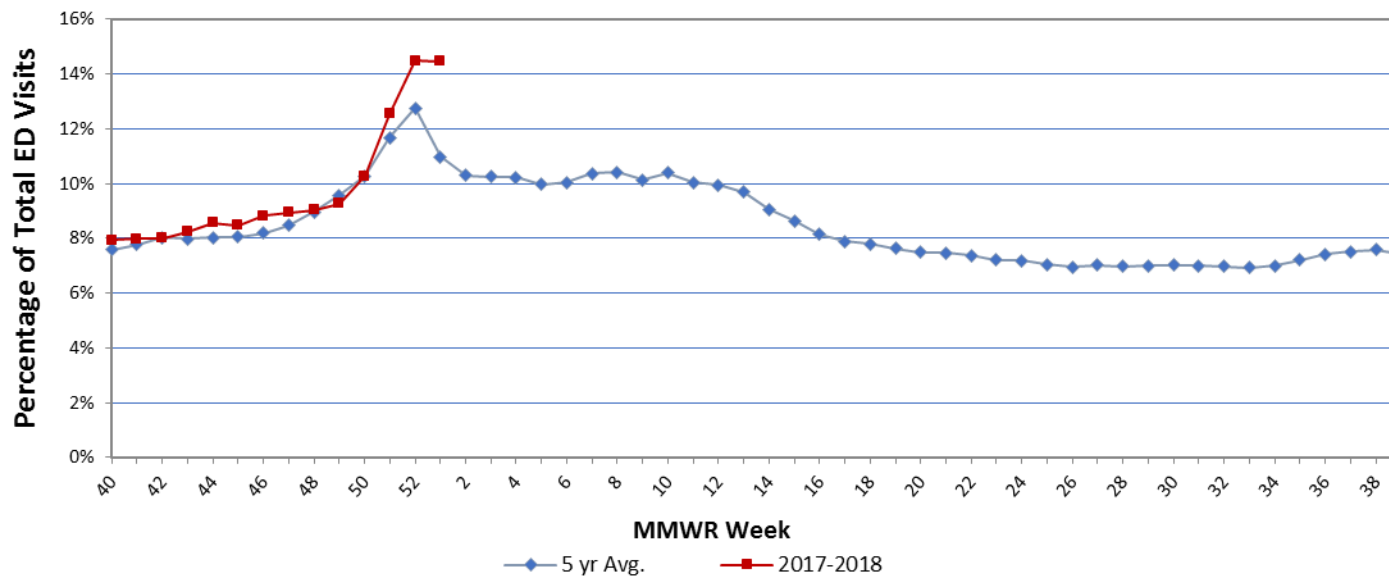
† Disease rates were calculated by number of cases per 100,000 residents using 2010 census data.

Source: Ohio Disease Reporting System

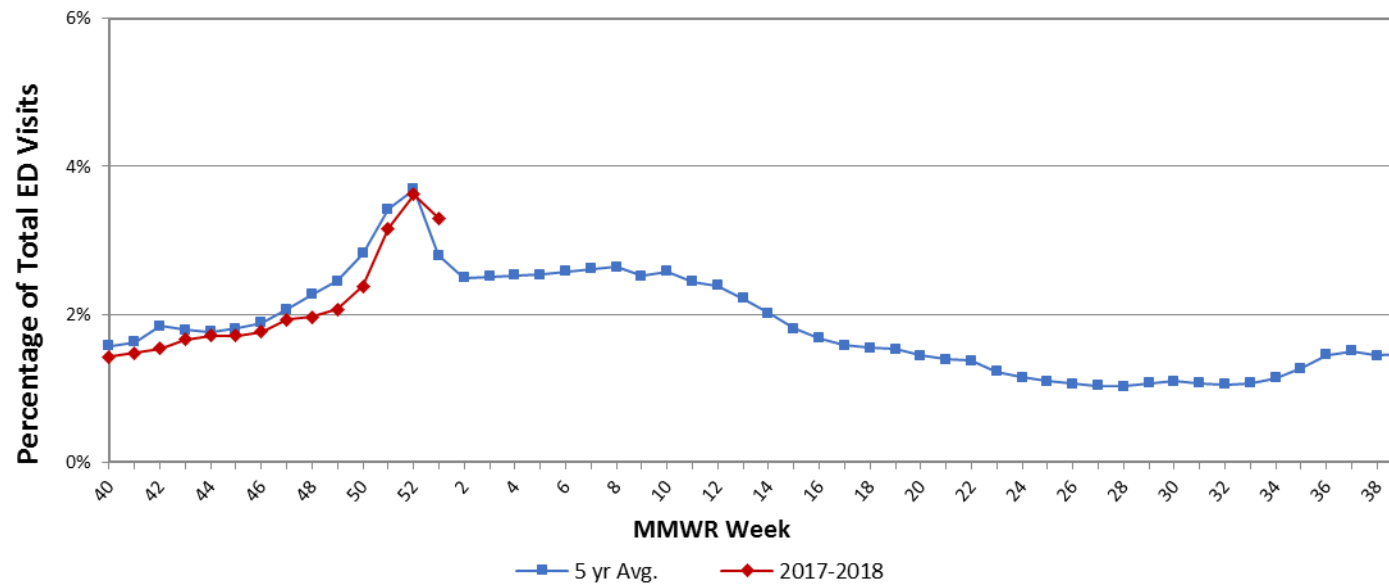
Influenza-associated Hospitalizations by Public Health Region and MMWR Week, Ohio, 2017-2018 Influenza Season



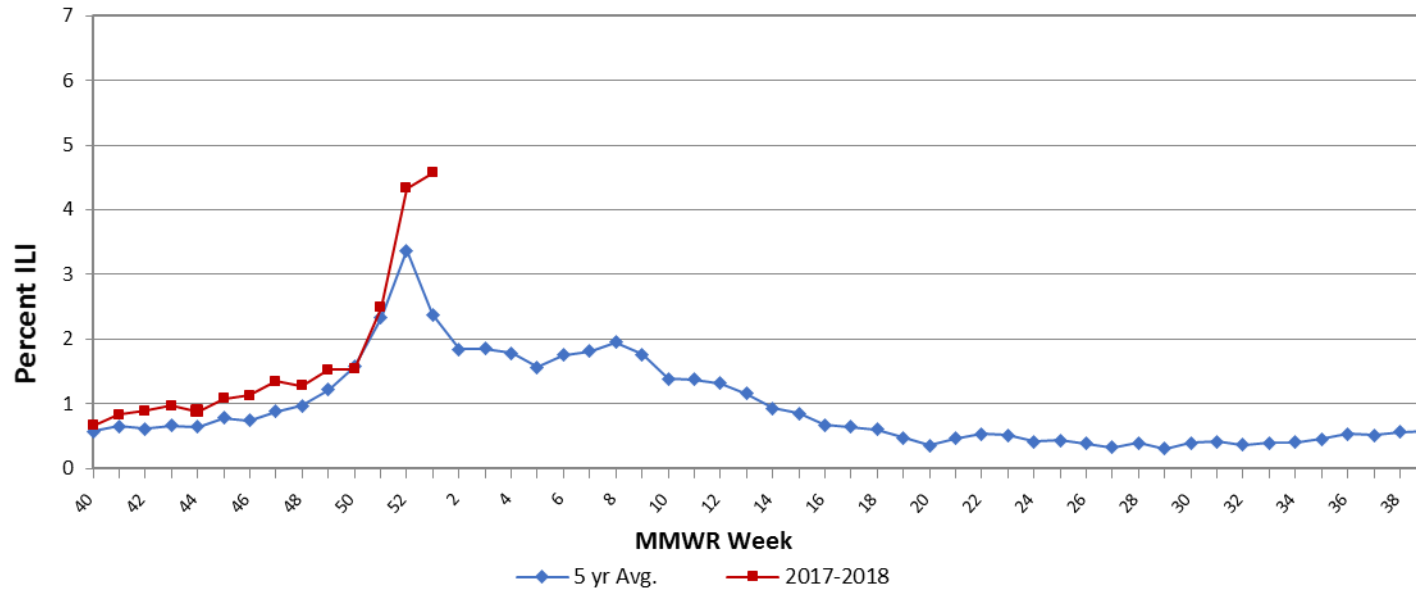
Ohio Constitutional ED Visits with 5 Year Baseline Average; 2017-2018



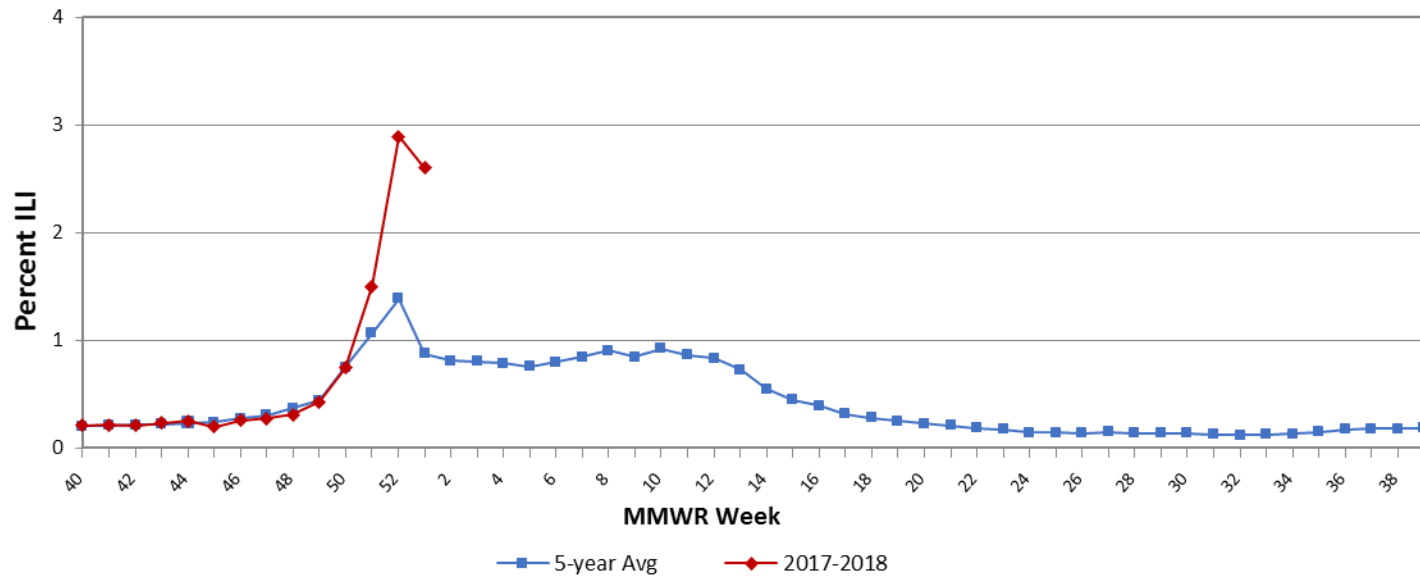
Ohio Fever & ILI Specified ED Visits with 5 Year Baseline Average; 2017-2018



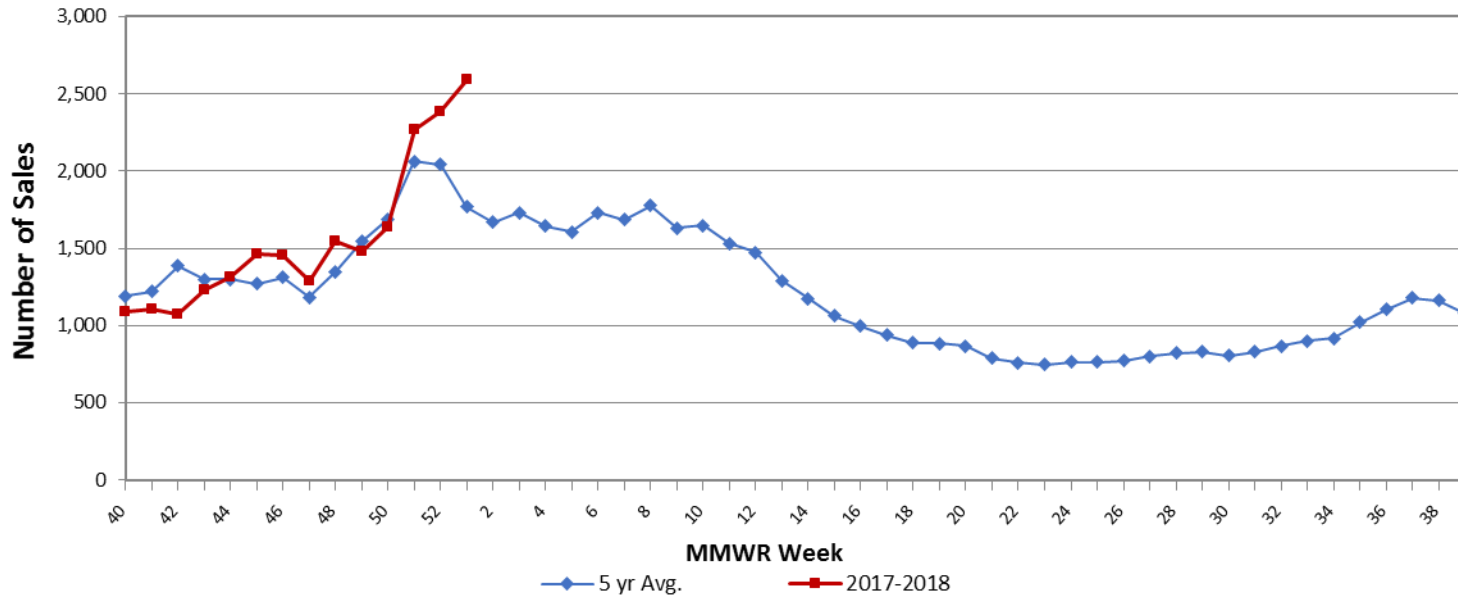
Ohio Outpatient Influenza-like Illness Network (ILINet) with 5 Year Baseline Average; 2017-2018



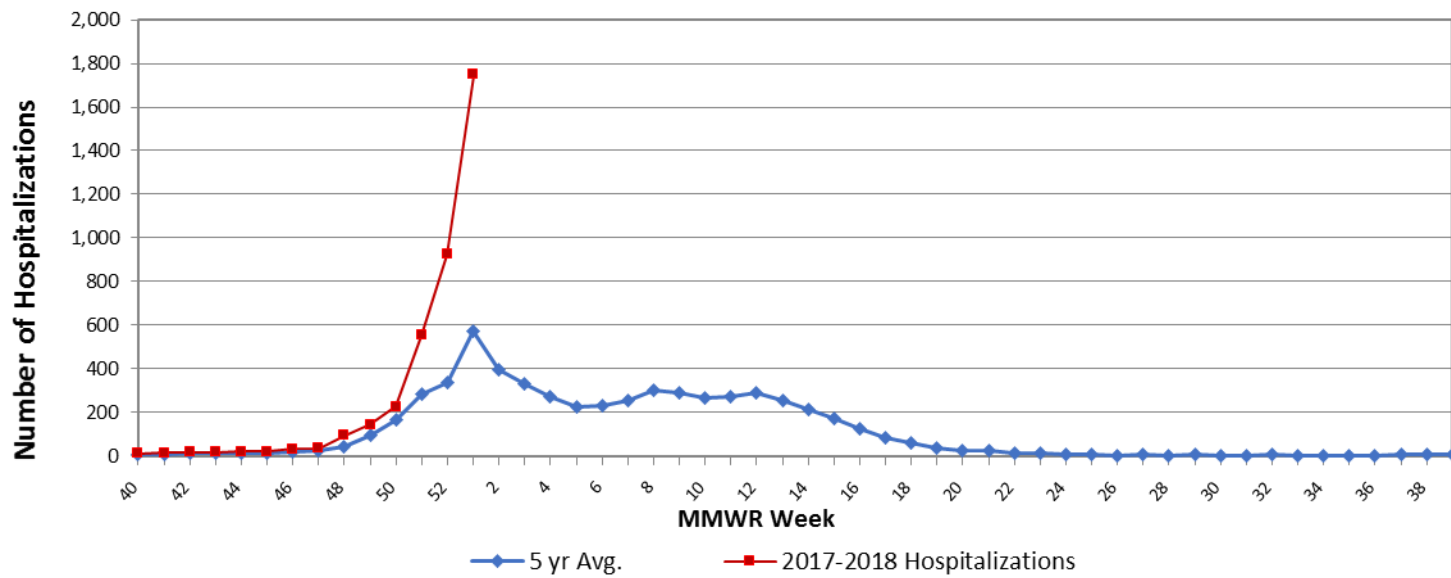
AthenaHealth: Ohio Influenza Related Outpatient Medical Claims 5 Year Baseline Average; 2017-2018



Ohio Thermometer Sales with 5 Year Baseline Average; 2017-2018



Ohio Confirmed Influenza-associated Hospitalizations by MMWR Week; 2017-2018 Season (n=3857)



Sources of Influenza Surveillance Data

- **National Retail Data Monitor (NRDM)-OTC Drug Purchases:** The NRDM collects over-the-counter (OTC) drug sales information from approximately 1,420 Ohio chain drug stores and grocery stores. For influenza surveillance, thermometer and adult cold relief sales are monitored on a weekly basis.
- **Emergency Department Visits (EpiCenter):** EpiCenter collects emergency department chief complaint data from 180 hospitals and urgent care facilities across Ohio in real time and classifies them into symptom and syndrome categories. Chief complaints from the constitutional syndrome category and the fever + ILI symptoms classifier are analyzed for influenza surveillance.
- **Sentinel Providers (ILINet):** Sentinel providers, through the US Influenza-like Illness Surveillance Network (ILINet), collect outpatient influenza-like illness (ILI) data. ILI is defined as a fever (≥ 100 F), **and** cough and/or sore throat without another known cause. Providers report the total number of patients seen and the number of patients with ILI by age group on a weekly basis. Sentinel providers also submit specimens for influenza testing to the ODH laboratory throughout the influenza season. There are 83 sentinel providers enrolled in Ohio for the 2016-2017 season.
- **ODH Laboratory Surveillance:** The Ohio Department of Health Laboratory reports the number of specimens that test positive for influenza each week. Generally, specimens are submitted by sentinel provider participants. A subset of the positive specimens is sent to CDC for further testing during the season.
- **Influenza-associated Hospitalizations (ODRS):** Influenza-associated hospitalizations are reported to ODH from local health departments and hospitals by direct entry into the Ohio Disease Reporting System (ODRS). Hospitalizations can be used as an indicator of the severity of illness during a particular influenza season. This condition became reportable in 2009.
- **Influenza-associated Pediatric Mortality (ODRS):** Influenza-associated pediatric mortalities are reported into ODRS by local health department and hospital staff. Pediatric deaths can be an indicator of the severity of illness during the influenza season. This condition became reportable in 2005.
- **National Respiratory and Enteric Virus Surveillance System (NREVSS):** The National Respiratory and Enteric Virus Surveillance System (NREVSS) is a laboratory-based system that monitors temporal and geographic patterns associated with the detection of respiratory syncytial virus (RSV), human parainfluenza viruses (HPIV), respiratory and enteric adenoviruses and rotavirus. There are 19 facilities in Ohio that submit data to this system.
- **athenahealth®:** athenahealth is a technology and services company for medical billing and electronic health records. Diagnosis and procedure data from primary care visits are automatically queried to produce influenza related statistics.

Ohio Public Health Regions: These counties comprise the Ohio Public Health Regions described in the figures shown on pages 1 and 5.

Central		East Central		Noth East	North West		South East		South West	West Central
CRAWFORD	LOGAN	ASHLAND	RICHLAND	ASHTABULA	ALLEN	MERCER	ATHENS	MONROE	ADAMS	CHAMPAIGN
DELAWARE	MADISON	CARROLL	STARK	CUYAHOGA	AUGLAIZE	OTTAWA	BELMONT	MORGAN	BROWN	CLARK
FAIRFIELD	MARION	COLUMBIANA	SUMMIT	GEAUGA	DEFIANCE	PAULDING	COSHOCTON	MUSKINGUM	BUTLER	DARKE
FAYETTE	MORROW	HOLMES	TRUMBULL	LAKE	ERIE	PUTNAM	GALLIA	NOBLE	CLERMONT	GREENE
FRANKLIN	PICKAWAY	MAHONING	TUSCARAWAS	LORAIN	FULTON	SANDUSKY	GUERNSEY	PERRY	CLINTON	MIAMI
HARDIN	UNION	MEDINA	WAYNE		HANCOCK	SENECA	HARRISON	PIKE	HAMILTON	MONTGOMERY
KNOX	WYANDOT	PORTAGE			HENRY	VAN WERT	HOCKING	ROSS	HIGHLAND	PREBLE
LICKING					HURON	WILLIAMS	JACKSON	SCIOTO	WARREN	SHELBY
					LUCAS	WOOD	JEFFERSON	VINTON		
							LAWRENCE	WASHINGTON		
							MEIGS			

If you have any further questions or comments about surveillance for seasonal influenza for the State of Ohio, please contact the Infectious Disease Informatics and Vaccine Preventable Disease Epidemiology Unit at SMED@odh.ohio.gov or call (614) 995-5599.