

INFLUENZA SUMMARY REPORT 2004-05 SEASON

UTAH DEPARTMENT OF HEALTH

Report Purpose and Acknowledgements

The purpose of this document is to provide Utah influenza partners a concise summary of this season's major results. Information displayed in this report has been compiled by the Utah Department of Health Bureau of Epidemiology (UDOH-Epid), but reflects information obtained from concerted joint efforts. All activities related to influenza during the 2004-05 season involved major contributions from many different entities. These include as follows: local health departments (LHDs), the Utah Public Health Laboratory (UPHL), UDOH-Immunization Program, UDOH-Public Information Office, private health care providers participating in the sentinel site system, and schools across the state collecting absenteeism data. The intent of this report is to document the results of the efforts put forth by these entities during the 2004-05 season.

Introduction to Influenza Surveillance in Utah

Influenza surveillance in Utah involves multiple components. These include case reports of lab-identified influenza, reports of patient visits for influenza-like illness (ILI) from sentinel clinics, reports of student absences from schools, identification and investigation of hospitalized influenza cases, reports of pediatric mortality due to influenza, and collection and review of syndromic surveillance data for respiratory and constitutional categories using the Real-time Outbreak and Disease Surveillance (RODS). Collection of information related to case reports, sentinel visits, student absenteeism, and hospitalized cases occur primarily through LHDs via influenza coordinators. This information is traditionally collected at the local level and sent to UDOH-Epid for compilation and further analysis. Weekly web postings allow analyzed results to be disseminated to involved partners, media entities, and the general public. Additionally, statistics depicting trends in reported cases (hospitalized and non-hospitalized) are distributed to an internal audience on a biweekly basis throughout the season.

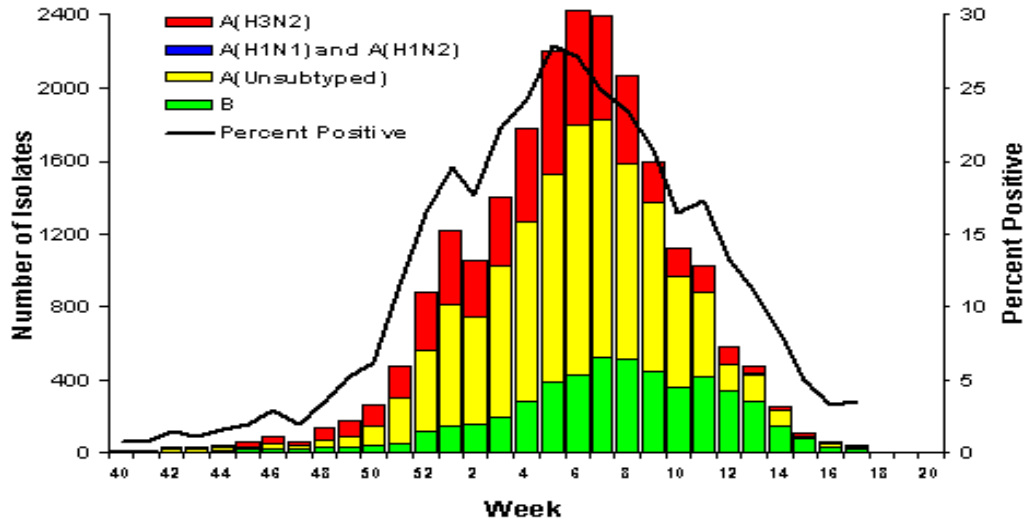
2004-05 Influenza Season National Highlights

Influenza activity during the 2004-05 season was moderate in the United States. Activity steadily increased during January, peaked in mid-February, and declined nationwide thereafter. Influenza B viruses made up an increasing proportion of influenza isolates as the season progressed, which is not unusual. Based on pediatric hospitalization and mortality data collected since October 1, 2004, hospitalization rates and the number of influenza-associated pediatric deaths this season appeared to be lower than the 2003-04 influenza season.

National laboratory surveillance identified a majority of influenza A viruses (76.5%) compared to influenza B viruses (23.5%). Nationally, influenza B viruses became more frequently reported than influenza A viruses during the week ending March 26 and predominated each week thereafter. Approximately 30% of influenza A viruses were sub-typed with the vast majority (99.7%) being influenza A (H3N2). A small percentage (0.3%) of influenza A (H1) was also identified.

Chart 1: National Influenza Laboratory Surveillance, 2004-05 Season

U.S. WHO/NREVSS Collaborating Laboratories Summary, 2004-05



2004-05 Influenza Season Utah Highlights

Similar to the national picture, influenza activity in Utah during the 2004-05 season was moderate compared to past seasons such as the 2003-04 season. Activity began to steadily increase during late December, peaked in mid-February, and continued to decline thereafter. This is in contrast to the timeline of the 2003-04 season, which peaked early and intensely in late December, and then rapidly declined. The majority of cases reported to UDOH-Epid in 2004-05 (52.3%) were not typed, but of the remaining 47.7% percent that were typed, the majority (56.4%) were influenza A viruses. Additionally, in contrast to the trend seen nationally, an increase in reports of influenza B viruses was not observed during late March and thereafter. Instead, during the immediate weeks prior to the season peak, influenza B viruses became more frequently reported.

Additionally, data collection was expanded during the 2004-05 season. Due to the national vaccine shortage situation, more information regarding vaccination status was collected for influenza cases than during past seasons. Investigations of hospitalized cases were also expanded to identify unusual clinical presentations and certain risk factors of interest. Student absenteeism data collection efforts were also expanded to allow schools to report absences due to sickness and ILI instead of total number of absences only.

Chart 2: Comprehensive Surveillance Measures, Utah Influenza Season 2004-05

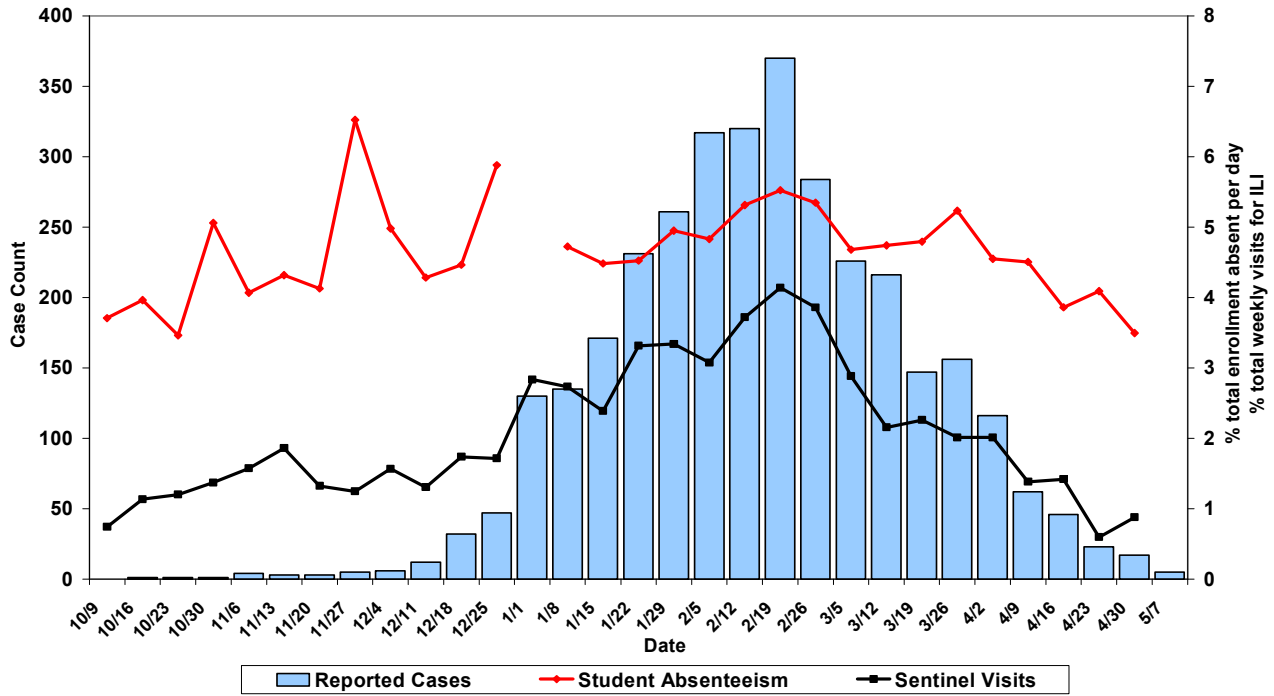


Chart 3: Weekly Incidence Rates, Utah Influenza Season 2003-04 vs. 2004-05

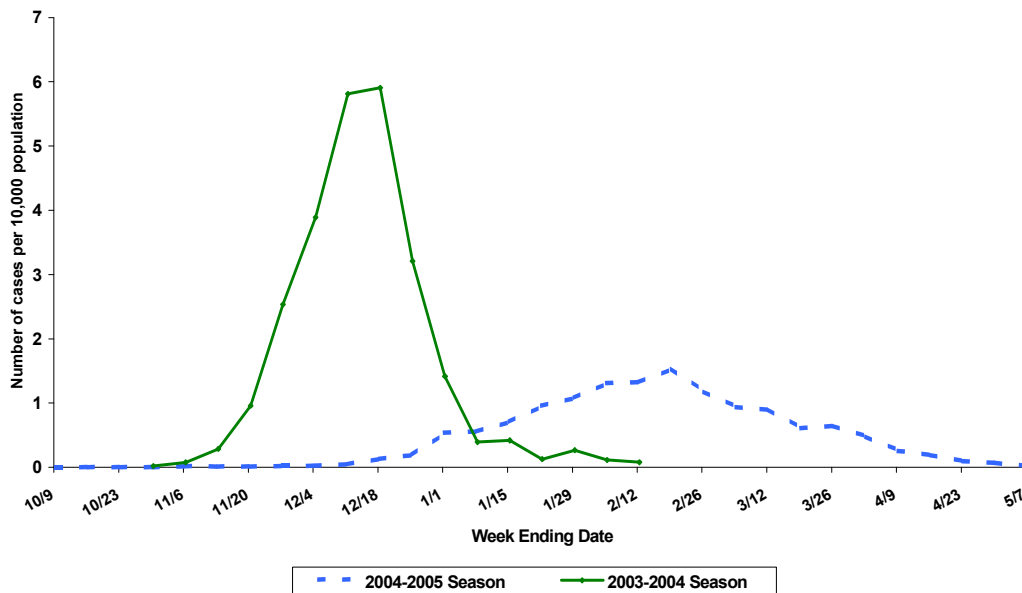
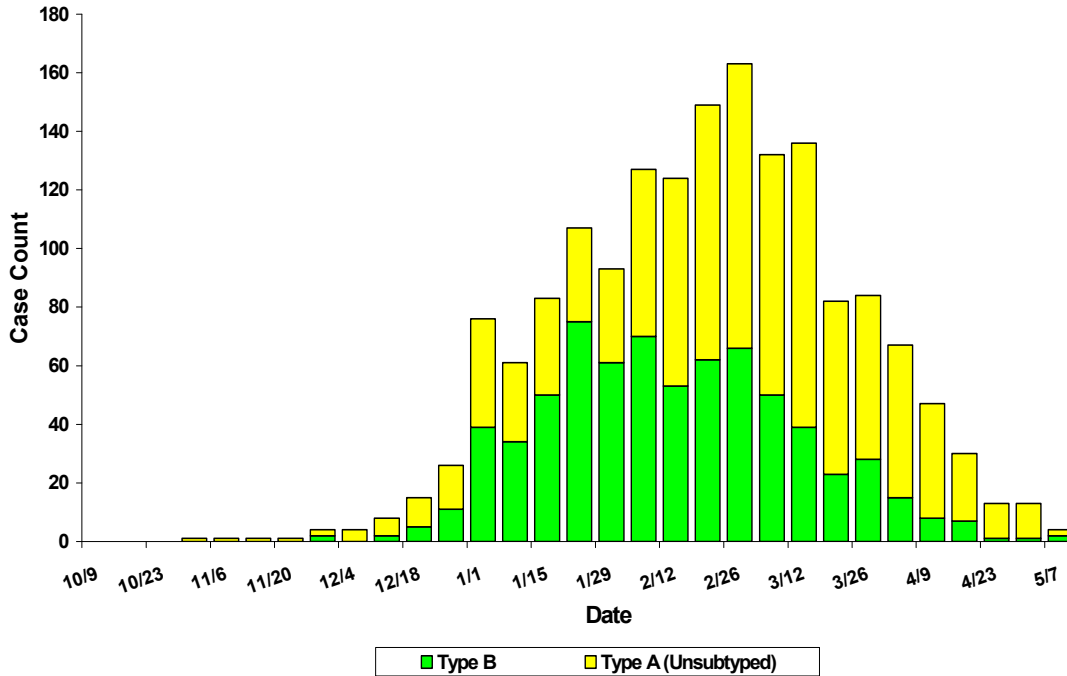


Chart 4: Lab Results by Event Date, Utah Influenza Season 2004-05



Case Reporting: All Cases

Influenza is currently a reportable disease in Utah. Between September 10, 2004 and May 10, 2005, 3,358 influenza cases were reported to UDOH-Epid. The vast majority of reported cases (90.0%) were identified using rapid influenza tests. These tests can differentiate between influenza A and B viruses, but not all versions of rapid tests are able to do so. Thus, 50.7% of all reported cases remain undifferentiated. Similar to previous seasons, children constituted the largest age group for reported cases with 48.7% of all reported cases occurring in individuals 18 years or younger. Additionally, more than 80% of reported cases occurred in individuals residing in the Wasatch Front area. Approximately the same proportion of reported cases can be attributed to males and females.

**Table 1: Demographic Characteristics for Reported Influenza Cases,
Utah Influenza Season 2004-05**

<i>Measure</i>	<i>Count</i>	<i>Percentage of Total</i>
Sex		
Female	1681	50.1
Male	1616	48.1
Unknown	61	1.8
Age group		
0-4 years	871	25.9
5-25 years	1044	31.1
25-64 years	1241	37.0
>= 65 years	176	5.2
Unknown	26	0.8
Age class		
Child (< 18 years)	1636	48.7
Adult (18-64)	1520	45.3
Elderly (>= 65 years)	176	5.2
Unknown	26	0.8
Race		
Asian/Pacific Islander	43	1.3
Black	15	0.5
Native American	5	0.2
White	786	23.4
Other	22	0.7
Unknown	2487	74.1
Hispanic Ethnicity		
Yes	148	4.4
No	429	12.8
Unknown	2781	82.8

Table 2: Laboratory Characteristics for Reported Influenza Cases, Utah Influenza Season 2004-05

Count Row Percent Column Percent	Type A	Type B	Unknown	Total
Culture	43 31.6 5.0	91 66.9 13.7	2 1.5 0.1	136 (4.3)
DFA	89 50.9 10.3	73 41.7 11.0	13 7.4 0.8	175 (5.5)
IgM	1 33.3 0.1	2 66.7 0.3	0 0 0	3 (0.09)
PCR	1 20.0 0.1	4 80.0 0.6	0 0 0	5 (0.20)
Rapid	727 25.3 84.4	495 17.2 74.4	1657 57.6 99.1	2879 (90.0)
Total	861 (26.9)	665 (20.8)	1672 (52.3)	3198*

* Missing=160

Case Reporting: Hospitalized Cases

The 2004-05 influenza season contained intensified efforts to determine hospitalization status for reported cases and to also collect supplemental information on any influenza cases that were reported as hospitalized. Hospitalization status was determined for 62% of all cases, compared to 14% during the 2003-04 season. Two hundred and fifty-two (252) total hospitalizations were reported between November 4, 2004 and May 10, 2005. The majority of hospitalizations occurred during the weeks immediately preceding and succeeding the season peak (i.e. early February to mid-March). Information regarding risk factors was collected for 70% of hospitalized cases during the 2004-05 season.

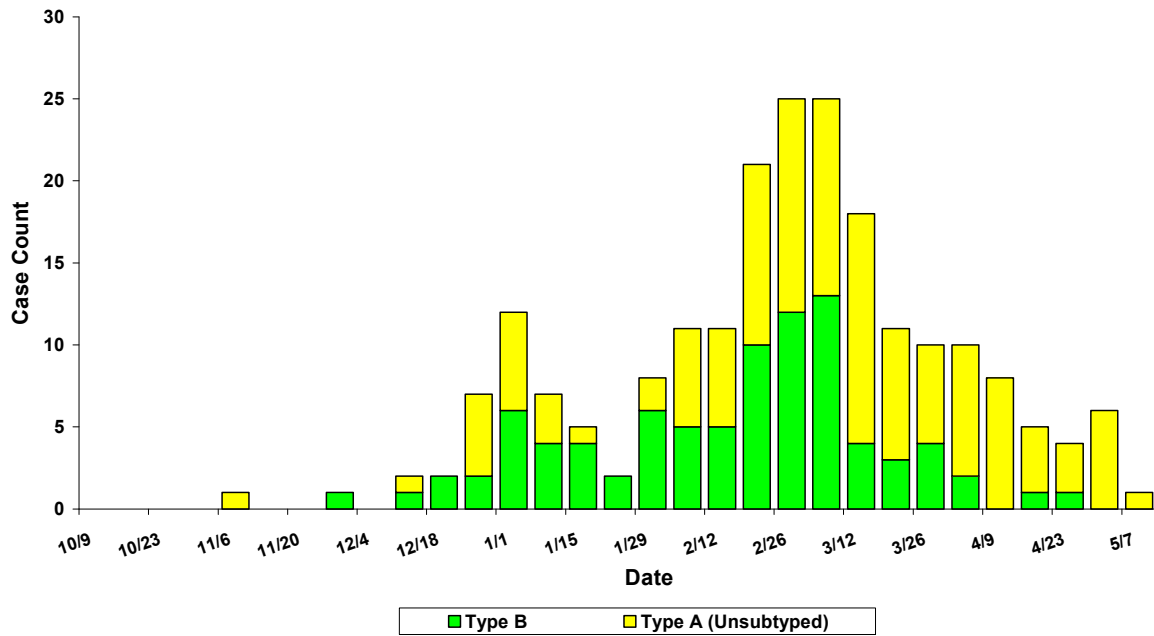
Approximately half of all hospitalized cases were diagnosed with influenza type A, with a smaller percentage of cases of unknown type when compared to non-hospitalized cases. A greater proportion of cases associated with influenza B viruses occurred in younger hospitalized age groups (0-4 years and 5-24 years) compared to their non-hospitalized counterparts. This is a statistically significant difference when evaluated by χ^2 analysis.

Similar to non-hospitalized cases, the largest age group represented was children, although a greater proportion of hospitalized cases occurred in children 0-4 years than non-hospitalized cases. A disproportionate amount of hospitalizations appeared to have occurred among certain minority populations, including individuals of Asian/Pacific Islander race and also individuals of Hispanic ethnicity. However, it remains undetermined whether these observations were accurate since the vast majority of ethnicity and race data was missing from case investigations.

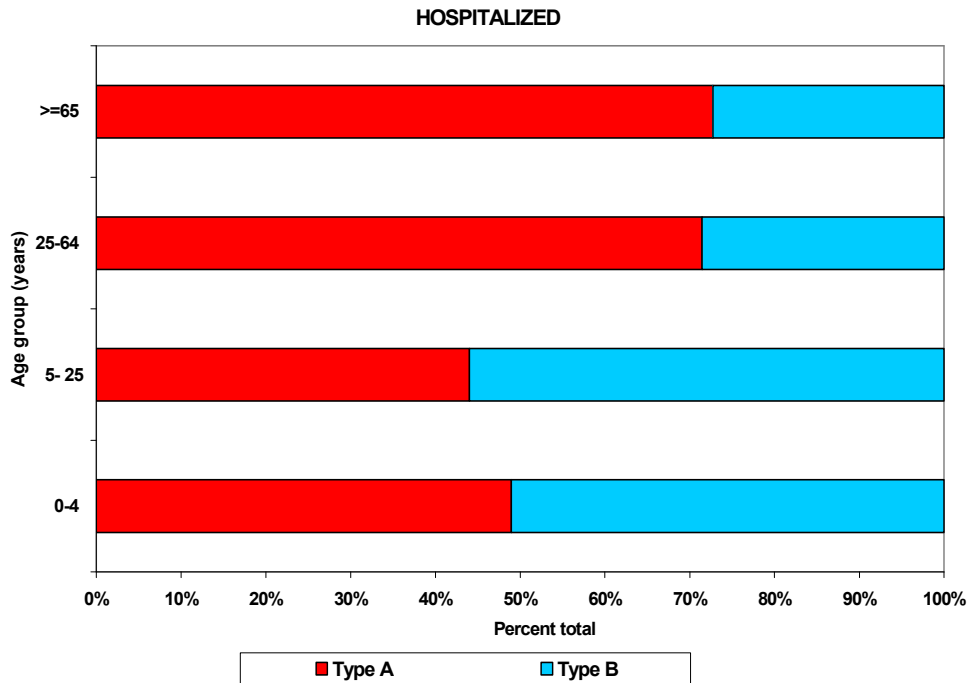
**Table 3: Demographic and Laboratory Characteristics by Hospitalization Status
Utah Influenza Season 2004-05**

<i>Measure</i>	<i>Hospitalization Status</i>					
	Yes		No		Unknown	
	Count	%	Count	%	Count	%
Sex						
Female	122	48.4	1077	51.8	482	47.0
Male	126	50.0	983	47.2	507	49.5
Unknown	4	1.6	21	1.0	36	3.5
Age group						
0-4 years	102	40.5	555	26.7	214	20.9
5-25 years	29	11.5	671	32.2	344	33.6
25-64 years	52	20.6	773	37.2	416	40.6
>=65 years	68	27.0	71	3.4	37	3.6
Unknown	1	0.4	11	0.5	14	1.4
Age class						
Child (< 18 years)	125	49.6	1053	50.6	458	44.7
Adult (18-64)	58	23.0	946	45.5	516	50.3
Elderly (>= 65 years)	68	27.0	71	3.4	37	3.6
Unknown	1	0.4	11	0.5	14	1.4
Race						
Asian/Pacific Islander	12	4.8	26	1.3	5	0.5
Black	3	1.2	10	0.5	2	0.2
Native American	0	0.0	3	0.1	2	0.2
White	99	39.3	507	24.4	180	17.6
Other	7	2.8	11	0.5	4	0.4
Unknown	131	52.0	1524	73.2	832	81.2
Hispanic Ethnicity						
Yes	39	15.5	84	4.0	25	2.4
No	43	17.1	285	13.7	101	9.9
Unknown	170	67.5	1712	82.3	899	87.7
Lab Result						
Type A	124	49.2	588	28.3	237	23.1
Type B	88	34.9	392	18.8	225	22.0
Unknown	40	15.9	1101	52.9	563	54.9

Chart 5: Hospitalized Influenza Cases by Type, Utah Influenza Season 2004-05



Charts 6,7: Hospitalized vs. Non-hospitalized Cases by Age (Years) and Influenza Type (Excluding Cases of Unknown Type), Utah Influenza Season 2004-05



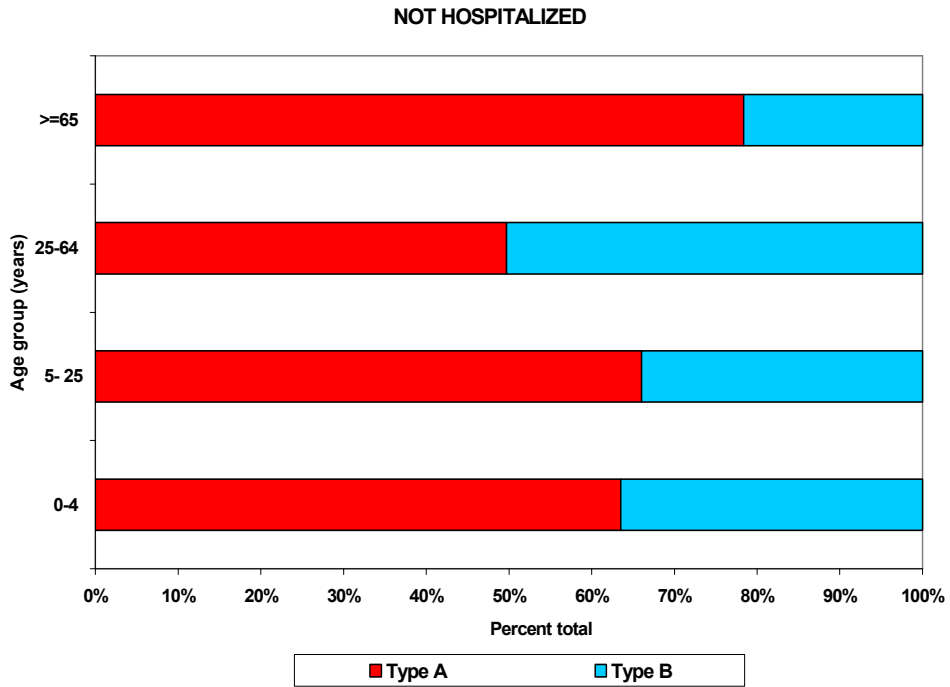
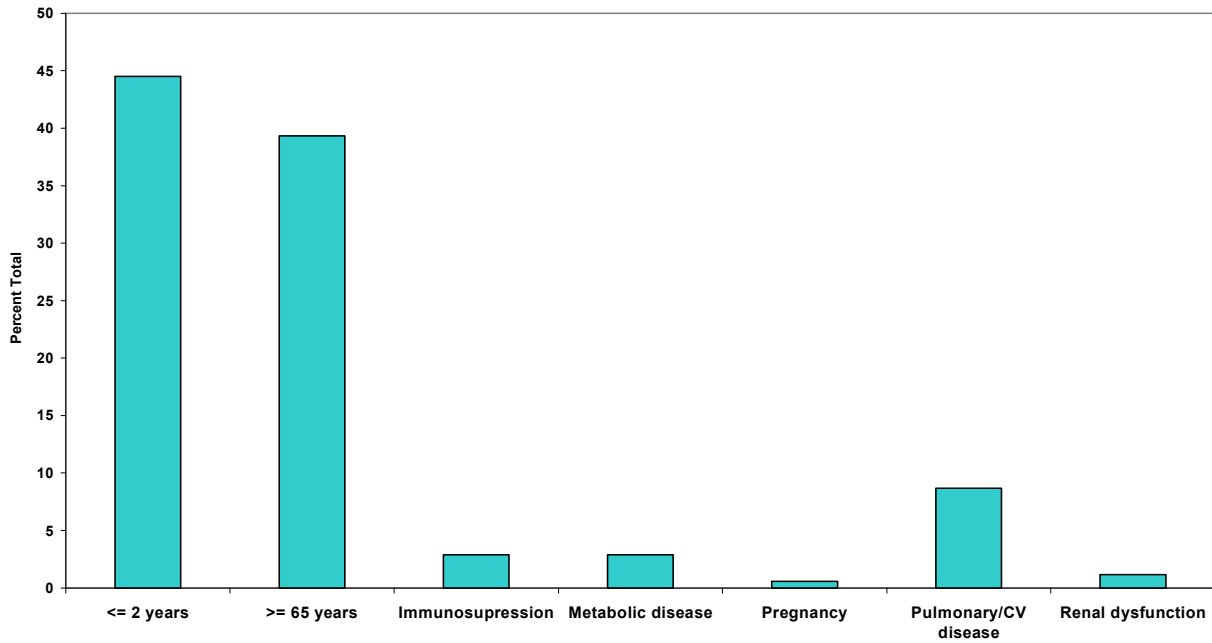


Chart 8: Identified Risk Factors of Hospitalized Influenza Cases, Utah Influenza Season 2004-05

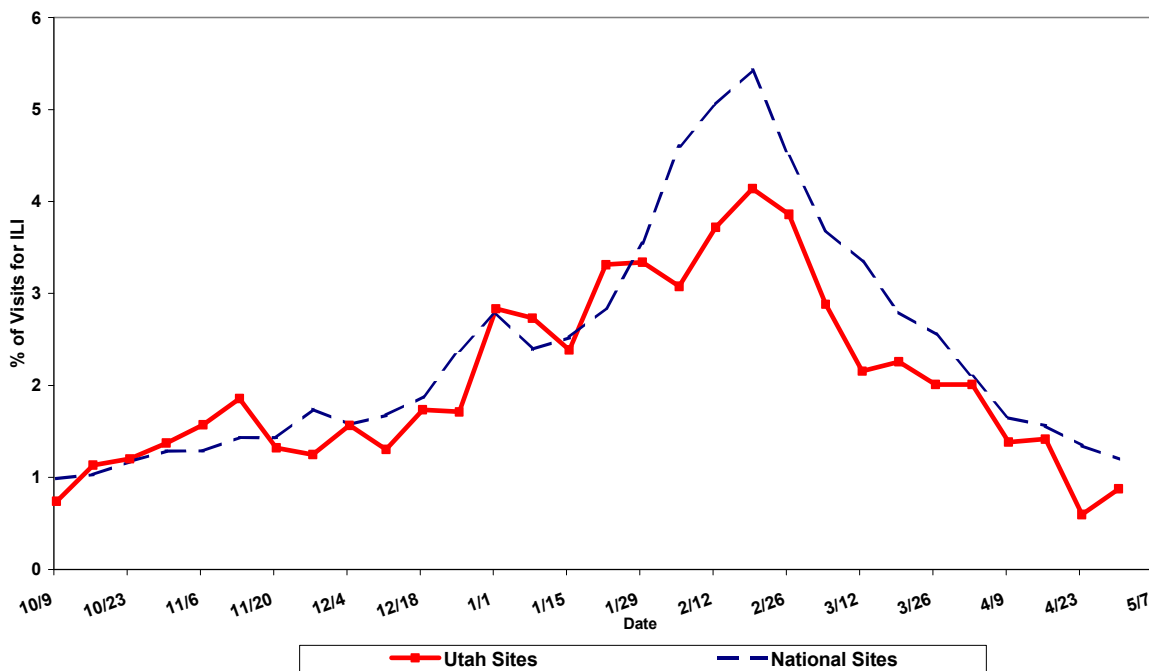


Sentinel Site Surveillance

Utah sentinel influenza sites are part of a 1,600-member, nationwide network of sentinel surveillance sites sponsored by the Centers for Disease Control and Prevention (CDC). In the majority of states, influenza is not a reportable condition and reports of ILI visits are used instead to measure influenza activity. ILI is typically defined as the presence of fever ($>100^{\circ}$ F) and cough or sore throat in the absence of a known cause. Sites begin reporting during early October and typically continue through May, and sometimes beyond if year-round reporting is feasible. Sites are asked to tally and report ILI visits at their clinics weekly, classifying counts into four age groups: 0-4 years, 5-24 years, 25-64 years, and ≥ 65 years.

Approximately 30 sites were enrolled in Utah's sentinel system at the start of the 2004-05 season. These sites represented 12 counties and 11 health districts. Twenty-two (22) sites reported data during the season. Participating sites reported over 27,000 patient visits in total during the 2004-05 season, averaging 9,000 visits to sentinel clinics each week. Over 5,700 ILI visits were reported during the season (2.1% of all visits). Reports of ILI visits peaked during mid-February, occurring at the same time reported cases of influenza peaked, and at the same time that ILI visits were reported to peak nationally.

Chart 9: ILI Visits, Utah and National Reporting, 2004-05 Influenza Season

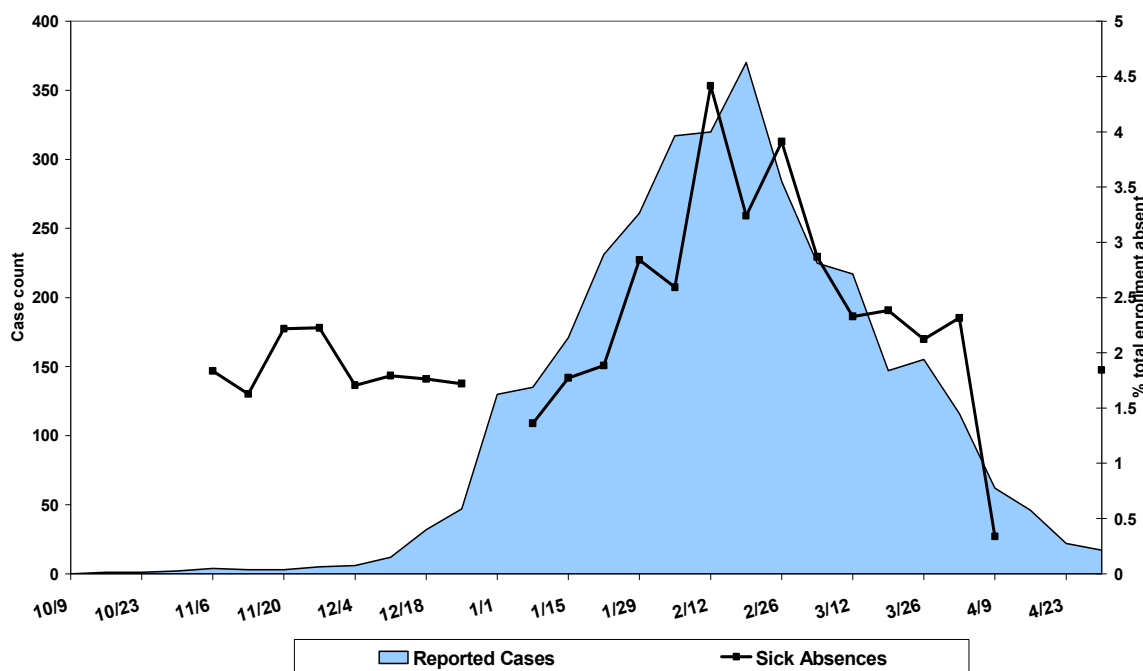


Student Absenteeism

Since influenza activity often begins circulating among school-aged children, reports of student absenteeism are also collected during each influenza season. Forty-four (44) schools were enrolled during the 2004-05 season in Utah with approximately 25 schools reporting weekly. These schools represented 9 health districts (Bear River (BR), Central (CN), Davis (DV), Salt Lake (SL), Southeast (SE), Southwest (SW), Utah (UT), Wasatch (WA), and Weber-Morgan (WM)) and 9 counties total (Box Elder, Cache, Carbon, Davis, San Juan, Sanpete, Utah, Wasatch, Weber). The 44 enrolled schools included 31 elementary, 4 middle, 3 junior high, and 6 high schools. Each week participating schools reported total fall enrollment, the number of days in the school week (typically five), and total numbers of students absent for any reason.

Collection of student absenteeism data was expanded during the 2004-05 season to allow for better assessment of absences due to illness versus vacation and other explanations not directly related to influenza activity. The UDOH-Immunization Program assisted in enlisting 14 schools total to collect two additional data points: (1) number of students absent due to sickness (any) and (2) number of students absent due to ILI. These schools represented 6 health districts (BR, CN, SE, UT, WA, WM) and 6 counties (Box Elder, San Juan, Sanpete, Utah, Wasatch, Weber). The schools enrolled in this additional data collection included 8 elementary, 2 middle, 1 junior high, and 1 high school. Analysis suggests absences reported due to sickness and ILI have a more significant correlation with influenza activity during the season than total absences as measured by correlation with reported lab-identified influenza cases and sentinel site visits over time.

Chart 10: Absences Due to Sickness, Comparison to Reported Lab-Identified Influenza Cases, Utah Influenza Season 2004-05



Pediatric Mortality

Beginning October 1, 2004, the CDC added influenza-associated pediatric mortality (< 18 years) to the list of conditions reportable to the National Notifiable Diseases Surveillance System. The goals of surveillance are as follows: (1) monitor and describe the incidence, distribution, and basic epidemiologic characteristics of deaths among children related to influenza virus infection; (2) provide data to guide future influenza immunization policy; and (3) rapidly recognize influenza seasons in which the impact of influenza appears to be unusually severe among children.

An influenza-associated death is defined for surveillance purposes as a death resulting from a clinically compatible illness that was confirmed to be influenza by an appropriate laboratory or rapid diagnostic test. There should be no period of complete recovery between the illness and death. Influenza-associated deaths in all persons aged <18 years are to be reported.

During the 2004-05 season, one (1) confirmed influenza-associated death in an individual aged < 18 years was reported to UDOH-Epid. The death occurred in a female who was approximately 18 months of age with significant comorbidities.