



New Jersey Department of Health and Senior Services
Communicable Disease Service
2009-2010 Influenza Season Summary

NOTE: This is a summary report of the 2009-2010 influenza season. Detailed information regarding novel influenza A H1N1 (2009 H1N1) is not included in this report. A separate detailed report focusing on 2009 H1N1 data will be distributed separately.

Highlights

- The 2009-2010 influenza season began with regional activity during week 40 (2009). Activity decreased to regional by week 52, local by week 6 and sporadic by week 7. The activity pattern noted in the 2009-2010 season is uncharacteristic for an influenza season in New Jersey and was due primarily to the 2009 H1N1 virus. Except for week 18 when no activity was recorded, sporadic activity occurred for the remainder of the season.
- One thousand one hundred nineteen samples were tested at the New Jersey Public Health and Environmental Laboratories (NJPHL), of which 453 samples tested positive for influenza. Influenza A was predominant and was isolated from 449 (99%) of positive samples, and influenza B was isolated from 2 (<1%) of positive samples. Between week 40 (2009) and week 20 (2010), 447 (99%) of samples which tested positive were identified as 2009 H1N1.
- The peak of lab-confirmed 2009 H1N1 occurred in week 44. This peak occurred earlier than would normally be seen in a traditional influenza season in New Jersey. Only two lab-confirmed influenza AH3 were identified in weeks 9 and 15. No lab-confirmed influenza B viruses were identified in the 2009-2010 influenza season.
- Similar trends in influenza-like illness (ILI) seen in emergency departments and absenteeism in schools were noted with a common peak occurring for both in week 44. Sporadic activity with several small peaks was noted for long-term care facilities.
- Data collected from sentinel providers indicated that the peak of activity occurred in week 44 and closely matched the trend observed in the other ILI and lab surveillance data.

Influenza Activity Level

Influenza activity level is determined by evaluating a number of parameters to determine geographic spread of influenza throughout the state. The definitions used to determine the activity level are described below.

State Activity Level Definitions

No Activity – At least 2 of 3 parameters at or below state baseline **AND** no lab-confirmed cases

Sporadic – At least 2 of 3 parameters above state baseline **AND** confirmed laboratory cases anywhere in the state within previous 3 weeks **OR** at least one lab-confirmed outbreak in an institution anywhere in the state

Local – At least 2 of 3 parameters above state baseline in a single county **AND** confirmed laboratory cases from that same county within the previous 3 weeks (other counties may be above baseline without lab confirmed cases) **OR** confirmed outbreaks in 2 or more institutions in a single county

Regional – At least 2 of 3 parameters above state baseline in ≥ 2 but ≤ 10 counties **AND** lab-confirmed cases from these same counties in the past 3 weeks **OR** confirmed outbreaks institutions in ≥ 2 but ≤ 10 counties

Widespread – At least 2 of 3 parameters above state baseline in > 10 counties **OR** institutional outbreaks in > 10 counties **AND** lab-confirmed influenza cases in previous 3 weeks.

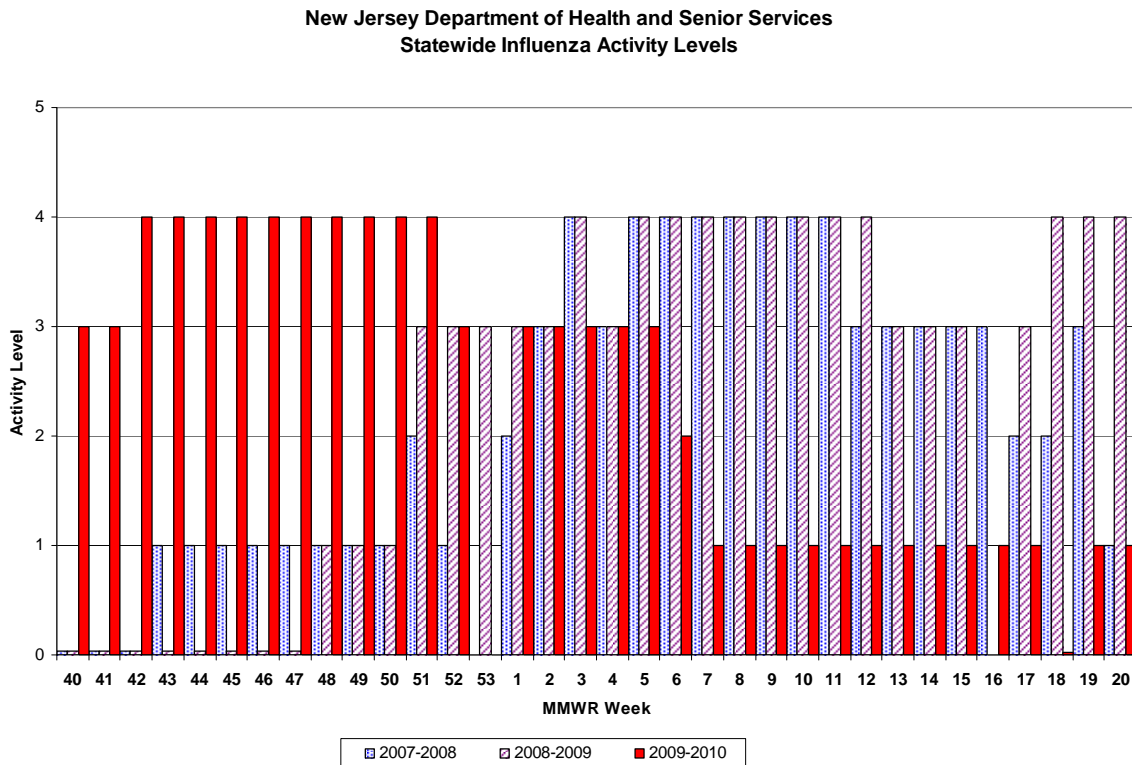
Parameter = School, emergency department, or long term care weekly surveillance data

Off-season baseline is calculated by taking the average of statewide percentages of ILI for a 4-year (2006, 2007, 2008, 2009) period during months when influenza is less likely to be circulating (May-August).

Four-year average is an average of the 2005-2006, 2006-2007, 2007-2008, and 2008-2009 influenza seasons.

Due to the novel influenza A H1N1 (referred in this document as “2009 H1N1”), the 2009-2010 influenza season began with regional activity in week 40 (2009) and was increased to widespread activity in week 42 (2009). The majority of activity was due to the 2009 H1N1 virus. Activity remained elevated until week 7 (2010) when the level decreased to sporadic. Except for week 18 when no activity was recorded, sporadic activity occurred for the remainder of the season (Figure 1).

Figure 1
Statewide Influenza Activity Levels 2007-2010



0=No report/activity 1=Sporadic 2=Local 3= Regional 4=Widespread

Influenza Activity Level by Region

Influenza activity levels were also determined for each public health region using the definitions described below.

Regional Activity Level Definition

Public Health Regions

Northwest Region (NW) - Morris, Passaic, Sussex, Warren

Northeast Region (NE) - Bergen, Essex, Hudson

Central West Region (CW) - Hunterdon, Mercer, Somerset

Central East Region (CE) - Middlesex, Monmouth, Ocean, Union

South Region - Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Salem

No Activity- At least 2 of 3 parameters at or below state baseline **AND** no lab-confirmed cases in the public health region

Sporadic – At least 2 of 3 parameters above state baseline **AND** confirmed laboratory cases anywhere in the public health region **OR** at least one lab-confirmed outbreak in an institution anywhere in the public health region

Local – At least 2 of 3 parameters above state baseline in a single county of a public health region **AND** confirmed laboratory cases from that same county within the previous 3 weeks (other counties may be above baseline without lab confirmed cases) **OR** confirmed outbreaks in 2 or more institutions in a single county of a public health region

Regional – At least 2 of 3 parameters above state baseline in at least half of the counties of a public health region **AND** lab-confirmed cases from these same counties in the past 3 weeks **OR** confirmed outbreaks institutions in at least half of counties of public health region counties

Widespread – Not used for public health region data

The activity levels by public health region in the state for the 2009-2010 influenza season are displayed in Figure 2 and Table 1. The season began with sporadic activity occurring in two regions (NE and CE) and regional activity occurring in the southern public health region. All public health regions were at regional activity in week 42 (2009). Beginning in week 52 (2009), activity levels in all public health regions began to decline.

Figure 2
Influenza Activity Level by Public Health Region
MMWR Week 40 to 20, 2010

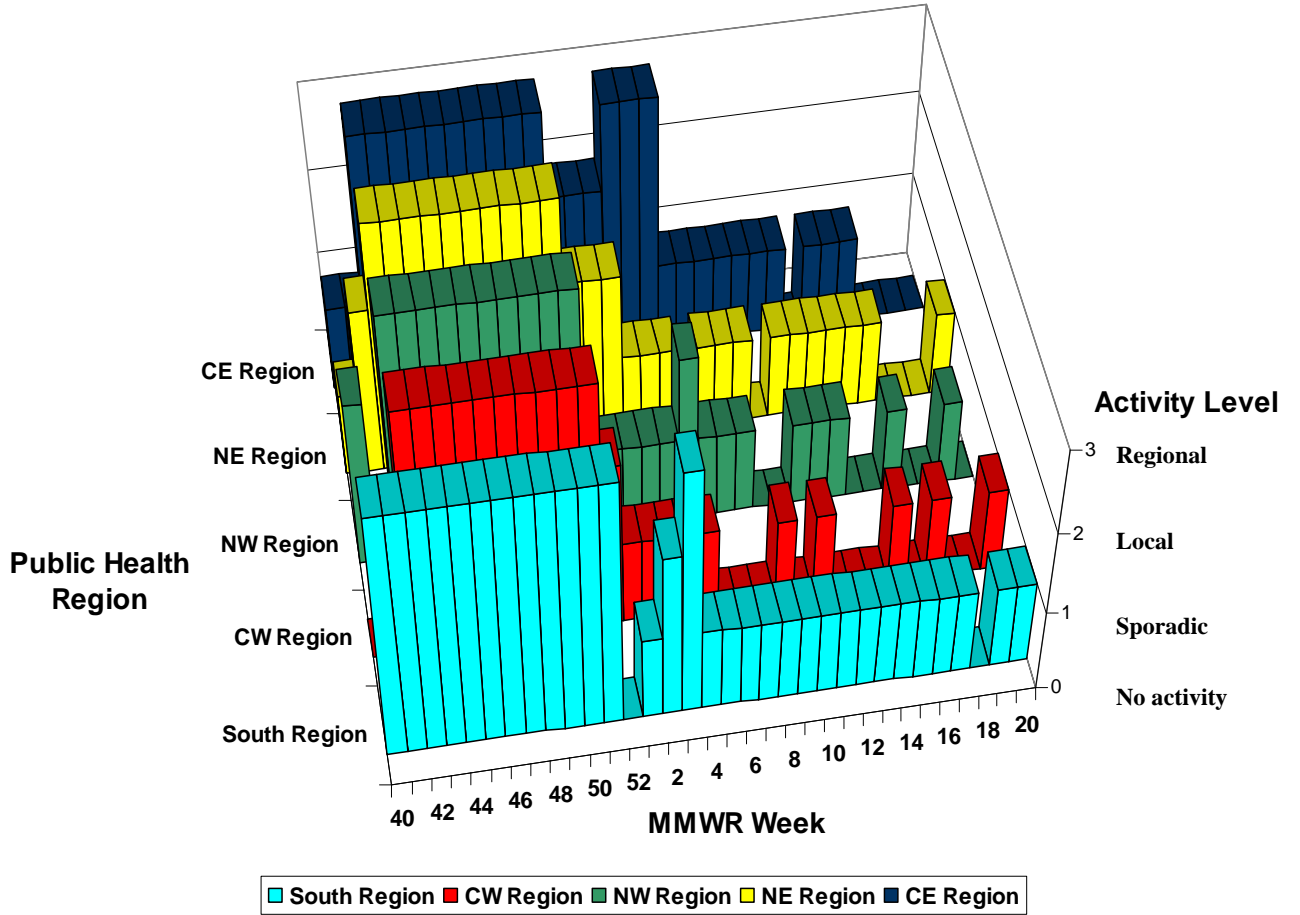


Table 1
Influenza Activity Level by Public Health Region, 2009-2010*

MMWR Week	NW Region	NE Region	CW Region	CE Region	South Region
40	Local	Sporadic	No Activity	Sporadic	Regional
41	No Activity	Local	Sporadic	Sporadic	Regional
42	Regional	Regional	Regional	Regional	Regional
43	Regional	Regional	Regional	Regional	Regional
44	Regional	Regional	Regional	Regional	Regional
45	Regional	Regional	Regional	Regional	Regional
46	Regional	Regional	Regional	Regional	Regional
47	Regional	Regional	Regional	Regional	Regional
48	Regional	Regional	Regional	Regional	Regional
49	Regional	Regional	Regional	Regional	Regional
50	Regional	Regional	Regional	Regional	Regional
51	Regional	Regional	Regional	Regional	Regional
52	Sporadic	Local	Local	Local	No Activity
1	Sporadic	Local	Sporadic	Local	Sporadic
2	Sporadic	Local	Sporadic	Local	Local
3	Sporadic	Sporadic	Sporadic	Regional	Regional
4	Sporadic	Sporadic	Sporadic	Regional	Sporadic
5	Local	Sporadic	Sporadic	Regional	Sporadic
6	Sporadic	No Activity	No Activity	Sporadic	Sporadic
7	Sporadic	Sporadic	No Activity	Sporadic	Sporadic
8	Sporadic	Sporadic	No Activity	Sporadic	Sporadic
9	No Activity	Sporadic	Sporadic	Sporadic	Sporadic
10	No Activity	No Activity	No Activity	Sporadic	Sporadic
11	Sporadic	Sporadic	Sporadic	Sporadic	Sporadic
12	Sporadic	Sporadic	No Activity	Sporadic	Sporadic
13	Sporadic	Sporadic	No Activity	No Activity	Sporadic
14	No Activity	Sporadic	No Activity	Sporadic	Sporadic
15	No Activity	Sporadic	Sporadic	Sporadic	Sporadic
16	Sporadic	Sporadic	No Activity	Sporadic	Sporadic
17	No Activity	No Activity	Sporadic	No Activity	Sporadic
18	No Activity	No Activity	No Activity	No Activity	No Activity
19	Sporadic	No Activity	No Activity	No Activity	Sporadic
20	No Activity	Sporadic	Sporadic	No Activity	Sporadic

*MMWR weeks 40-52, 2009; weeks 1-20, 2010

Laboratory Surveillance

From week 40 (2009) to week 20 (2010), the New Jersey Public Health and Environmental Laboratories (PHEL) tested 1,119 samples for influenza. During this timeframe, 453 samples were found to be positive for influenza by viral isolation or real-time polymerase chain reaction (RT-PCR) test. Virus activity in the 2009-2010 season cannot be compared to previous influenza seasons due to the predominance of 2009 H1N1. A summary of influenza test results broken down by influenza type is in Table 2, and the number and type of influenza by MMWR week, county of residence, and testing methodology are displayed in Table 3.

Table 2
Circulating Respiratory Viruses in the U.S. and NJ as Determined by Testing Performed by CDC/WHO and PHEL, Influenza Seasons 2008-2009 and 2009-2010

Virus Identified	Influenza Season 2008-2009		Influenza Season 2009-2010	
	CDC/WHO (U.S.)* No. of Samples Tested = 519,543	PHEL (NJ)*** No. of Samples Tested = 1,980	CDC/WHO (U.S.)** No. of Samples Tested = 366,229	PHEL (NJ)*** No. of Samples Tested = 1,119
	No. of Positive Samples		No. of Positive Samples	
	106,778	1,335	68,704	453
Influenza A, No. (%)	95,476 (89 %)	1,143 (86%)	68,402 (99.5%)	449 (99.1%)
A (unsubtyped****)	31,971 (33%)	0	14,976 (22%)	0
2009 A (H1N1)	50,768 (56%)	770 (67%)	53,372 (78%)	447 (99.6%)
A (H1)	8361 (9%)	239 (21%)	18 (0.03%)	0
A (H3)	4,376 (5%)	134(12%)	36 (0.05%)	2 (0.45%)
Influenza B, No. (%)	11,302 (11%)	192 (14%)	302 ((0.44%)	0
Other Virus Isolated, No.		0		4
NVI		598		633
QNS/ Test Error		5		8
Indeterminate		42		25

*2007-08 CDC U.S. Influenza Season Summary

**2009-10 CDC Influenza Season Week 20 Report

***PHEL MMWR week 40 (2009) to Week 20 (2010)

****Unable to subtype and/or subtyping not performed

NVI = No virus isolated

QNS = Quantity not sufficient

Table 3
Influenza Rapid and Culture Results by County of Residence, 2009-2010*

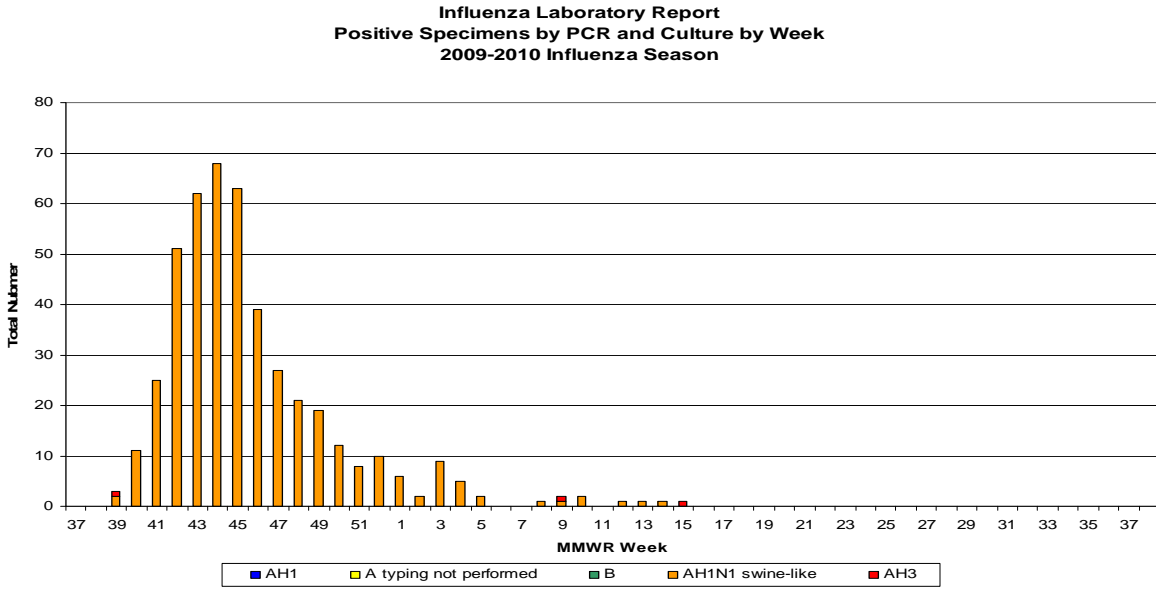
	Rapid**	Culture**			
	Total	A H1	A H3	A UNK	B
Atlantic County	49	0	0	25	0
Bergen County	54	0	1	35	0
Burlington County	110	0	0	8	0
Camden County	0	0	0	46	0
Cape May County	23	0	0	19	0
Cumberland County	0	0	0	16	0
Essex County	213	0	0	9	0
Gloucester County	0	0	0	4	0
Hudson County	95	0	0	10	0
Hunterdon County	84	0	0	27	0
Mercer County	42	0	0	28	0
Middlesex County	214	0	0	52	0
Monmouth County	522	0	0	23	0
Morris County	142	0	1	47	0
Ocean County	45	0	0	4	0
Passaic County	154	0	0	13	0
Salem County	17	0	0	12	0
Somerset County	0	0	0	4	0
Sussex County	139	0	0	53	0
Union County	16	0	0	2	0
Warren County	127	0	0	10	0
Unknown	49	0	0	2	0
State Total	2046	0	2	447	0

*Data are for MMWR week 40 through MMWR week 20

**Rapid data are acquired from facilities reporting rapid influenza tests via National Respiratory and Enteric Virus Surveillance system (NREVSS) or Communicable Disease Reporting and Surveillance System (CDRSS) ILI module. Culture results are obtained via PHEL.

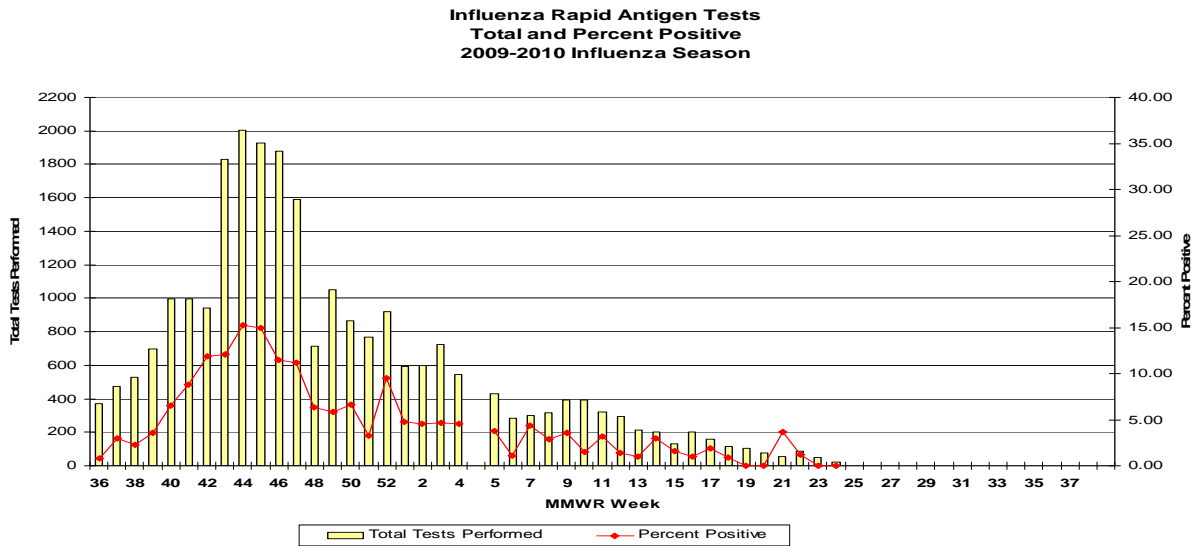
A gradual increase in the number of positive samples was observed beginning in week 39 (2009) with 2009 H1N1 being the predominant virus identified. The largest number of positive 2009 H1N1 samples were identified in week 44 (2009) with 68 samples found to be positive (Figure 3A). Only two samples were found to be positive for seasonal influenza AH3. These samples were identified in weeks 9 (2010) and 15 (2010). Samples found to be positive for influenza began to decline after week 5 (2010).

Figure 3A
Influenza Laboratory Report,
Viral Culture Positive Specimens by MMWR Week 2009-2010



In the 2009-2010 season, NJDHSS asked hospital laboratories to also report information on positive results from influenza rapid antigen tests (Figure 3B). The peak activity for seasonal influenza based on the rapid antigen test data occurred in week 44 (2009). Samples found to be positive by rapid antigen testing began to decline after week 10 (2010).

Figure 3B
Influenza Laboratory Report,
Reported Rapid Antigen Positive Results* by MMWR Week, 2009-2010



*As reported in CDRSS ILI module or NREVSS

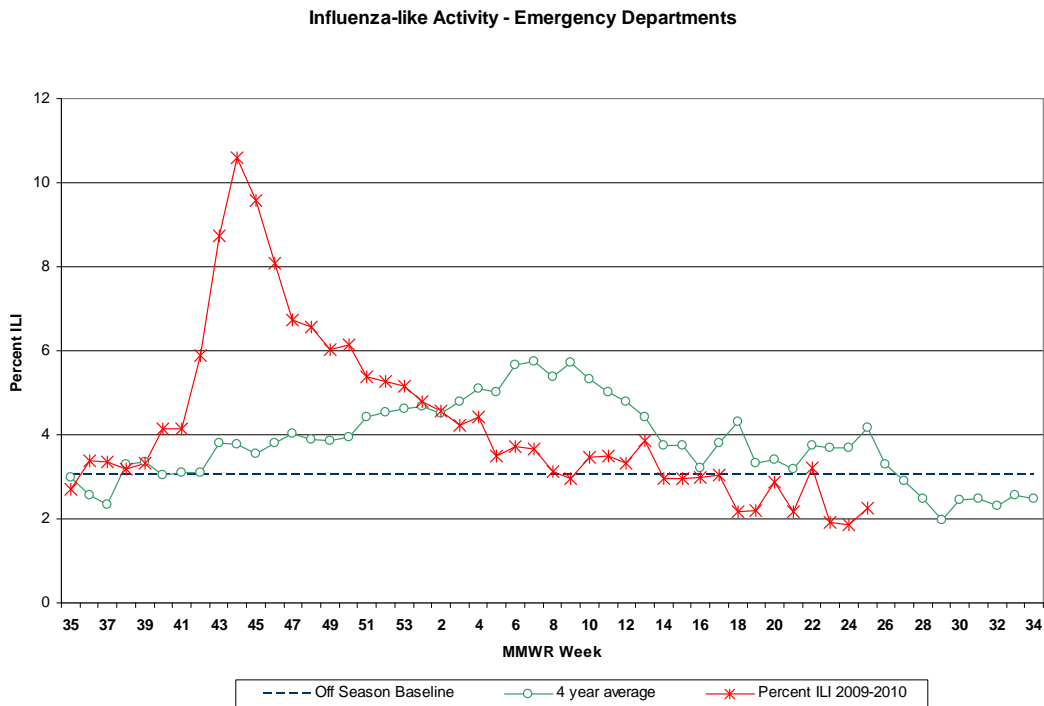
Influenza-like Illness (ILI) Surveillance

NJDHSS collects statewide information once a week on ILI from hospital emergency departments and long-term care facilities and collects absenteeism information from schools. All of this information is recorded in a dedicated ILI module in the Communicable Disease Reporting and Surveillance System (CDRSS). The following is a summary of these data.

Emergency Departments

ILI activity in emergency departments peaked in week 44 (2009) with 10.60% of emergency department visits associated with ILI (Figure 4). ILI activity for emergency departments was above baseline starting in week 36 (2009) and remained above baseline for 26 consecutive weeks. Activity levels dropped below baseline beginning in week 14 (2010).

Figure 4
Influenza-like Activity, Emergency Departments, 2009- 2010*



*MMWR weeks 35-52, 2009; weeks 1-23, 2010

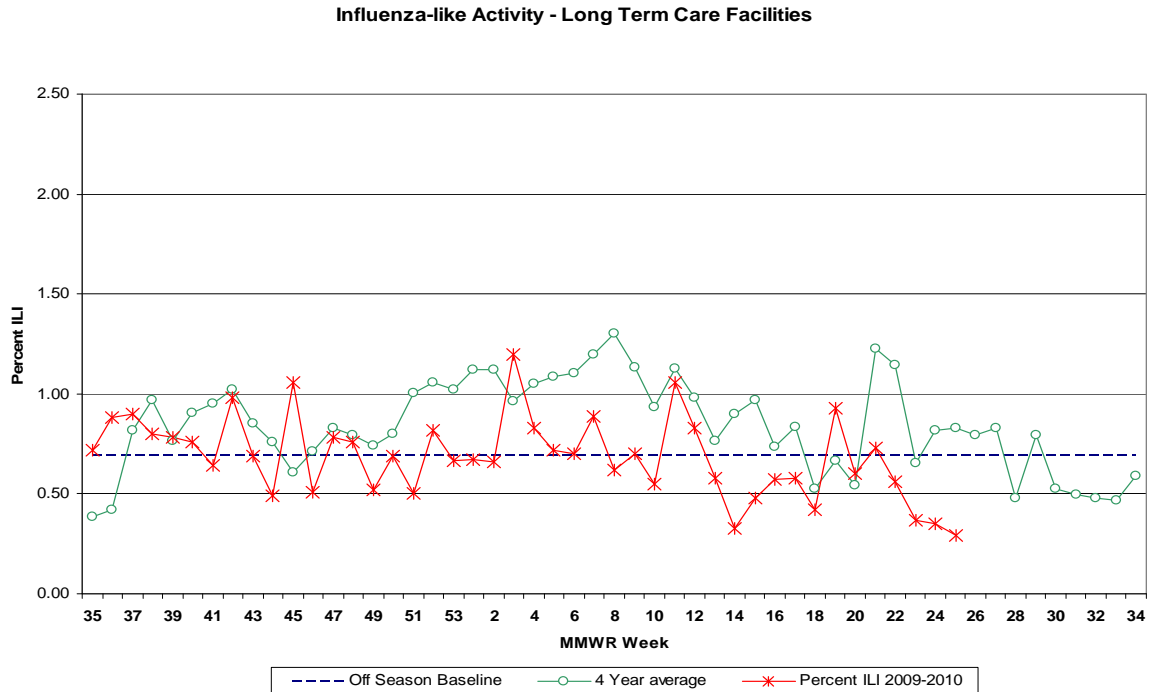
Long-term Care Facilities

ILI activity during the influenza season for long-term care facilities peaked in week 3 with 1.20% ILI reported (Figure 5). ILI activity for long term care facilities was initially above baseline starting in week 35 (2009). Several peaks of ILI activity was identified in long-term care facilities. Activity remained low throughout the season and hovered near baseline. The characteristic elevation in activity between weeks 52 and 18, as seen in the past 4 influenza seasons, was not observed during the 2009-2010 season.

Nosocomial outbreaks

In the 2009-2010 influenza season, there were seven upper respiratory or ILI outbreaks in long-term care facilities reported between week 40 (2009) and week 20 (2010). All seven long term care facilities conducted testing for influenza; four of these facilities identified influenza by rapid antigen or PCR, of which type A was found in two facilities and 2009 H1N1 in the other two. In the 2008-2009 influenza season, 21 upper respiratory or ILI outbreaks were reported.

Figure 5
Influenza-like Activity, Long Term Care Facilities, 2009-2010*

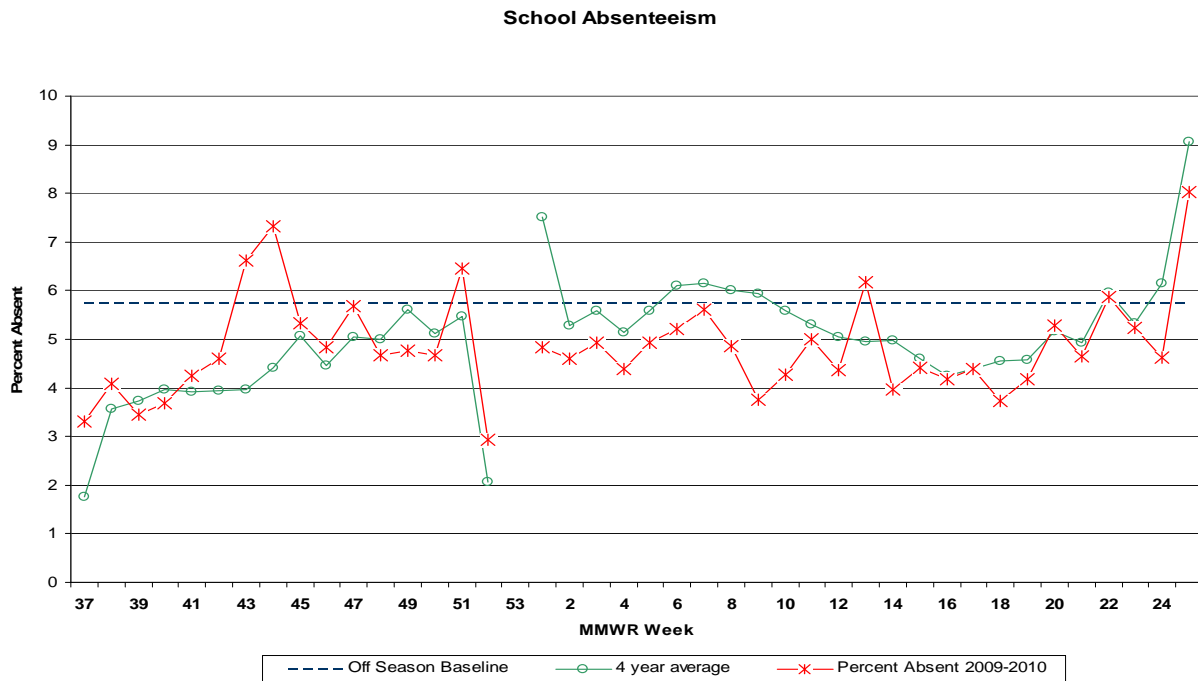


*MMWR weeks 35-52, 2009; weeks 1-23, 2010

School Absenteeism

School absenteeism peaked in week 44 (2009) with 7.33% absenteeism reported (Figure 6). A second peak during week 51 (2009) was likely due to holiday break. Another peak was observed in week 13 (2010) with 6.18% absenteeism reported. The percent absent for schools was initially above baseline starting in week 43. The peak in week 51 (2009) and subsequent decline in week 52 (2010) represents holiday school closures. Missing data for week 53 are due to holiday school closures in which no absenteeism reporting occurred.

Figure 6
School Absenteeism, 2009-2010*

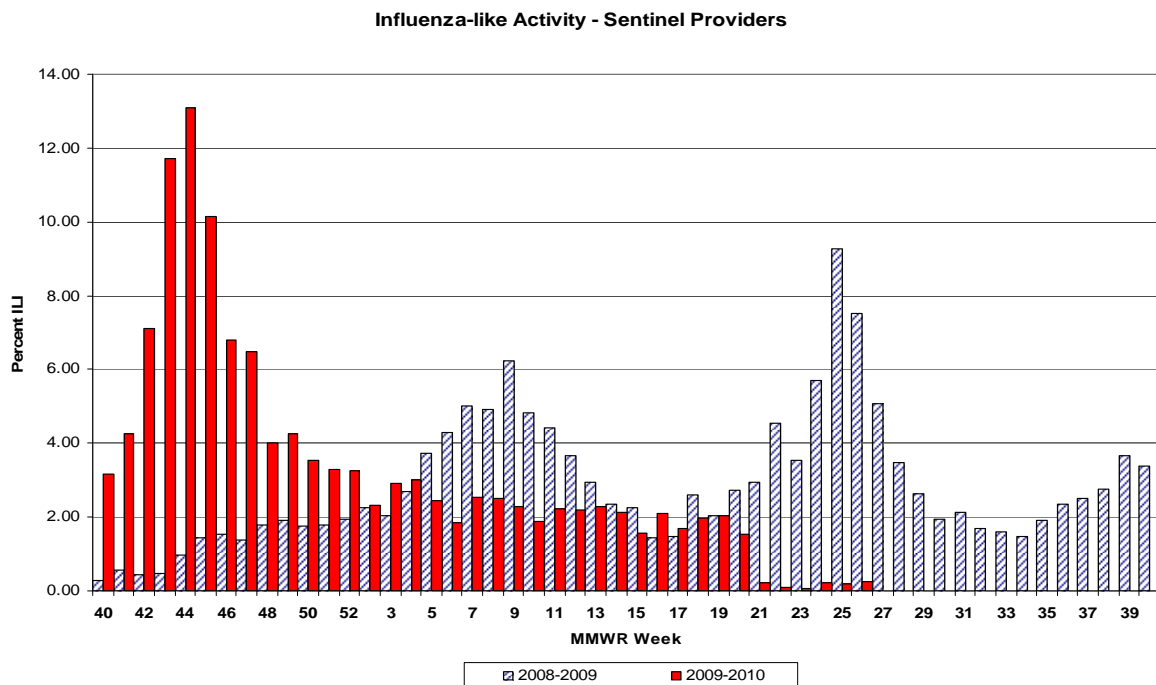


*MMWR weeks 37-52, 2009; weeks 1-39, 2010

Sentinel Provider Surveillance

NJDHSS currently has 70 providers enrolled in Centers for Disease Control and Prevention (CDC) Outpatient Influenza-like Illness Surveillance Network (ILINet). These providers report once a week the total number of patient visits and the number of patients seen with ILI (i.e., cough and/or fever). During the 2009-2010 influenza season, an average of 32 reporters per week submitted data on a total of 278,630 visits. Of these visits, 12,066 (4.33%) visits were associated with ILI. The Mid-Atlantic (New York, New Jersey) region baseline for sentinel provider reporting as calculated by the CDC is 2.9%. The peak of activity occurred in week 44 in which 13.1% of visits were due to ILI (Figure 7).

Figure 7
Influenza-like Activity- Sentinel Providers,
2008-2010*



*MMWR weeks 40-52, 2009; weeks 1-23, 2010

Pediatric Influenza Surveillance

In the 2009-2010 season NJDHSS received 144 reports of pediatric illness. Of these cases, 95 have met the case definition for pediatric illness or death associated with influenza. An in-depth report regarding pediatric influenza will be released separately.

122 City Mortality Report

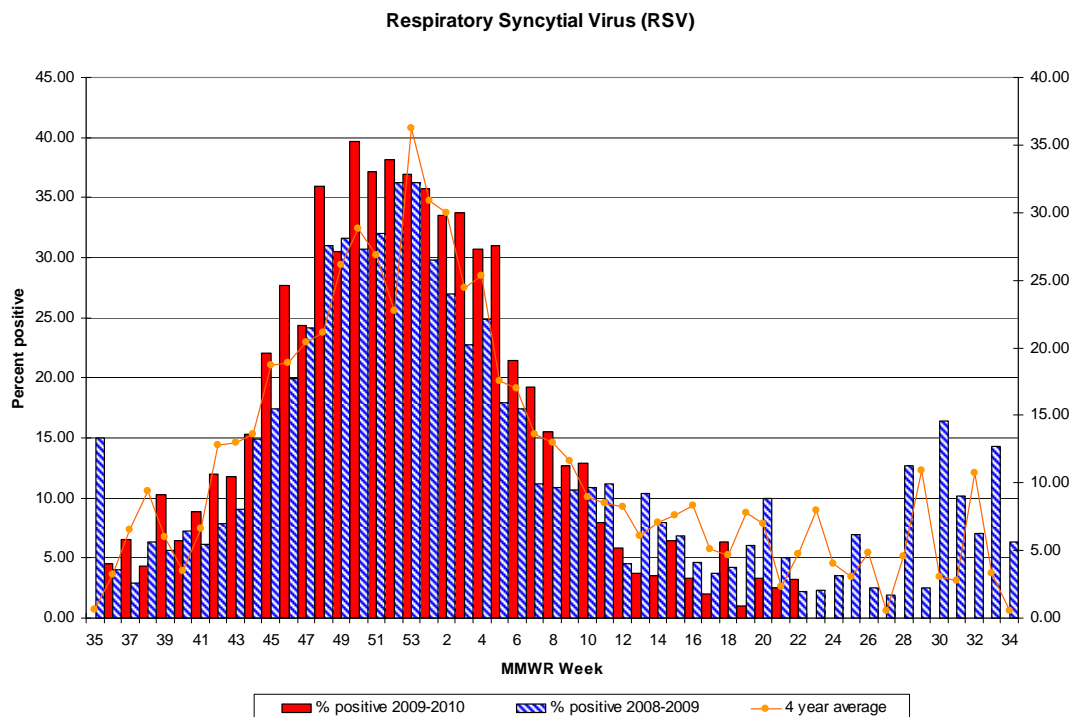
As part of national influenza surveillance efforts, the CDC receives weekly mortality reports within 2-3 weeks from dates of death from 122 cities and metropolitan areas in the United States. These reports summarize the total number of deaths occurring in these cities/areas each week, as well as the number due to pneumonia and influenza.

New Jersey evaluates these data from vital statistics offices in 6 New Jersey cities (Camden, Elizabeth, Jersey City, Newark, Paterson, Trenton). For the 2009-2010 influenza season, the peak of deaths due to pneumonia or influenza was recorded in week 13 (2010) with 7.95% of death associated with pneumonia or influenza.

RSV Reports

NJDHSS receives weekly reports from select hospital laboratories on the number of respiratory syncytial virus tests performed and the number that are positive. There were 12,630 tests reported with 2,929 (23%) positive for RSV (Figure 8). The peak of activity occurred in week 50 with 39.62% positive for RSV. The peak of activity in the 2008-2009 season occurred in week 52 with 36.29% of samples positive for RSV.

Figure 8
Respiratory Syncytial Virus (RSV) Surveillance*
2008-2010



*Value for week 53 is an imputed average of weeks 52 and 1.

Additional Information

For a listing of MMWR weeks, please visit the following website:

http://nj.gov/health/flu/documents/mmwr_weeks.pdf

For additional information regarding influenza surveillance, please visit the following websites:

<http://nj.gov/health/flu/surveillance.shtml>; <http://www.cdc.gov/flu/>