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## SUMMARY

This report summarizes the influenza activity in Maricopa County for the 2011-2012 Season (October 2, 2011 [MMWR WK 40] to September 29, 2012 [MMWR WK 39]). Maricopa County Department of Public Health (MCDPH) influenza surveillance is a collaborative effort between MCDPH, Arizona Department of Health Services (ADHS), Centers for Disease Control (CDC), and local community partners such as health care providers, emergency departments, community health clinics, Office of Vital Statistics, Office of the Medical Examiner, and local schools. Information on influenza activity is based on several influenza indicators such as: laboratory-confirmed cases, influenza like illness (ILI) activity, absenteeism information from schools, pneumonia and influenza (P&I) mortality and influenza-associated pediatric mortality. Typically, influenza peaks in January or February; however, widespread influenza activity can occur as early as October or as late as May during a flu season. Influenza cases reported to MCDPH represent a small proportion of the true number of cases of influenza. Many people do not visit the doctor when ill and not every patient exhibiting ILI symptoms is tested.

Based on influenza indicators in Maricopa County, overall, this season was mild. The first case of influenza acquired in Maricopa County was laboratory confirmed on December 14<sup>th</sup>. ([table 1](#)). Peak influenza activity occurred in late March, which was later compared to the previous season (early February in 2010-2011). There were only four weeks with widespread influenza activity this season. In contrast, there were 11 weeks of widespread activity during the 2010-2011 season. Influenza type A accounted for the majority of laboratory confirmed cases ([graph 3](#)). The influenza type B virus was less common, but accounted for most of the cases in the later part of the season. RT-PCR and viral culture testing suggested that the 2009 H1N1 virus was the most common virus during the 2011-2012 season.

Influenza-like illness (ILI) activity was generally lower during the 2011-2012 season than it was during the 2010-2011 season. In hospital emergency departments, the number of ILI visits reported in 2010-2011 season was higher compared to this season ([graph 7](#)). Data reported to CDC from sentinel sites show that the percent of outpatient visits due to ILI never exceeded CDC regional baseline and remained beneath the ADHS epidemic threshold ([graph 8](#)). School absenteeism due to ILI was also lower than in previous seasons ([graph 9](#)).

Pneumonia and influenza (P&I) mortality was lower compared to the previous season ([table 4](#)). There were also fewer pediatric P&I deaths and no influenza-associated pediatric deaths were reported in Maricopa County during this season. This is the first season that did not have an influenza death in a child reported since the condition became reportable in the state of Arizona in 2004 ([graph 11](#)).

Respiratory Syncytial Virus (RSV) activity was also mild during the 2011-2012 season compared to previous seasons ([graph 12](#)). Activity peaked in early March. RSV activity, like influenza activity, began and ended later than in the previous three seasons.

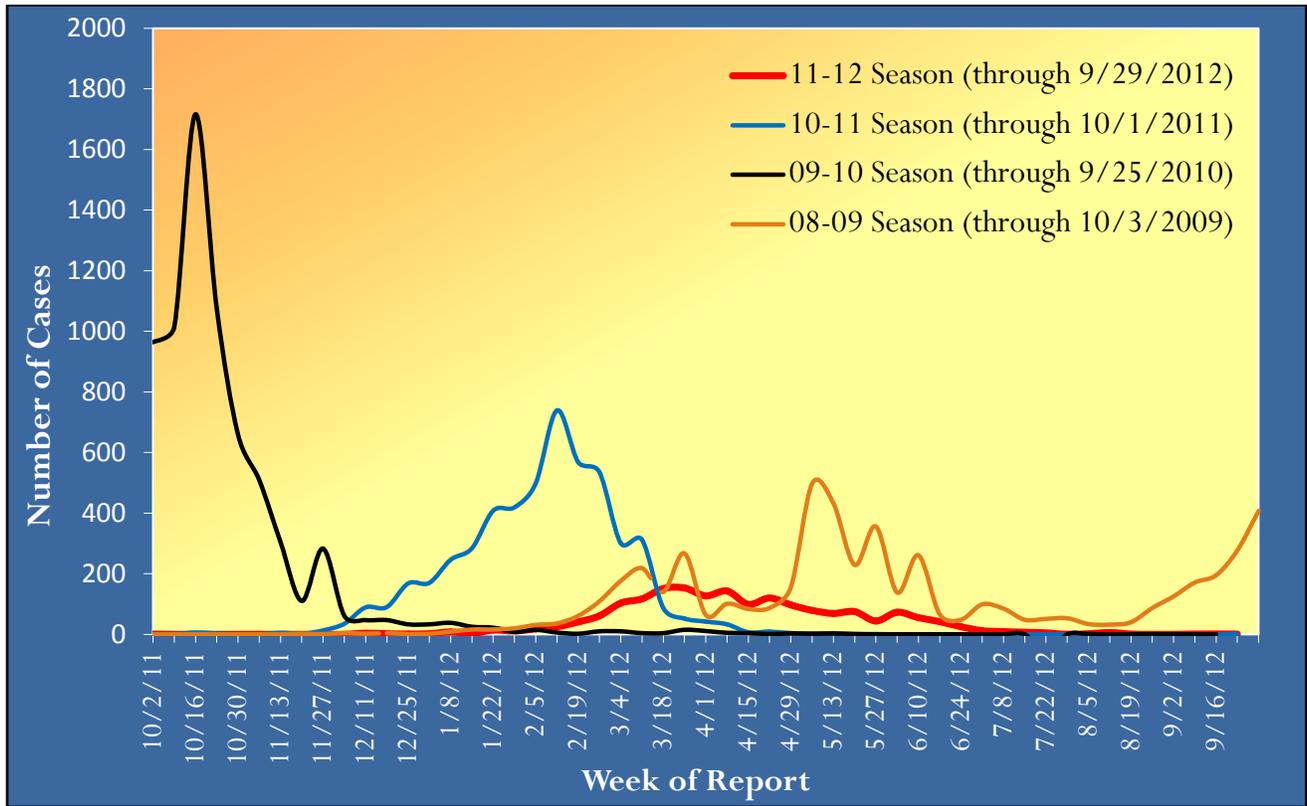
**Table 1. Influenza Activity Levels**

	<b>2011-2012</b>	<b>2010-2011</b>	<b>2009-2010</b>	<b>2008-2009</b>
<b>Date First Case Confirmed, no travel</b>	Dec. 14, 2011	Sept. 28, 2010	Confirmed during summer	Nov. 19, 2008
<b>Weeks with Widespread Activity (AZ)</b>	<b>Weeks 11 – 14</b> (3/11/2012-4/7/2012)	<b>Weeks 52 – 10</b> (12/26/2010-3/12/2011)	<b>Weeks 40 – 48</b> (10/4/2009-12/5/2009)	<b>Weeks 6 – 12</b> (2/8/2009-3/28/2009) <b>Weeks 17 – 24</b> (4/26/2009-6/20/2009) <b>Weeks 35 – 39</b> (8/30/2009-10/3/2009)
<b>Weeks with Hospital ILI above Regional Threshold</b>	<b>Weeks 7 – 13</b> (2/12/2012-3/31/2012) <b>Weeks 16 –18</b> (4/15/2012-5/5/2012) <b>Weeks 20-21</b> (5/13/2012-5/26/2012)	<b>Weeks 50-13</b> (12/12/2010- 4/2/2011)	<b>Weeks 40-44</b> (10/4/2009-11/7/2009)	--
<b>Peak Week</b>	<b>Week 13</b> (3/25/2012-3/31/2012)	<b>Week 7</b> (2/13/2011-2/19/2011)	<b>Week 42</b> 10/18/2009-10/24/2009)	<b>Week 19</b> (5/10/2009-5/16/2009)

## LABORATORY CONFIRMED INFLUENZA

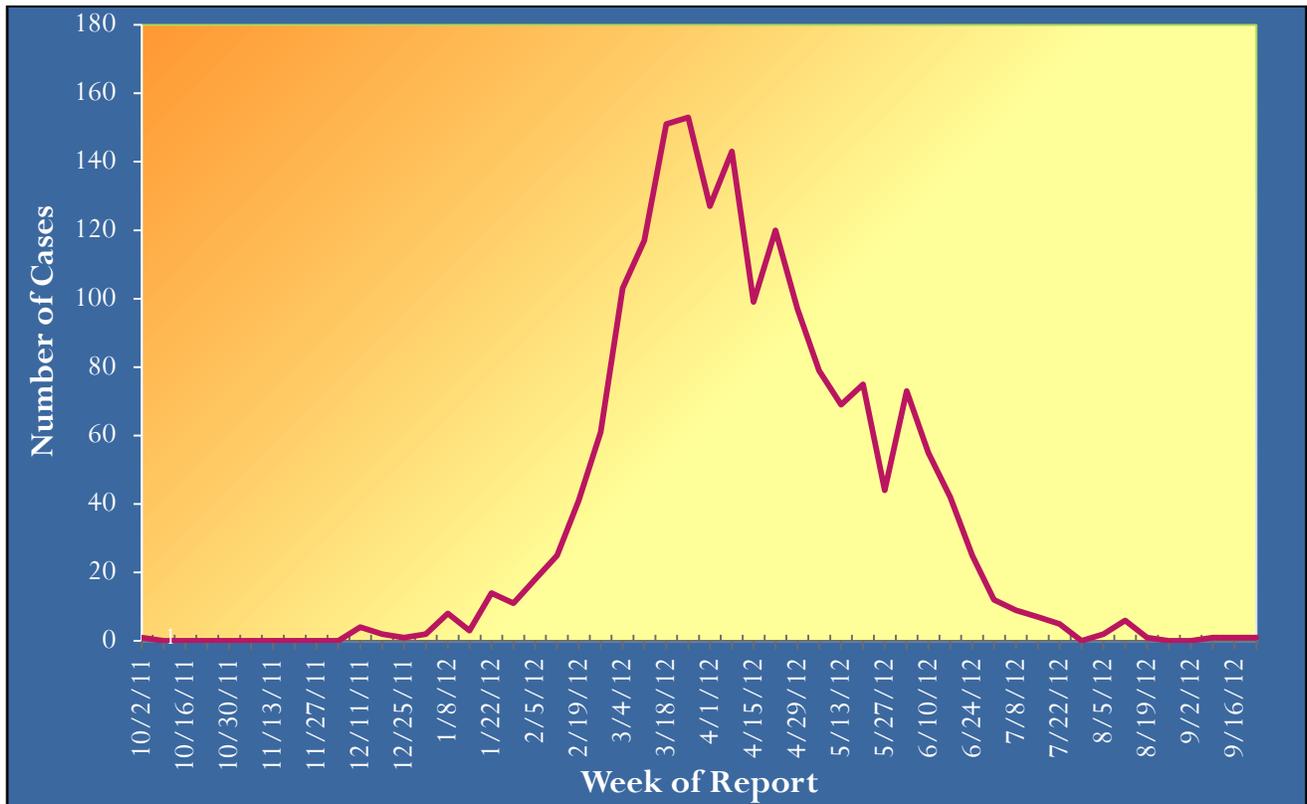
Influenza is a laboratory reportable disease under Arizona Administrative Code R9-204. Influenza seasons run from week 40 to week 39. Although there was one influenza case confirmed on October 2, the first case without travel history was recorded on December 14, 2011. This season there were 1,808 laboratory confirmed cases of influenza in Maricopa County ([table 2](#)). This represents a 65% decrease in total number of cases from the 2010-2011 influenza season, which had a total of 5,138 confirmed cases. Influenza activity was widespread from weeks 11 to 14 (3/11/2012- 4/7/2012) and peaked on week 13 when 153 cases were reported ([graph 2](#)).

**Graph 1. Number of Laboratory Confirmed Influenza Cases Reported by Week, 2008-2012, Maricopa County**



\*For graphs of multiple years, date of report refers the weeks in the 2011-2012 season

**Graph 2. Number of Laboratory Confirmed Influenza Cases Reported by Week, 2011-2012, Maricopa County**



## INFLUENZA TYPES AND SUBTYPES

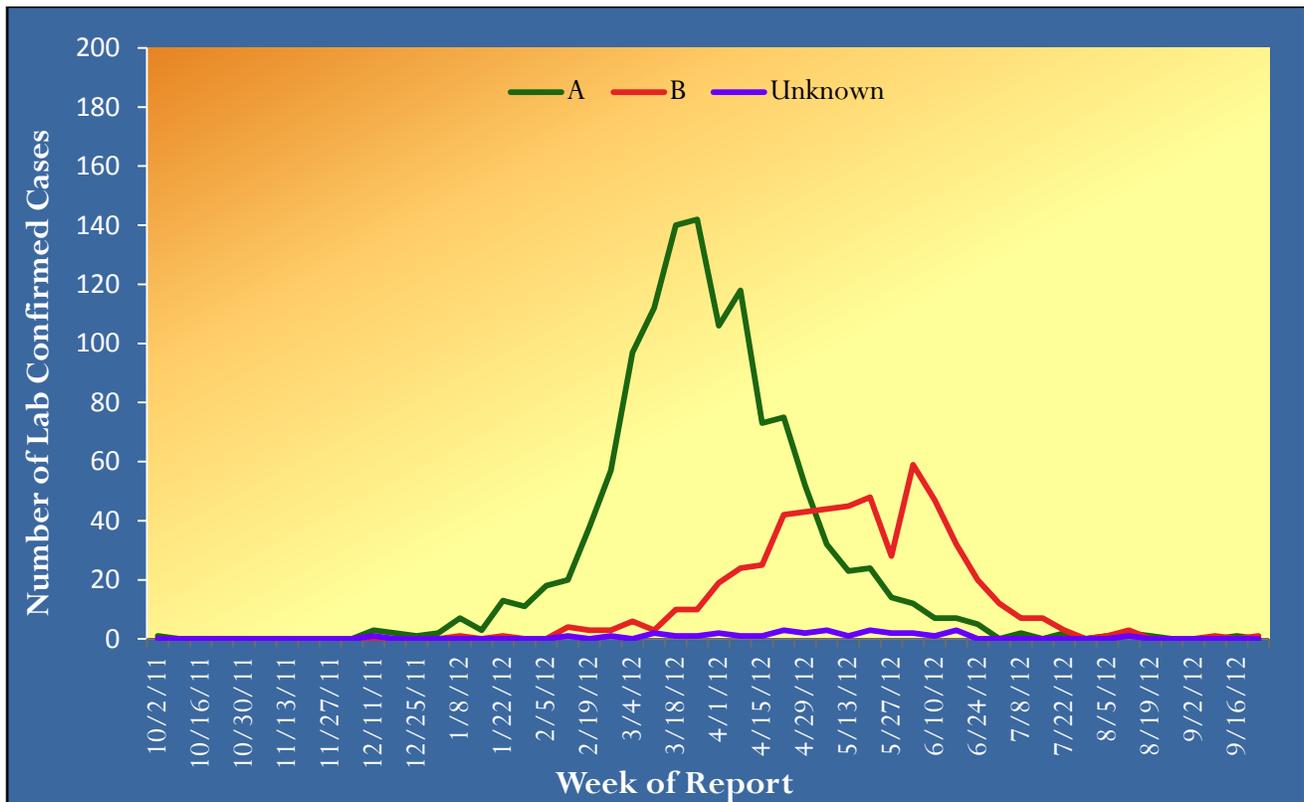
Influenza types A (67.7%) and B (30.5%) were the dominant influenza strains currently circulating this season. When influenza subtype testing was performed, influenza 2009 H1N1 and influenza A/H3 were the two most common influenza A subtypes.

**Table 2. Types/Subtypes of Influenza by Test, 2011-2012 Season, Maricopa County**

Total	1808	100.0%
Type A	1224	67.7%
<i>Subtype 2009 H1N1</i>	334	27.3%
<i>Subtype H3</i>	167	13.6%
<i>Subtyping not performed or unknown</i>	723	59.1%
Type B	552	30.5%
Type Unknown	32	1.8%

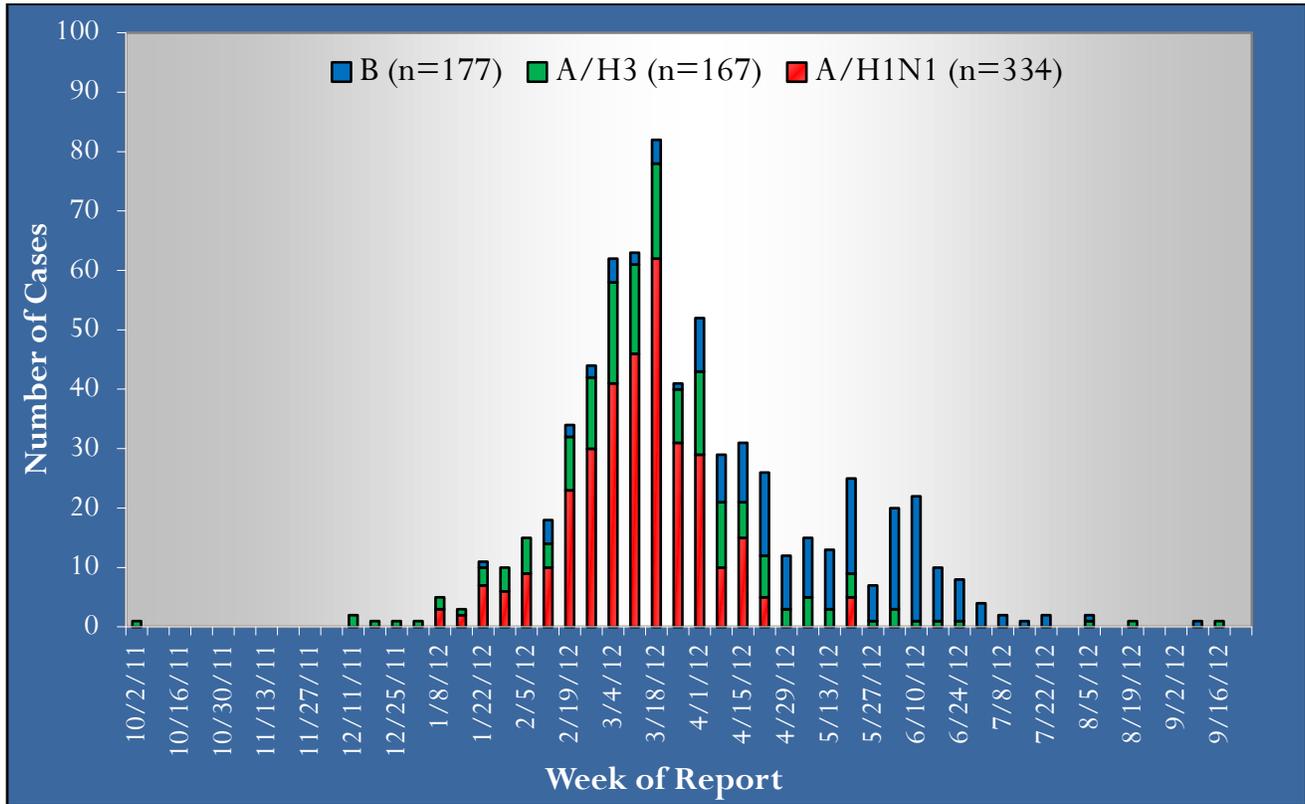
Influenza A activity peaked during the week of 3/25/12 (week 13) which corresponds with the overall peak of this season. However, a number of cases continued to be reported during the summer in which influenza B accounted for the majority of these cases.

**Graph 3. Influenza Activity by Type, Season 2011-2012, Maricopa County**



Of the 1,808 lab confirmed cases reported this season, 678 cases tested positive by RT-PCR or viral culture. Overall, 49% of specimens tested by RT-PCR or viral culture were 2009 H1N1, 25% A/H3, and 26% B. During the peak of the season, 2009 H1N1 activity was highest but dramatically declined with no additional reports of 2009 H1N1 reported after the week of 5/20/12.

**Graph 4. Influenza Cases Confirmed by RT-PCR or Culture Testing, All Laboratories, 11-12 Season**



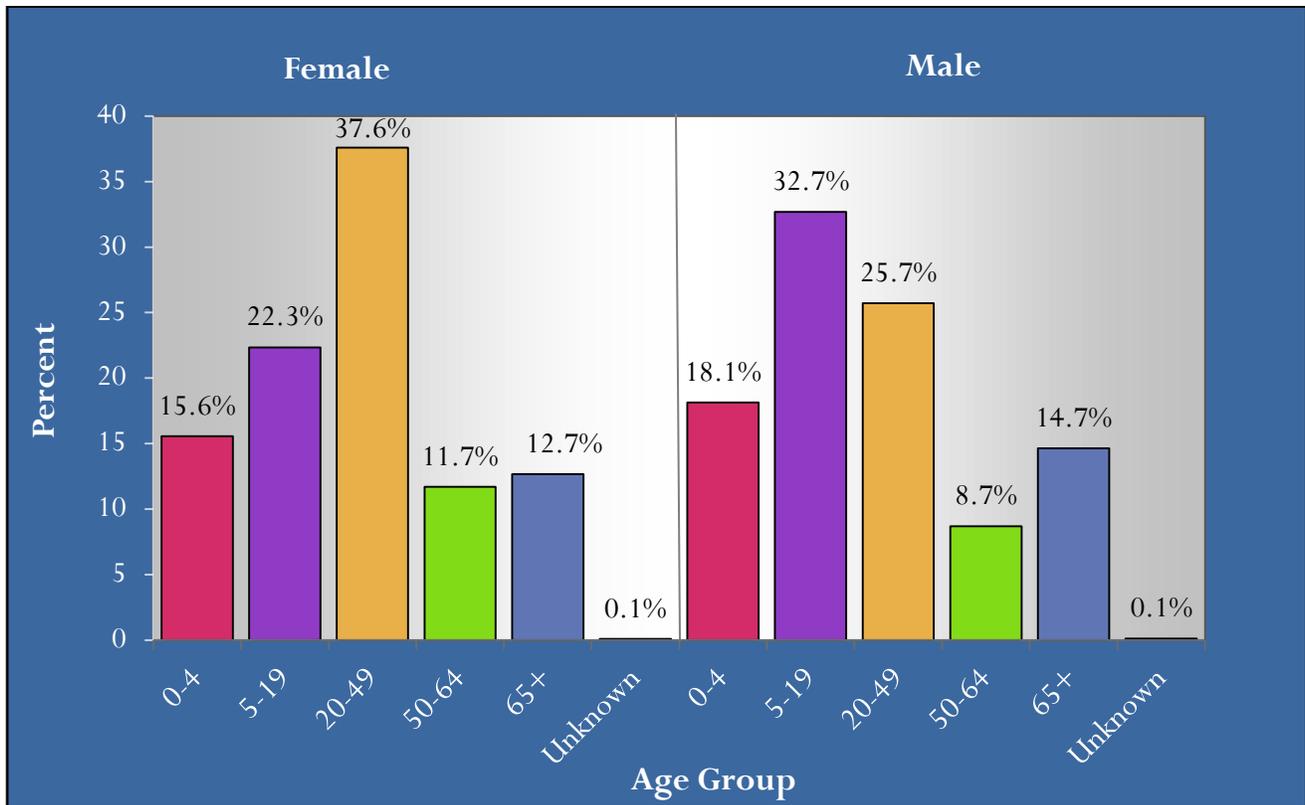
**INFLUENZA ACTIVITY BY AGE AND GENDER**

The demographic breakdown of laboratory confirmed cases in Maricopa County is provided below. Slightly over half of reported cases were female. The majority of all cases were reported in those ages 5-19 and 20-49. However the rate of reported cases was highest among children 0-4 years of age.

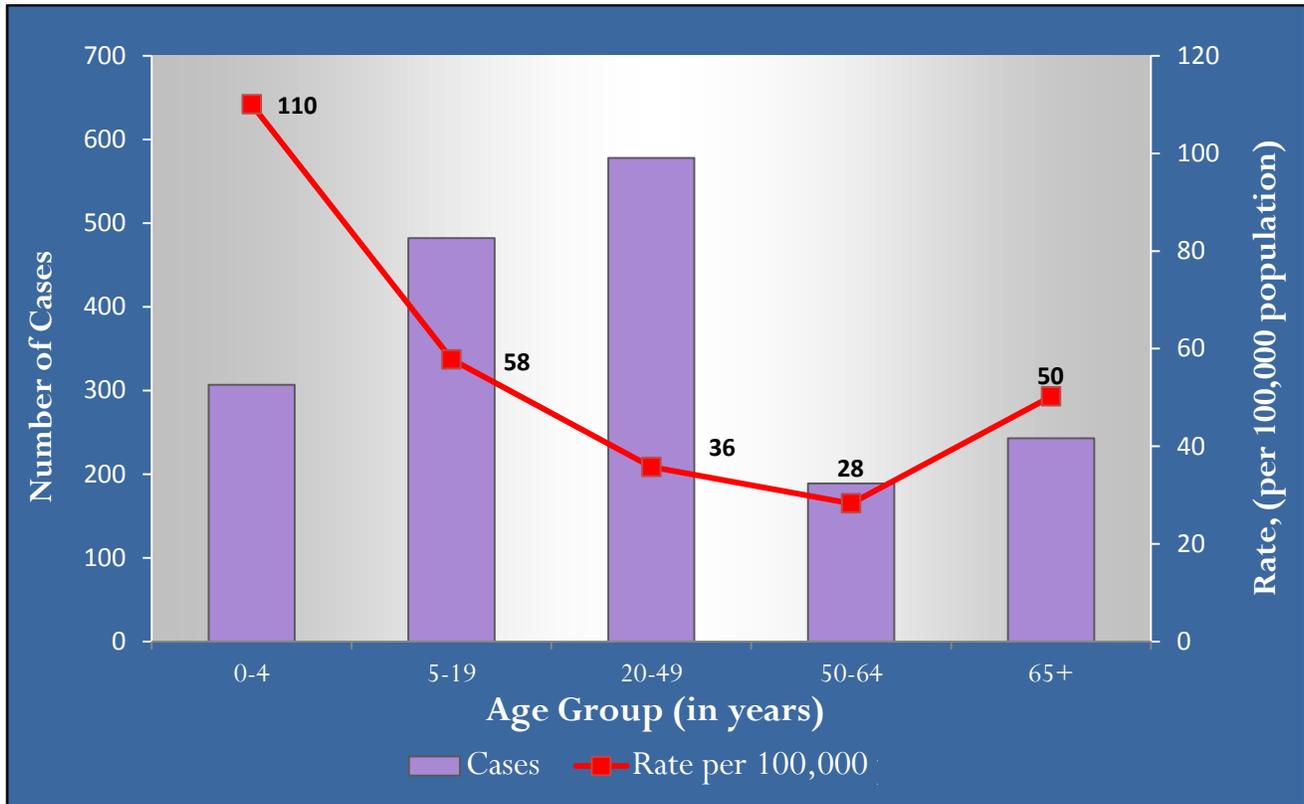
**Table 3. Confirmed Cases by Gender and Age, Season 2011-2012, Maricopa County**

	TOTAL	%
<b>GENDER</b>		
Female	931	51.49
Male	805	44.52
Unknown	72	3.98
<b>Total</b>	<b>1808</b>	<b>100</b>
<b>AGE GROUP</b>		
0-4	307	16.98
5-19	482	26.66
20-49	578	31.97
50-64	189	10.45
65+	243	13.44
Unknown	9	0.5
<b>Total</b>	<b>1808</b>	<b>100</b>

**Graph 5: Confirmed Cases by Gender and Age, Season 2011-2012, Maricopa County**



**Graph 6: Rates of Confirmed Influenza Cases by Age Group per 100,000 Residents, Season 2011-2012, Maricopa County**



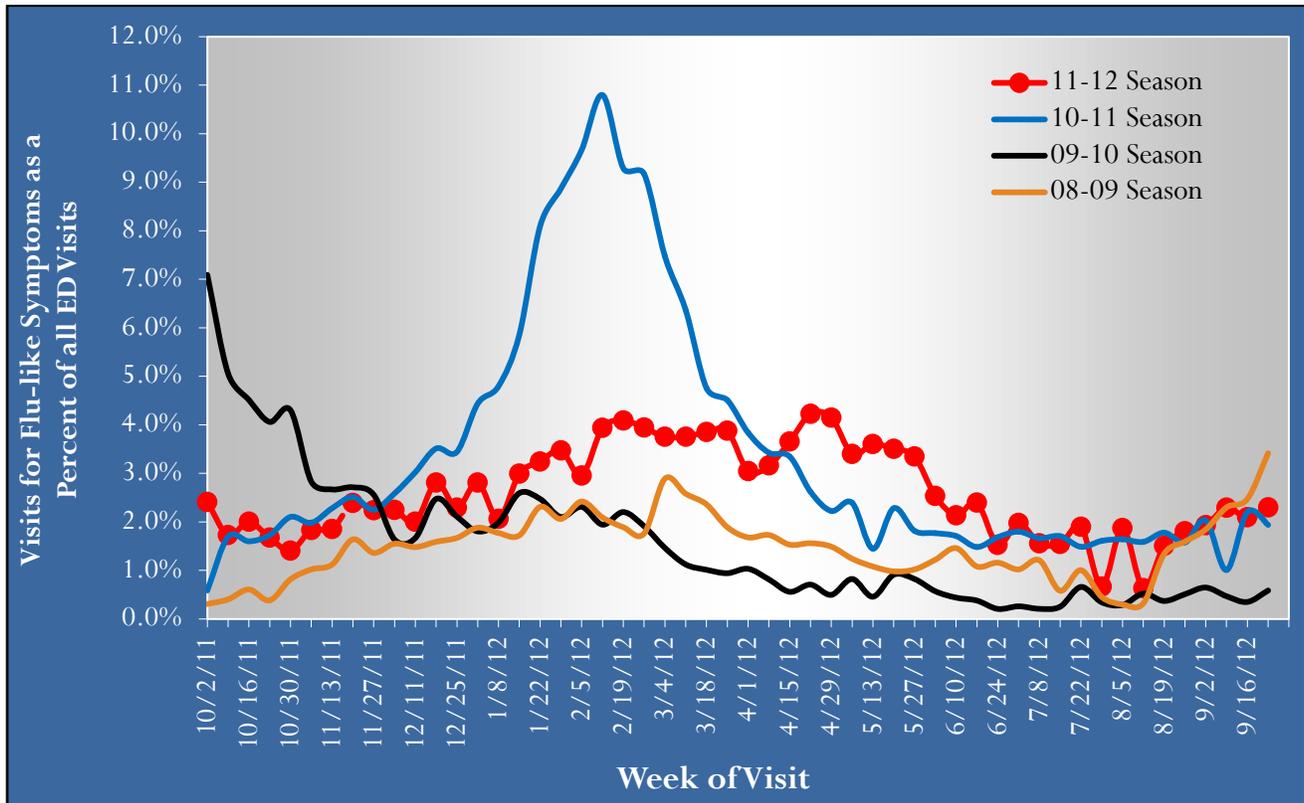
## ILI INDICATORS

MCDPH Office of Epidemiology collects data on influenza-like illness to estimate the severity of an influenza season because not all suspect cases of influenza can be tested. ILI is defined as a fever greater than or equal to 100°F **AND** cough or sore throat in the absence of a known cause other than influenza. MCDPH uses the following sources to estimate the incidence of ILI: emergency department visits, sentinel site (outpatient clinic) visits, and student absenteeism due to flu-like symptoms.

## Emergency Department Visits

Every week local emergency departments report visits due to ILI and total number of emergency department visits. This season ILI activity was mild compared to previous seasons. Peak ILI activity occurred on the week of 4/22/12, when 4.2% of all emergency department visits were due to influenza-like symptoms. This peak occurred later than it did in the 2010-2011 season, when the peak occurred on 2/12/11 with 10.8% ILI visits.

**Graph 7. Visits by Individuals with Influenza-Like Symptoms as a Percent of All Hospital Emergency Department\* Visits, Maricopa County**

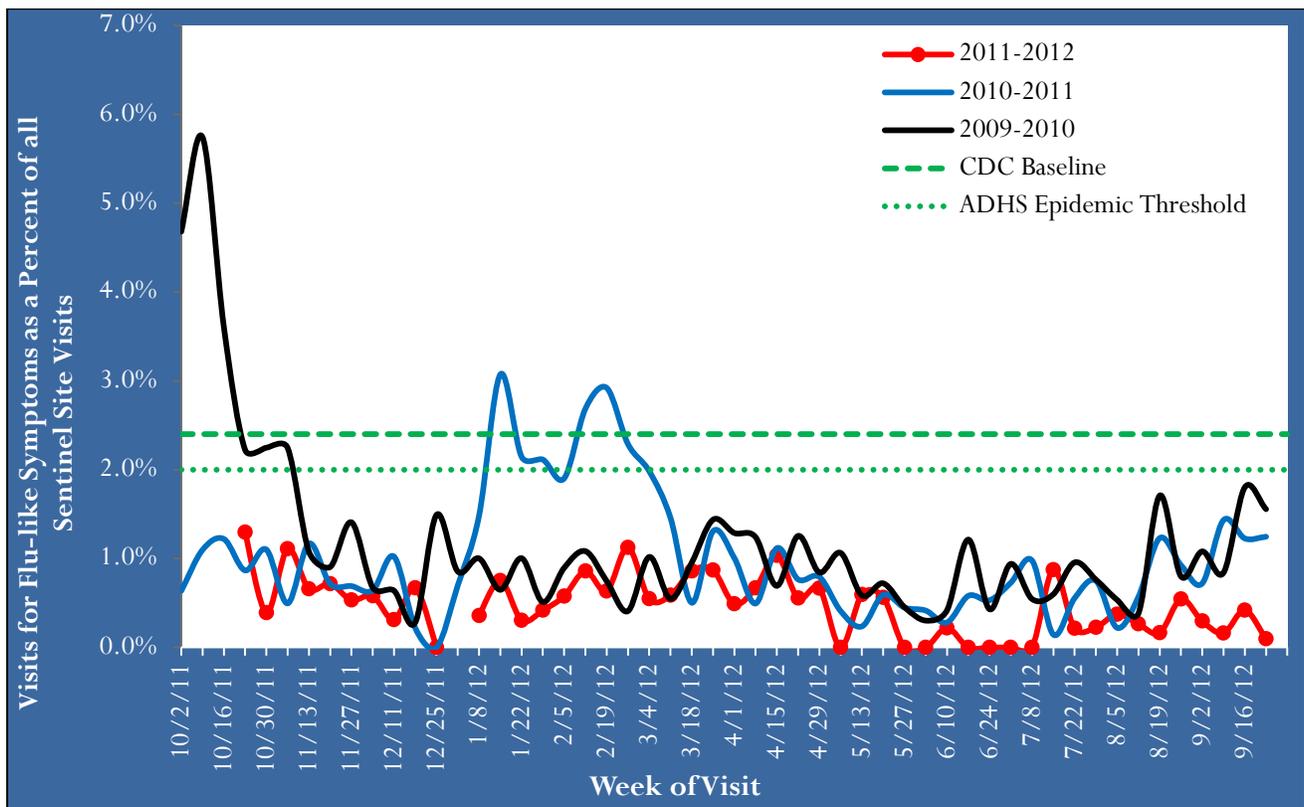


\*Twelve emergency departments participating in ILI reporting

## Sentinel Site Surveillance

Maricopa County sentinel sites (outpatient clinics) report visits due to influenza-like symptoms and the total number of visits seen each week to CDC. This percentage is then compared to the CDC baseline and ADHS epidemic threshold each week to determine the level of influenza activity. In general ILI activity was low during the 2011-2012 influenza season. ILI activity never exceeded the CDC baseline (2.4%) and was consistently below the ADHS epidemic threshold (2.0%).

**Graph 8. Visits by Individuals with Influenza-like Symptoms as a Percent of All Sentinel Site (Outpatient Clinic) Visits, Maricopa County**



\*Two sentinel sites participating in ILI reporting

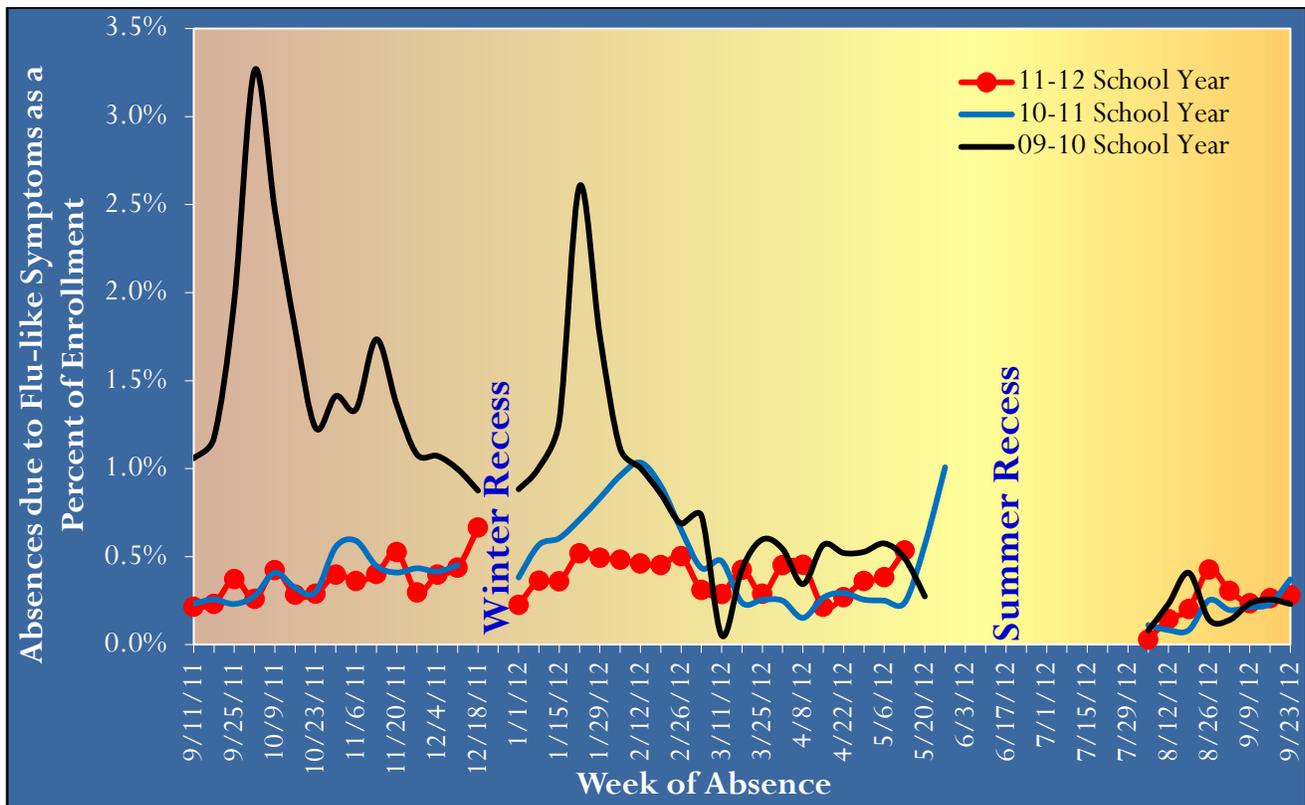
For more information on CDC and ADHS baselines and thresholds visit:

<http://www.cdc.gov/flu/pdf/weekly/overview.pdf>  
<http://www.azdhs.gov/phs/oids/epi/flu/pdf/influenza/influenza11-12-summary.pdf>

## School Surveillance

Maricopa County uses a web-based school surveillance system to collect student absenteeism data due to ILI and other illnesses. This season, 18 schools participated in this program. Overall, absenteeism due to influenza-like symptoms was very low during the 2011-2012 school year compared to previous seasons. Unlike previous seasons, there were no distinct peaks in ILI absenteeism.

**Graph 9. Students absent due to influenza-like symptoms as a percent of total enrollment, Maricopa County**



## INFLUENZA MORTALITY

Influenza-associated deaths in adults are not reportable in Arizona. Many influenza-related fatalities are attributed to complications of influenza infection, including pneumonia. Individuals who died of influenza-associated pneumonia may or may not have influenza listed as a cause of death. As a result, influenza deaths are often underreported. In order to estimate the burden of influenza mortality, pneumonia and influenza (P&I) deaths are grouped together and used as an indicator of the severity of a flu season.

The table below shows the number of P&I deaths recorded during the current and previous influenza seasons. The number of all P&I deaths decreased this season compared to last season including those directly attributed to influenza.

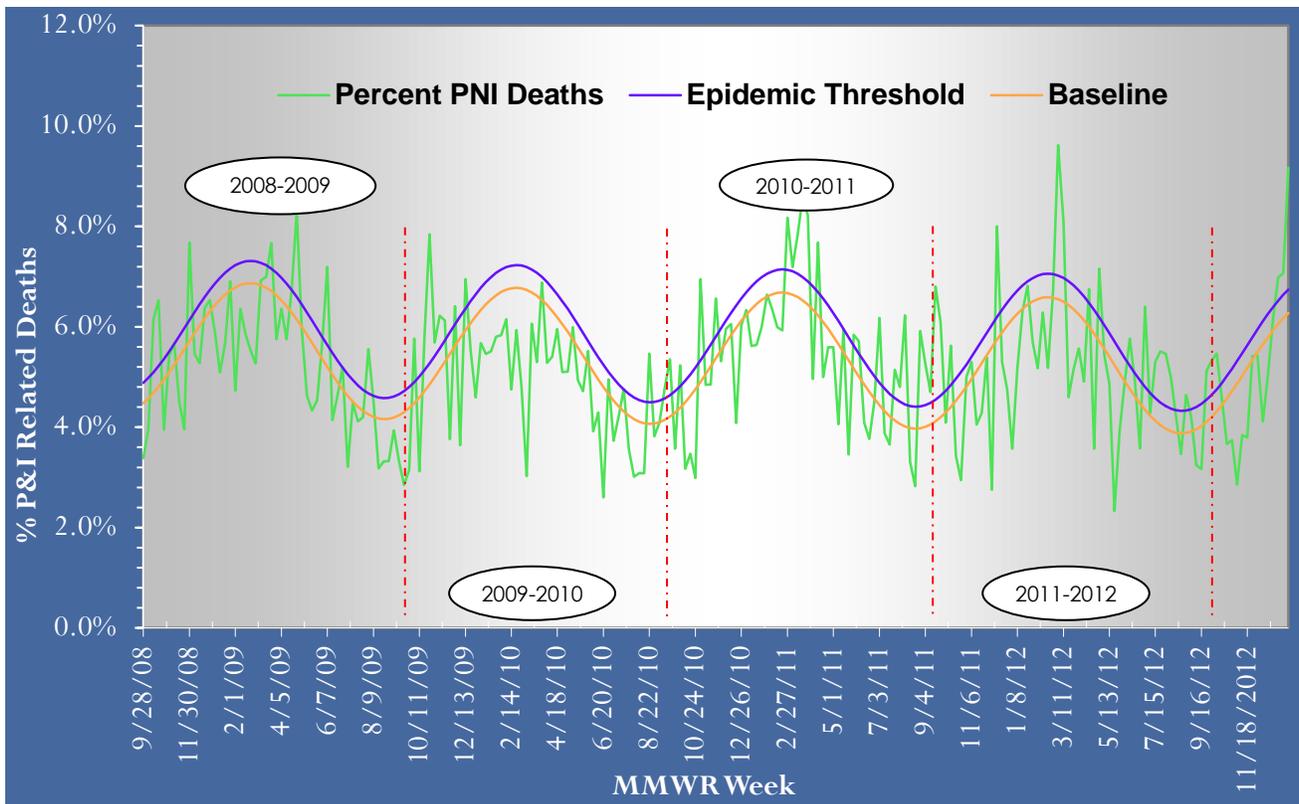
**Table 4. P&I Deaths, 2010-11 & 2011-12 Seasons, Maricopa County**

	Current Season (2011-2012) As of [9/29/2012]		Last Season (2010-2011) As of [10/1/2011]	
	Pneumonia and Influenza	Influenza	Pneumonia and Influenza	Influenza
<b>Pediatric (Under age 18)</b>	11	0	22	4
<b>Adult (18 and Over)</b>	1282	5	1425	16

Source: MCDPH Office of Vital Statistics

Maricopa County participates in CDC’s 122 US Cities P&I reporting system. Every week deaths due to P&I that occurred in Phoenix are reported to CDC. The percent of all deaths due to P&I is plotted against the baseline and threshold value calculated for each week. Baselines and thresholds are calculations using historical P&I data to estimate what levels are expected for that time of the year. When levels exceed the epidemic threshold, this indicates elevated influenza activity.

**Graph 10. P&I Related Deaths as a Percent of Total Deaths, 2008-2012, Maricopa County**

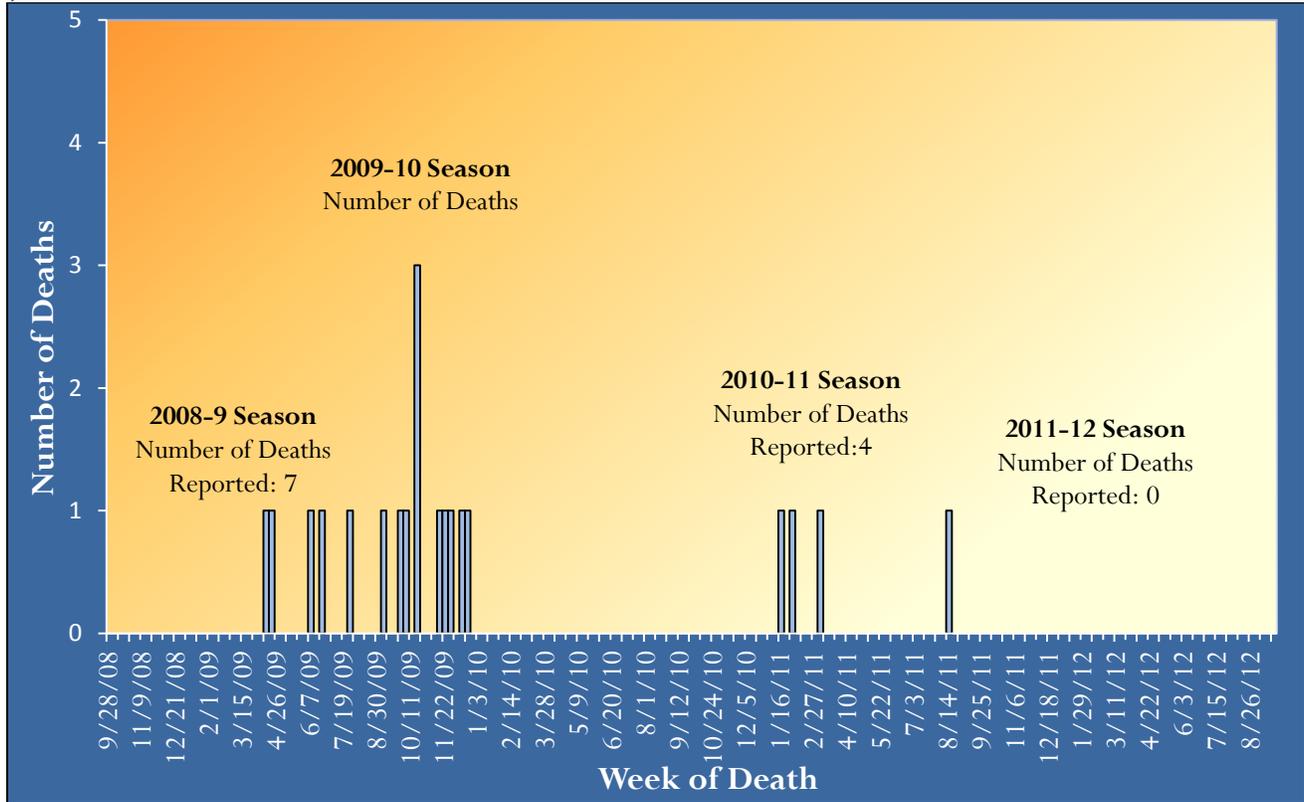


Source: MCDPH Office of Vital Statistics

\*The dashed lines represent the ending of a season and the beginning of the next season

Influenza-associated mortality in children is reportable in Arizona. Graph 12 shows the number of pediatric deaths that were attributed to influenza from 2008-2012. No pediatric influenza deaths were recorded during the 2011-2012 season. This is the first season, since this condition became reportable in 2004, that Maricopa County has not had an influenza-associated pediatric death.

**Graph 11. Number of Pediatric Deaths Associated with Laboratory-Confirmed Influenza by Week of Death: 08-09, 09-10, 10-11 & 11-2012 Seasons**

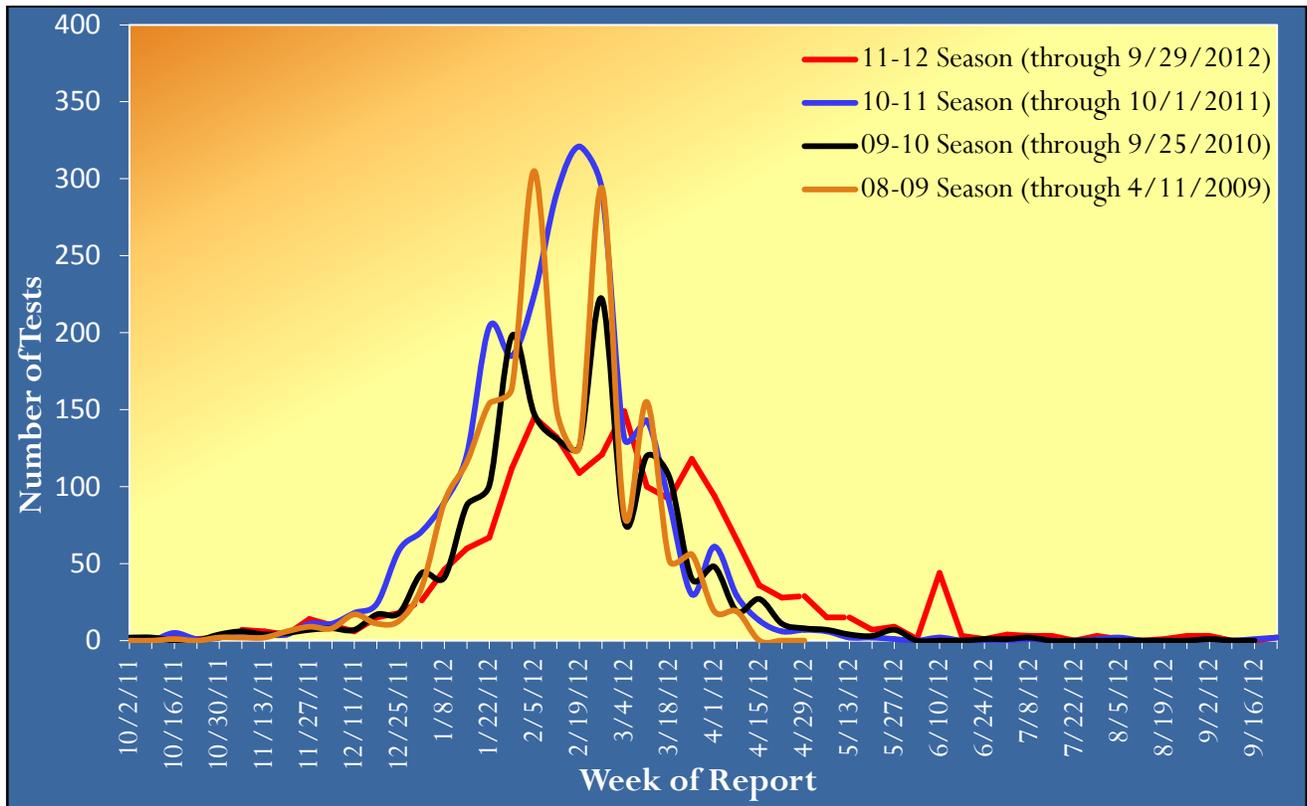


**RSV SURVEILLANCE**

Respiratory syncytial virus (RSV) is a laboratory reportable disease in the state of Arizona. Activity is usually highest during the winter and early spring. RSV infections are most common in children. To learn more about RSV, visit the following link: <http://www.cdc.gov/rsv/>

The number of individuals with confirmed RSV tests by week from 2008-2012 are shown below. In total, there were 1,734 individuals confirmed with an RSV test this season. RSV activity was highest from mid-January to mid-April. Peak activity occurred during week 10 (3/4/12), with 149 laboratory confirmed RSV cases. The onset, offset, and peak of widespread RSV activity all occurred later than in previous seasons. In general, the 2011-2012 RSV season was less severe than the previous three seasons.

**Graph 12. Number of Laboratory Confirmed RSV Cases Reported by Week, 2008-2012, Maricopa County**



**Graph 13. Number of Laboratory Confirmed RSV Cases Reported by Week, 2011-2012, Maricopa County**

