



Ohio Department of Health Seasonal Influenza Activity Summary

MMWR Week 14

March 31st – April 6th, 2019

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 14, public health surveillance data sources indicate Minimal intensity for influenza-like illness (ILI) in outpatient settings reported by Ohio’s sentinel providers. The percentage of emergency department visits with patients exhibiting constitutional symptoms and fever and ILI specified ED visits **decreased** but are still above baseline levels. Reported cases of influenza-associated hospitalizations are **above** the seasonal threshold*. There were 579 influenza-associated hospitalizations reported during MMWR Week 14.

Ohio Weekly Influenza-associated Hospitalizations by Ohio Public Health Region

Central	97
East Central	132
Northeast	123
Northwest	81
Southeast	36
Southwest	51
West Central	59
Total	579

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)	1.49%	-36.60%	↓ 2	
Thermometer Sales (National Retail Data Monitor)	1263	-22.56%	↓ 4	
Fever and ILI Specified ED Visits (EpiCenter)	2.08%	-17.79%	↓ 4	
Constitutional ED Visits (EpiCenter)	10.30%	-13.66%	↓ 4	
Confirmed Influenza-associated Hospitalizations (Ohio Disease Reporting System)	579	-26.62%	↓ 2	
Outpatient Medical Claims Data ⁴	1.57%	-41.20%	↓ 4	

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

State, Regional, and National Data:

Ohio Surveillance Data:

- **ODH lab** has reported 1411 **positive** influenza tests from specimens sent from various submitters. 2018-2019 influenza season positive results: **(647) A/pdmH1N1; (610) A/H3N2; (7) Influenza B;** (through 4/06/2019).
- The **National Respiratory and Enteric Virus Surveillance System (NREVSS)** has reported **61,299** influenza tests performed at participating facilities. 2018-2019 influenza season positive results: **(403) A/pdmH1N1, (508) A/H3N2, (9,408) Flu A Not Subtyped, and (158) Flu B** (through 4/06/2019).
- **4 pediatric influenza-associated mortalities** have been reported during the 2018-2019 season (through 4/06/2019).
- No **novel influenza A virus infections** have been reported during the 2018-2019 season (through 4/06/2019).
- Incidence of confirmed **influenza-associated hospitalizations** in 2018-2019 season = 9090 (through 4/06/2019).

HHS Regional Surveillance Data*: During week 13 (**March 24th – March 30th, 2019**), the proportion of outpatient visits for ILI in Region 5 (Ohio is in Region 5) was 2.57%, which is **above** the regional baseline of 1.8%. Kentucky reports Regional Activity; West Virginia, Michigan, Indiana, Pennsylvania, and Ohio reported Widespread Activity.

National Surveillance Data*: During week 13 (**March 24th – March 30th, 2019**) Most U.S. States reported Low or Moderate influenza activity, though some are reporting High or Minimal activity. The proportion of outpatient visits for ILI was 3.2%, which is **above** the national baseline of 2.2%. All 10 regions reported ILI at or above their region-specific baseline level. **Influenza A(H1N1)pdm09** and **influenza A(H3)** viruses are both circulating widely on a national level. Nationally, influenza A(H3) viruses were reported more frequently than influenza A(H1N1)pdm09 viruses during week 13.

*National-level and regional-level data are reported one week later than Ohio state-level data

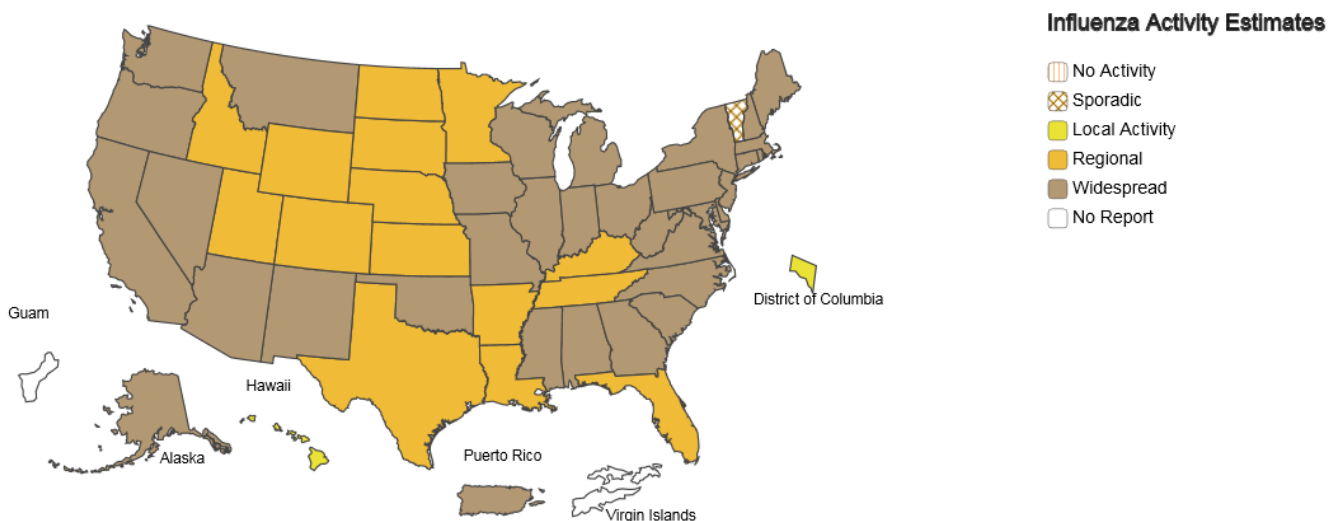
FLUVIEW



A Weekly Influenza Surveillance Report Prepared by the Influenza Division

Weekly Influenza Activity Estimates Reported by State and Territorial Epidemiologists*

Week Ending Mar 30, 2019 - Week 13



*This map indicates geographic spread and does not measure the severity of influenza activity.

2018-2019 Influenza Vaccine Components:

A/B	Virus	Trivalent	Quadrivalent
A	Michigan/45/2015 (H1N1)pdm09-like	X	X
A	A/Singapore/INFIMH-16-0019/2016 (H3N2)-like	X	X
B	B/Colorado/06/2017-like virus (Victoria lineage)	X	X
B	Phuket/3073/2013-like (B/Yamagata lineage)		X

Antigenic Characterization:

CDC has antigenically or genetically characterized 1,769 influenza viruses collected September 30, 2018 – March 30, 2019, and submitted by U.S. laboratories, including 906 influenza A(H1N1)pdm09 viruses, 642 influenza A(H3N2) viruses, and 221 influenza B viruses.

Influenza A Viruses

- **A (H1N1)pdm09:** Phylogenetic analysis of the HA genes from 906 A(H1N1)pdm09 viruses showed that all belonged to clade 6B.1. Two hundred ninety-two A(H1N1)pdm09 viruses were antigenically characterized, and 283 (96.9%) were antigenically similar (analyzed using HI with ferret antisera) to A/Michigan/45/2015 (6B.1), a cell-propagated A/Michigan/45/2015-like reference virus representing the A(H1N1)pdm09 component for the 2018-19 Northern Hemisphere influenza vaccines.
- **A (H3N2):** Phylogenetic analysis of the HA genes from 642 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=66), subclade 3C.2a1 (n=145) or clade 3C.3a (n=431). Two hundred seventy-two A(H3N2) viruses were antigenically characterized by FRA with ferret antisera, and 156 (57.4%) A(H3N2) viruses tested were well-inhibited (reacting at titers that were within 4-fold of the homologous virus titer) by ferret antisera raised against A/Singapore/INFIMH-16-0019/2016 (3C.2a1), a cell-propagated reference virus representing the A(H3N2) component of 2018-19 Northern Hemisphere influenza vaccines. One hundred sixteen (42.6%) viruses reacted poorly (at titers that were 8-fold or greater reduced compared with that of the homologous virus A/Singapore/INFIMH-16-0019/2016) and of those, 115 (98.8%) belonged to clade 3C.3a.

Influenza B Viruses

- **B/Victoria:** Phylogenetic analysis of 106 B/Victoria-lineage viruses indicate that all HA genes belonged to genetic clade V1A, however genetic subclades which are antigenically distinct have emerged. Genetic subclades which are antigenically distinct include viruses with a two amino acid deletion (162-163) in the HA protein (V1A.1, previously abbreviated as V1A-2Del) and viruses with a three amino acid deletion (162-164) in the HA protein (abbreviated as V1A-3Del). Eighty-three B/Victoria lineage viruses were antigenically characterized and 63 (75.9%) were antigenically similar with ferret antisera raised against cell-propagated B/Colorado/06/2017-like V1A.1 reference virus. Twenty (24.1%) reacted poorly (at titers that were 8-fold or greater reduced compared with the homologous virus titer) and belonged to clade V1A or genetic subclade V1A-3Del.
- **B/Yamagata:** Phylogenetic analysis of 115 influenza B/Yamagata-lineage viruses indicate that the HA genes belonged to clade Y3. A total of 100 influenza B/Yamagata-lineage viruses were antigenically characterized, and all were antigenically similar to cell-propagated B/Phuket/3073/2013 (Y3), the reference vaccine virus representing the influenza B/Yamagata-lineage component of the 2018-19 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/>

****The graph of positive laboratory tests from the National Respiratory and Enteric Virus Surveillance System (NREVSS) is currently unavailable due to a reporting lag from one of the NREVSS reporting sites.**

**Influenza-Associated Hospitalizations, Ohio
2018-2019 Season***

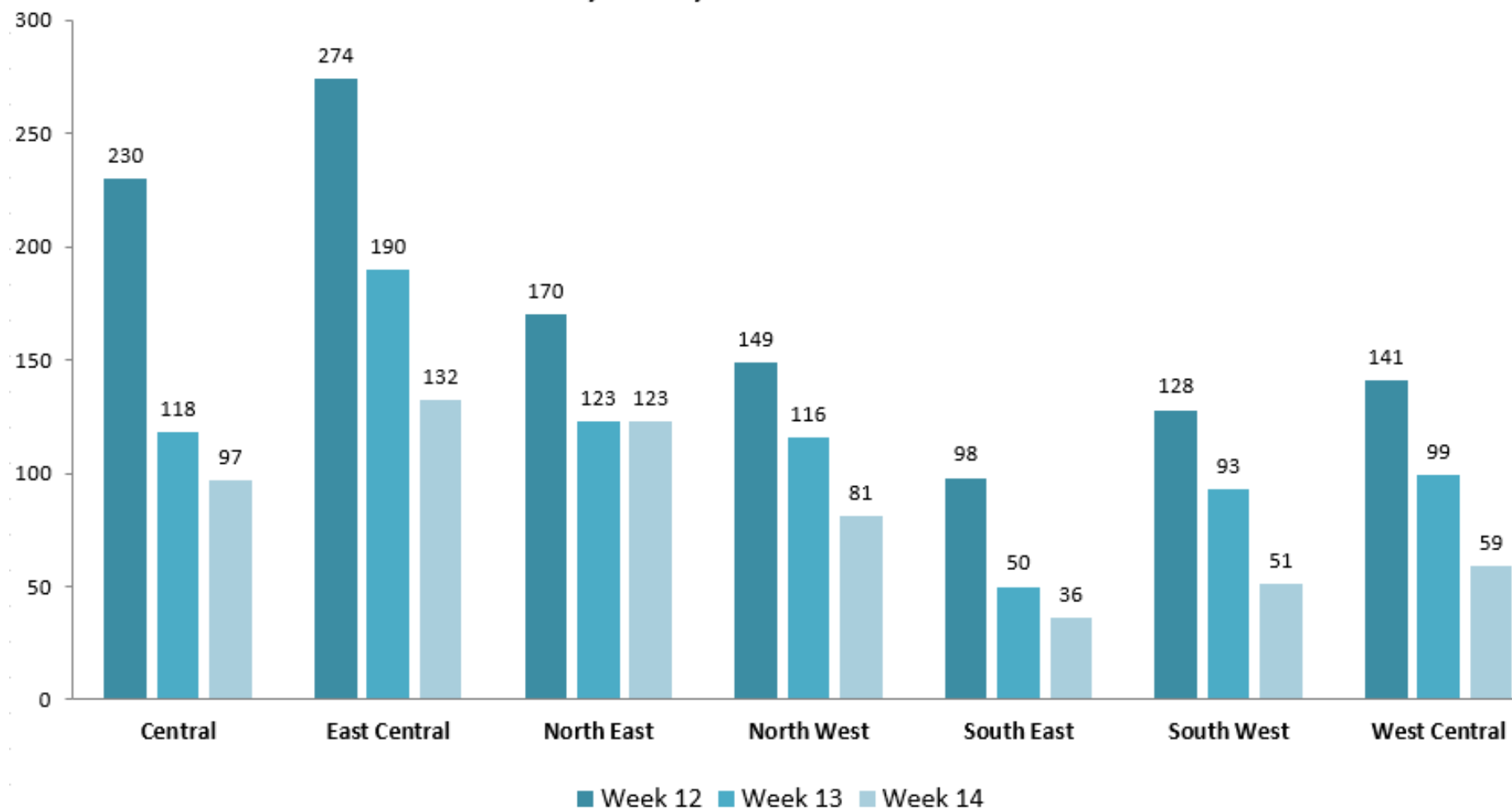
County	Influenza-Associated Hospitalizations	Percent of All Influenza-Associated Hospitalizations	Rate per 100,000 Population†	County	Influenza-Associated Hospitalizations	Percent of All Influenza-Associated Hospitalizations	Rate per 100,000 Population†
ADAMS	13	0.1%	45.53	LOGAN	13	0.1%	28.35
ALLEN	131	1.4%	123.20	LORAIN	129	1.4%	42.81
ASHLAND	27	0.3%	50.81	LUCAS	433	4.8%	98.00
ASHTABULA	69	0.8%	67.98	MADISON	38	0.4%	87.49
ATHENS	38	0.4%	58.68	MAHONING	195	2.1%	81.65
AUGLAIZE	43	0.5%	93.58	MARION	76	0.8%	114.28
BELMONT	28	0.3%	39.77	MEDINA	139	1.5%	80.66
BROWN	3	0.0%	6.69	MEIGS	21	0.2%	88.35
BUTLER	273	3.0%	74.16	MERCER	38	0.4%	93.11
CARROLL	19	0.2%	65.89	MIAMI	56	0.6%	54.63
CHAMPAIGN	13	0.1%	32.42	MONROE	7	0.1%	47.81
CLARK	160	1.8%	115.66	MONTGOMERY	554	6.1%	103.52
CLERMONT	141	1.6%	71.44	MORGAN	12	0.1%	79.71
CLINTON	11	0.1%	26.17	MORROW	16	0.2%	45.94
COLUMBIANA	106	1.2%	98.29	MUSKINGUM	123	1.4%	142.90
COSHOCTON	23	0.3%	62.33	NOBLE	3	0.0%	20.48
CRAWFORD	32	0.4%	73.09	OTTAWA	26	0.3%	62.76
CUYAHOGA	1201	13.2%	93.82	PAULDING	23	0.3%	117.26
DARKE	42	0.5%	79.31	PERRY	40	0.4%	110.93
DEFIANCE	27	0.3%	69.17	PICKAWAY	60	0.7%	107.72
DELAWARE	76	0.8%	43.62	PIKE	27	0.3%	94.05
ERIE	50	0.6%	64.87	PORTAGE	118	1.3%	73.10
FAIRFIELD	72	0.8%	49.26	PREBLE	20	0.2%	47.31
FAYETTE	18	0.2%	62.00	PUTNAM	15	0.2%	43.48
FRANKLIN	789	8.7%	67.82	RICHLAND	97	1.1%	77.93
FULTON	19	0.2%	44.50	ROSS	70	0.8%	89.67
GALLIA	38	0.4%	122.84	SANDUSKY	41	0.5%	67.27
GEAUGA	55	0.6%	58.89	SCIOTO	57	0.6%	71.70
GREENE	146	1.6%	90.36	SENECA	36	0.4%	63.44
GUERNSEY	28	0.3%	69.85	SHELBY	32	0.4%	64.75
HAMILTON	621	6.8%	77.40	STARK	394	4.3%	104.90
HANCOCK	49	0.5%	65.52	SUMMIT	511	5.6%	94.32
HARDIN	19	0.2%	59.27	TRUMBULL	195	2.1%	92.72
HARRISON	12	0.1%	75.64	TUSCARAWAS	82	0.9%	88.57
HENRY	25	0.3%	88.61	UNION	16	0.2%	30.59
HIGHLAND	26	0.3%	59.65	VAN WERT	9	0.1%	31.31
HOCKING	10	0.1%	34.04	VINTON	14	0.2%	104.21
HOLMES	21	0.2%	49.57	WARREN	144	1.6%	67.70
HURON	43	0.5%	72.12	WASHINGTON	43	0.5%	69.60
JACKSON	29	0.3%	87.28	WAYNE	117	1.3%	102.17
JEFFERSON	43	0.5%	61.69	WILLIAMS	26	0.3%	69.07
KNOX	43	0.5%	70.58	WOOD	101	1.1%	80.49
LAKE	131	1.4%	56.95	WYANDOT	23	0.3%	101.70
LAWRENCE	38	0.4%	60.85	UNKNOWN	0	0.0%	*
LICKING	99	1.1%	59.46	TOTAL	9090	100%	78.79

*2018-2019 Season 10/1/2018 thru 9/29/2019

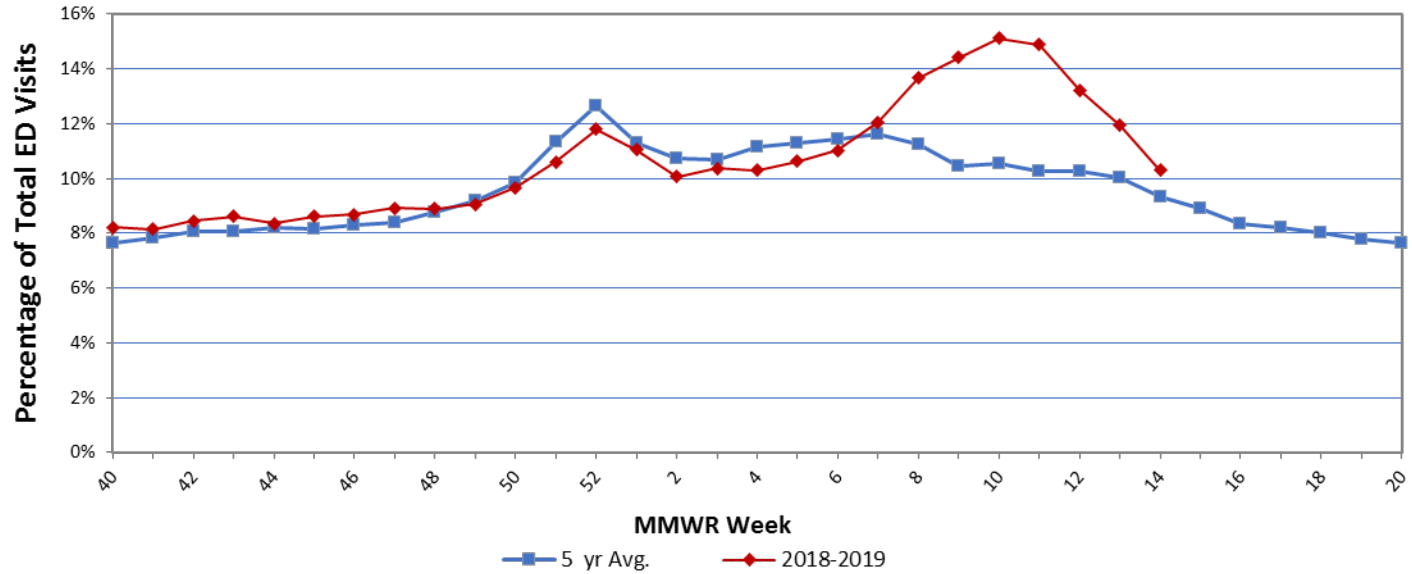
† Disease rates were calculated by number of cases per 100,000 residents using 2010 census data.

Source: Ohio Disease Reporting System

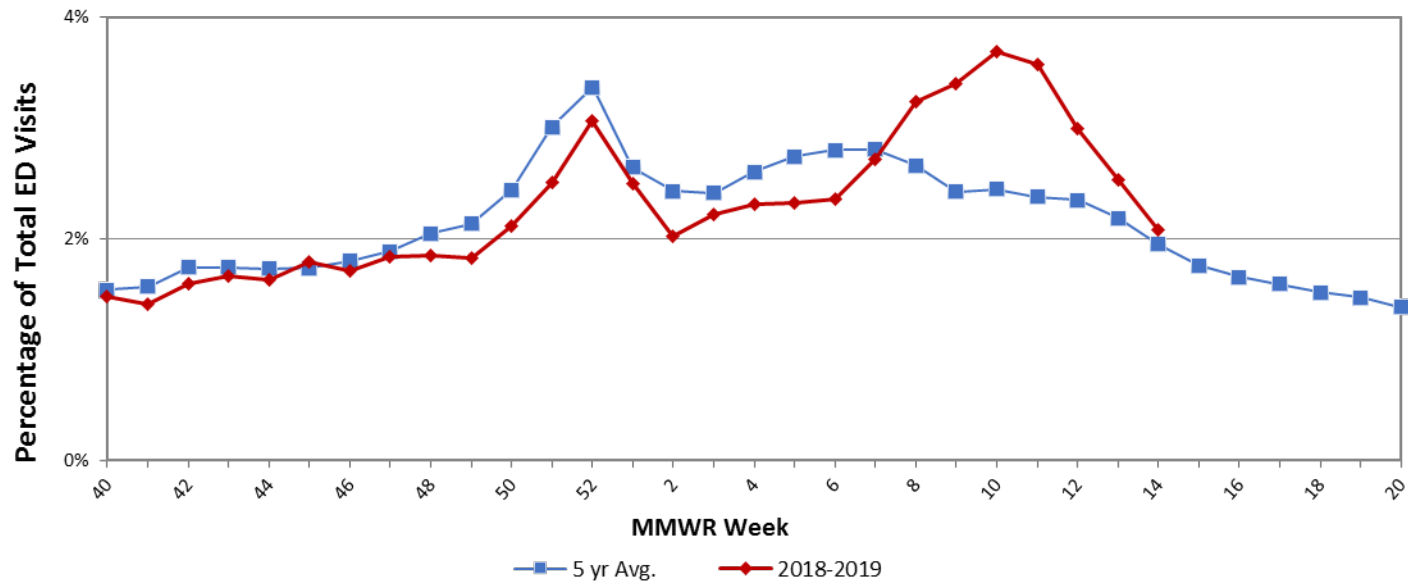
Influenza-associated Hospitalizations by Public Health Region and MMWR Week, Ohio, 2018-2019 Influenza Season



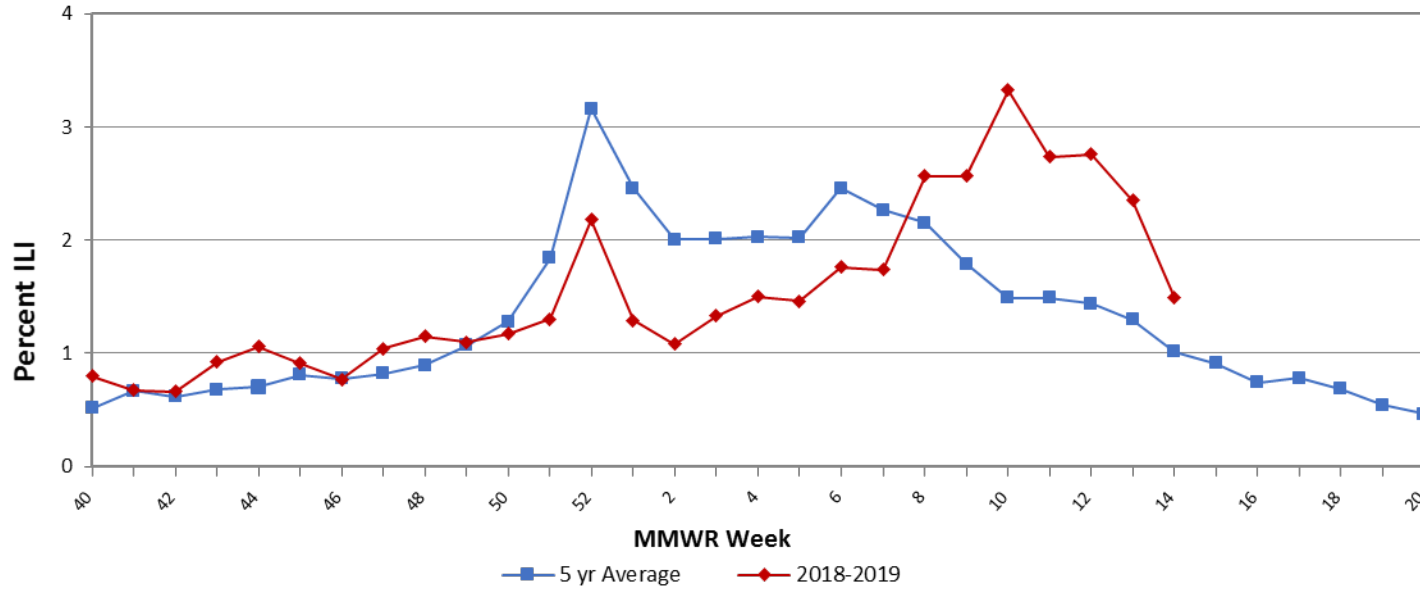
Ohio Constitutional ED Visits with 5 Year Baseline Average; 2018-2019



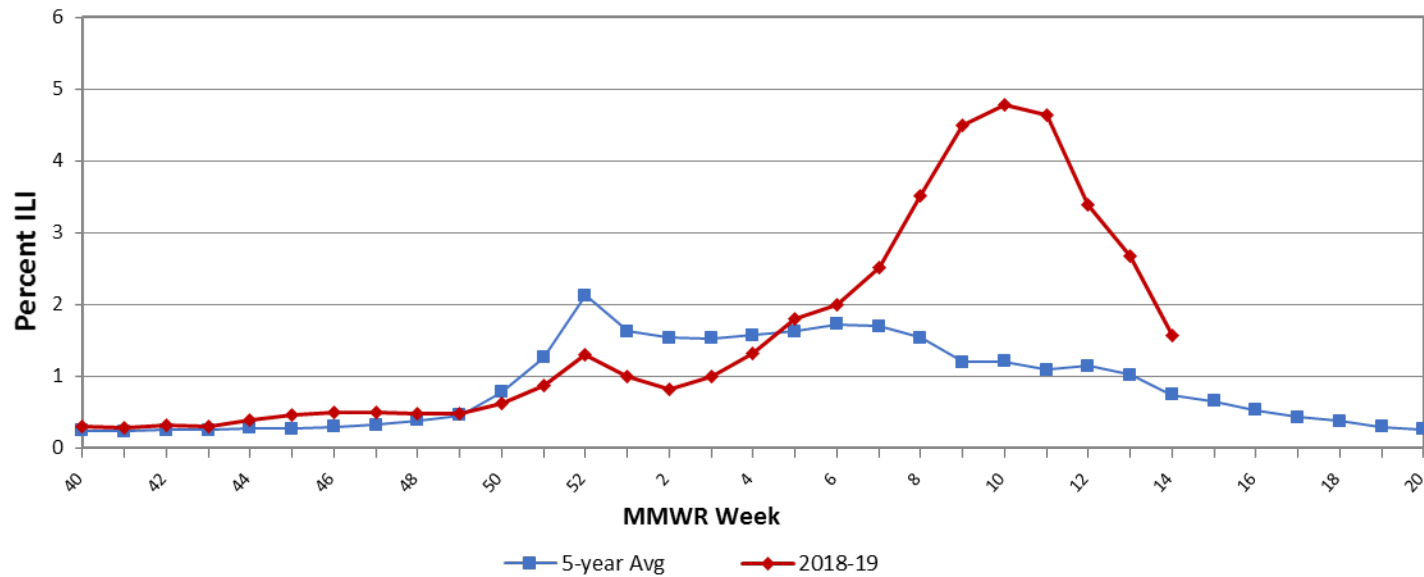
Ohio Fever & ILI Specified ED Visits with 5 Year Baseline Average; 2018-2019



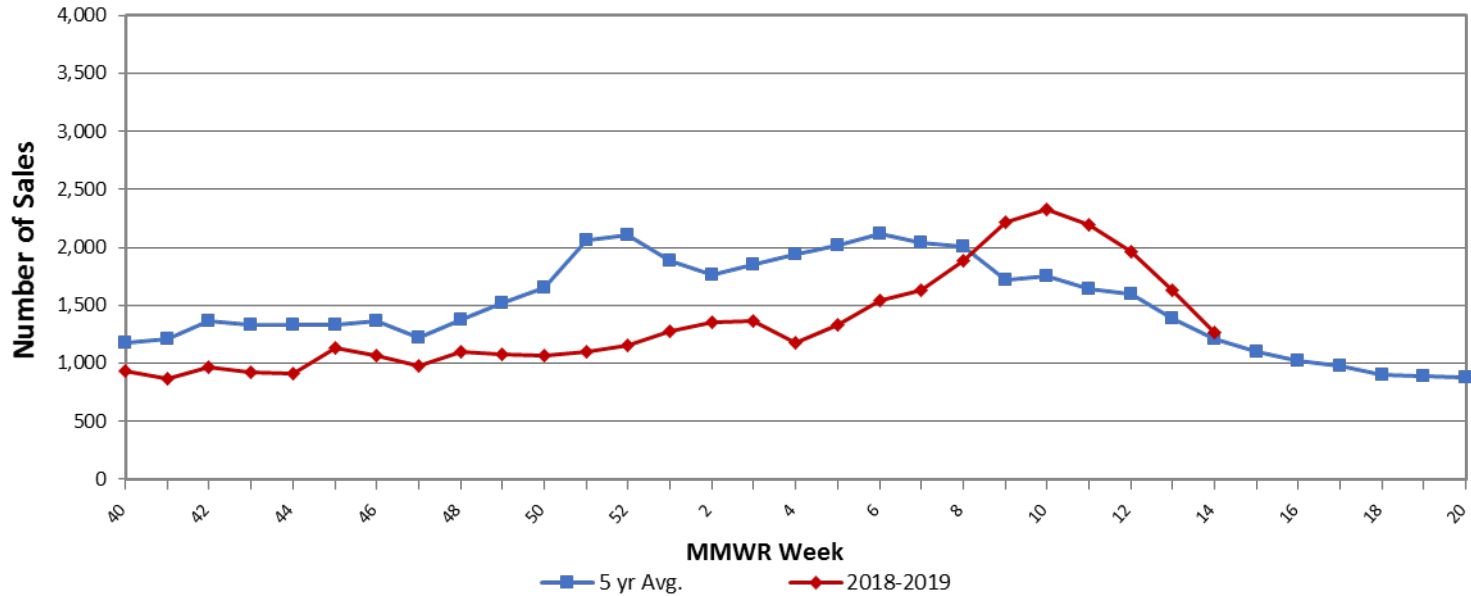
Ohio Outpatient Influenza-like Illness Network (ILINet) with 5 Year Baseline Average; 2018-2019



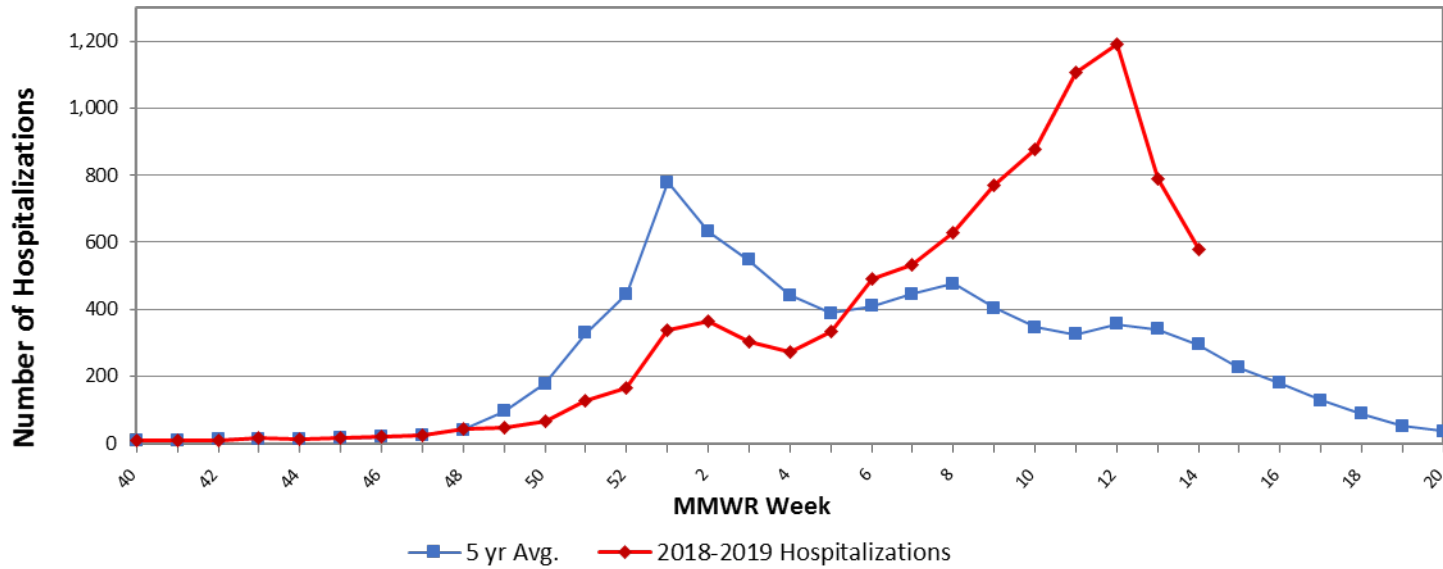
AthenaHealth: Ohio Influenza Related Outpatient Medical Claims with 5 Year Baseline Average; 2018-2019



Ohio Thermometer Sales with 5 Year Baseline Average; 2018-2019



Ohio Confirmed Influenza-associated Hospitalizations by MMWR Week; 2018-2019 Season (n=9090)



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.