Influenza Surveillance Report
2013-2014 Season
Infectious Disease Epidemiology Section
Louisiana State Public Health Laboratory

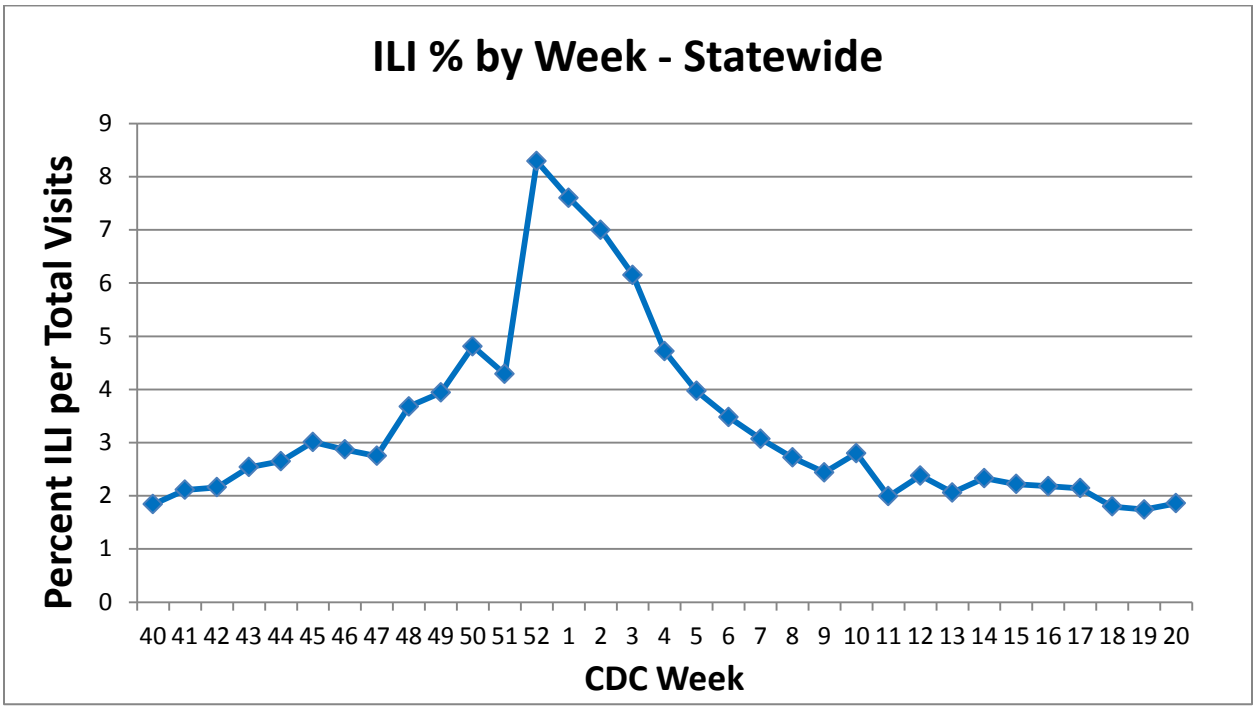
I. Influenza Surveillance Overview

The Louisiana Office of Public Health (LA OPH) Infectious Disease Epidemiology (ID Epi) Section conducts influenza surveillance for the state utilizing a three pronged voluntary approach. The main component of the program is outpatient influenza-like illness (ILI) surveillance from sentinel sites including physicians, hospitals and urgent care facilities. Sites report data each week on number of patient visits for ILI in five age groups (0-4, 5-24, 25-49, 50-64, >64) and the total number of patient visits for any reason. The ILI case definition is fever ≥100°F [37.8°C], oral or equivalent, AND cough and/or sore throat (without a known cause other than influenza). There is no requirement for a positive influenza test. Data is submitted to the Centers for Disease Control and Prevention (CDC) U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet); an online reporting system that is designed to collect information on ILI for national surveillance. The other two components of influenza surveillance in Louisiana revolve around laboratory testing. Participating providers report rapid test results weekly and the total number of tests done. The last component of the system is active virologic surveillance. Beginning with the 2013-2014 influenza season, the Infectious Disease Epidemiology Section and the Louisiana State Public Health Laboratory implemented a strategy to increase samples to meet requirements in the Association of Public Health Laboratories (APHL) *Influenza Virologic Surveillance Right Size Roadmap*. During the first year, the state laboratory tested 2,352 samples representing a fivefold increase over samples tested the previous season. Virologic surveillance sites collect influenza swabs on patients each week and submit them for subtyping at the state public health laboratory. Taken together, these components provide a comprehensive view of influenza in the state including: the beginning and end of influenza season, intensity of influenza activity, the age groups most affected by influenza each season, when and where influenza viruses are circulating, and finally to identify changes in the circulating viruses.

II. Influenza-like Illness (ILI) Surveillance

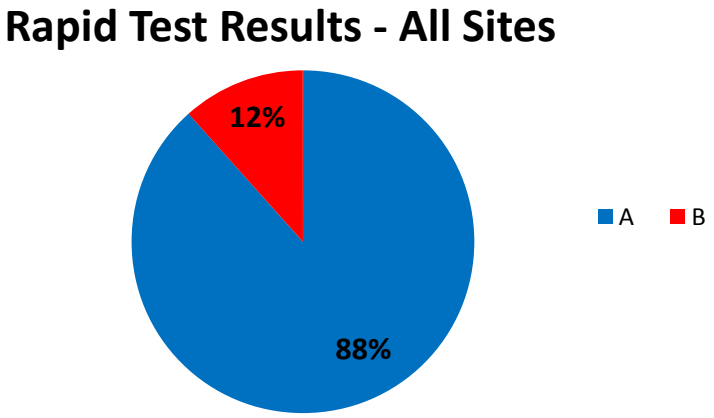
Influenza season consists of 33 weeks from October – May, but surveillance is conducted year round in Louisiana. ILI surveillance data is received through fax or online reporting by sentinel providers and through the Louisiana Early Event Detection System (LEEDS) from emergency departments. LEEDS is a web-based reporting system that automatically processes hospital Emergency Department and Urgent

Care data to identify visits indicative of specific syndromes including ILI. ILI data was received for 52 (100%) of 52 weeks for an average of 58 regular reporting sites (minimum 46, maximum 66).



III. Rapid Influenza Diagnostic Test (RIDT) Reporting

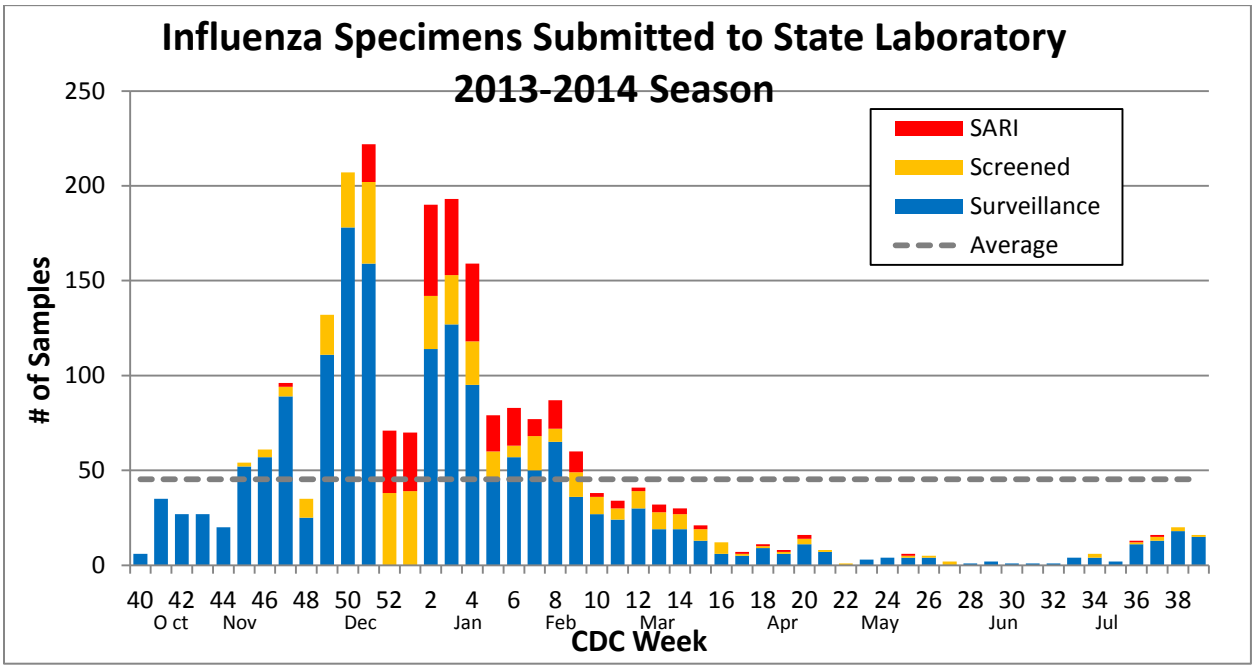
RIDT data was received for 52 (100%) of 52 weeks representing 28,784 total tests: 4,303 (14.9%) influenza A, 565 (1.7%) influenza B, for an overall positivity of 16.9% The following graph shows a breakdown of RIDT results reported from sentinel sites for the season. An average of 13 sites reported each week (6 minimum, 23 maximum).



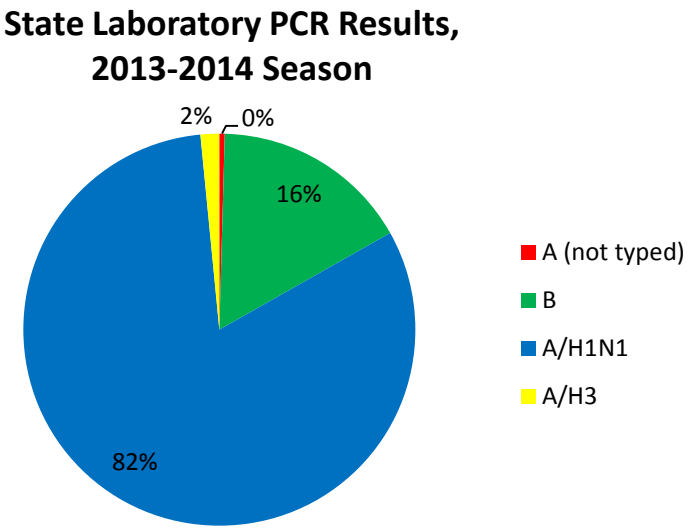
IV.

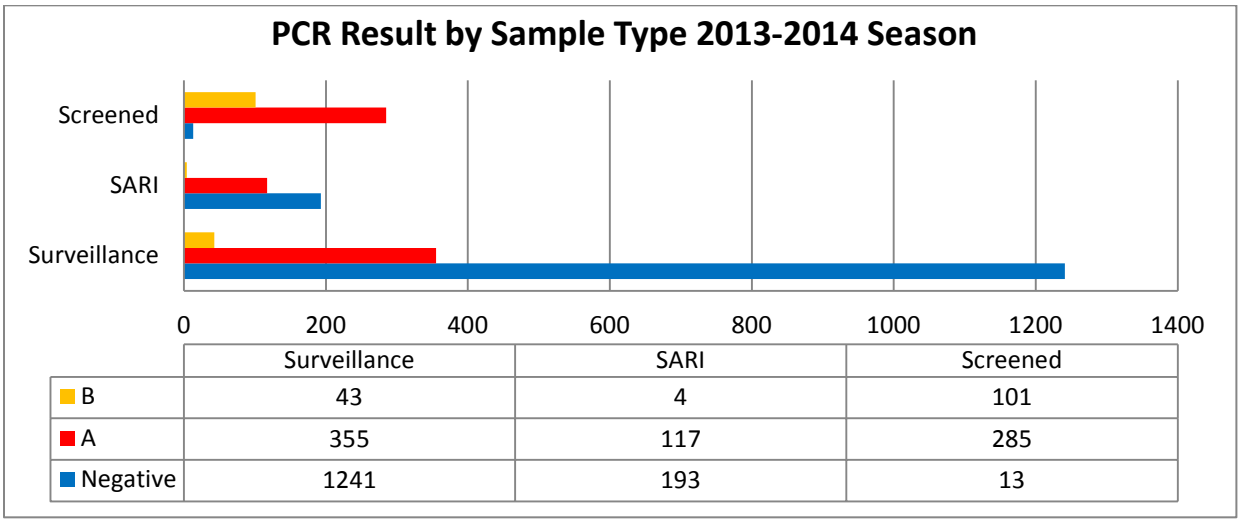
V. Active Virologic Surveillance

There were 2,352 samples from 46 sites statewide submitted to the state laboratory as part of influenza virologic surveillance for the 2013-2014 season. Samples were divided into 3 categories: Surveillance, Severe Acute Respiratory Illness (SARI), and Screened. The majority of samples, 1,640 (70.0%), were submitted as part of active virologic surveillance.



The dominant virus circulating in Louisiana throughout the 2013-2014 season was Influenza A 2009 H1N1.



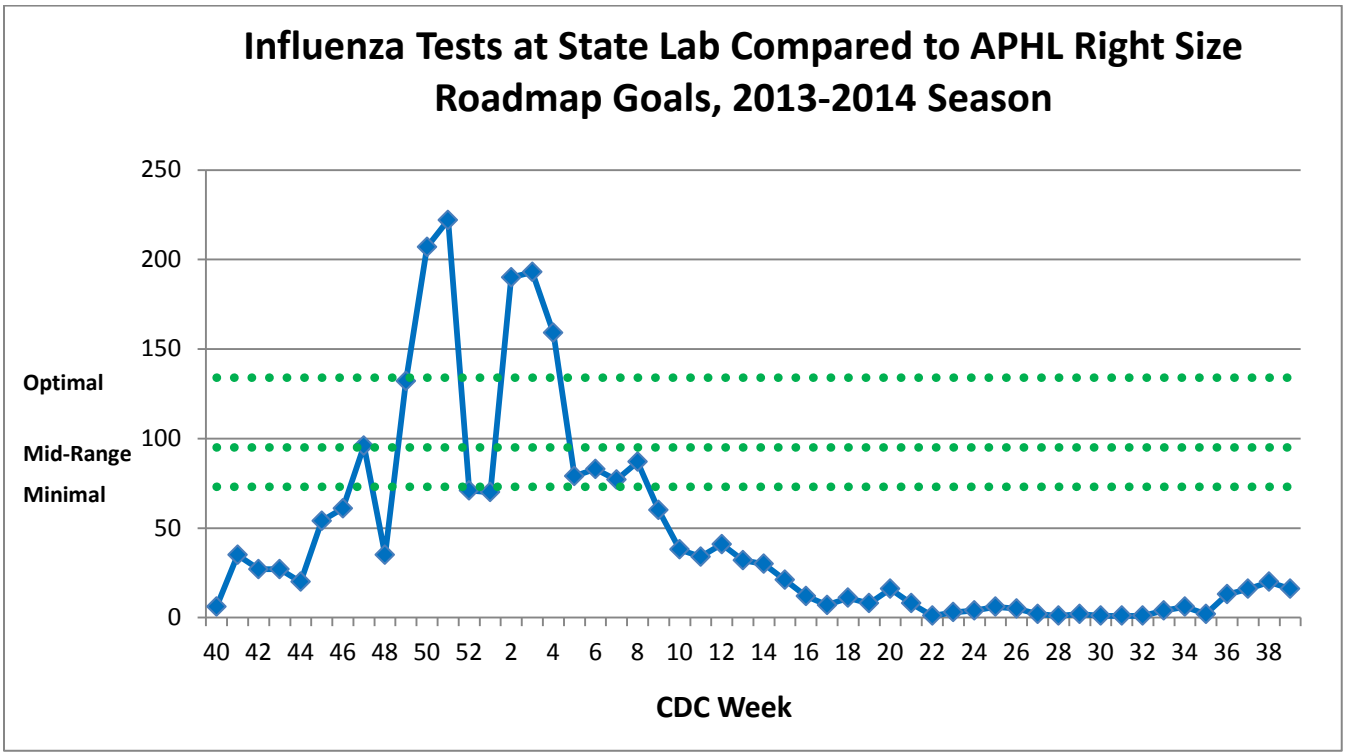


	Surveillance	SARI	Screened
B	43	4	101
A	355	117	285
Negative	1241	193	13

Of these 2,352 samples, 1,342 (57.1%) were female and 1,010 (42.9%) were male. The average age was 30.4 years with a range of 0 - 97 years. Age data by sample type is below. Submissions peaked from week 1347 (ending November 23, 2013) through week 1408 (ending February 8, 2014). The only week during this time below average was week 48 (Thanksgiving week).

Sample Type	**Age – Average**	**Age – minimum**	**Age - maximum**
Surveillance (n=1,639)	32.1	0	97
SARI (n=314)	52.8	0	91
Screened (n=399)	5.8	0	50

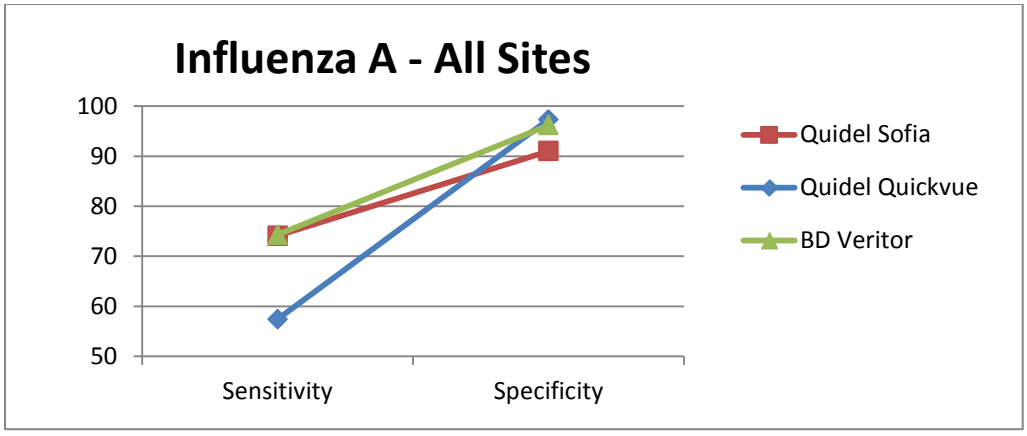
During the first year of implementation of a statistical based approach of influenza subtyping there were 2,353 samples subtyped at the state public health laboratory. While this did not translate into meeting the optimal roadmap goals each week it represents a fivefold increase in testing compared to the previous season. This increase in testing at the state public health laboratory provided a much more accurate picture of influenza activity than available in prior years in Louisiana, including detection of a novel event: sporadic oseltamivir resistance in the state. The increase also presented the opportunity to provide detailed feedback to surveillance sites comparing site specific data to state level and a breakdown by sample type: surveillance, screened, and SARI.

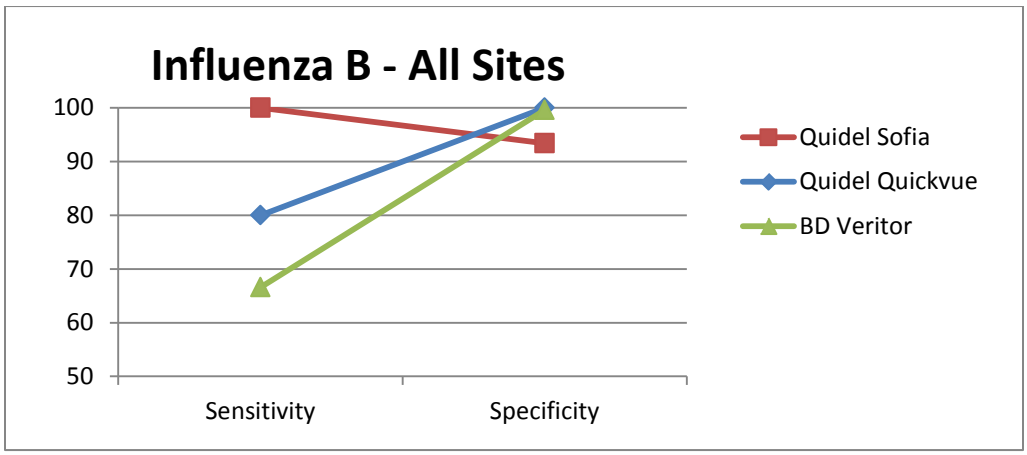


Every sample submitted to the state public health laboratory must be accompanied by a test request form. For virologic surveillance sites a field collecting information on rapid test result was added. With the exception of one hospital, all sites submitted unscreened samples. RIDT results were available for 2,091 (88.9%) of samples subtyped at the state lab. This allowed not only for surveillance site specific sensitivity and specificity calculations but a comparison among sites based on RIDT manufacturer. This provided surveillance sites a chance to evaluate RIDT performance not only within their clinic but compared with all other surveillance sites. Of the 1,639 total surveillance samples submitted 1,559 (95.1%) had a rapid test done; 1,532 (93.5%) had a rapid result. Results comparing RIDT results and state laboratory results are below:

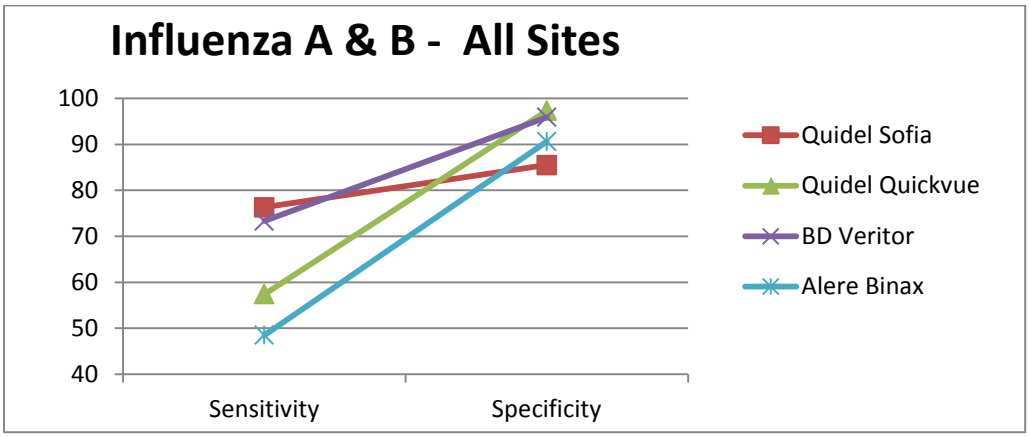
Frequency (%)	Rapid Result	PCR Result
196 (12.8)	A	A – H1N1
20 (1.3)	Positive	A – H1N1
2 (0.1)	A & B	A – H1N1
2 (0.1)	B	A – H1N1
115 (7.5)	Negative	A – H1N1
3 (0.1)	A	A – H3
1 (0.06)	Negative	A – H3
1 (0.06)	Negative	A – not subtyped
21 (1.4)	B	B
2 (0.1)	Positive	B
15 (0.9)	Negative	B
1040 (67.9)	Negative	Negative
64 (4.2)	A	Negative
34 (2.2)	B	Negative
11 (0.9)	Positive	Negative
5 (0.3)	A & B	Negative

RIDTs used in the state include the Quidel Sofia, Quidel Quickvue, BD Veritor, and Alere Binax. The following graphs illustrate how the RIDTs used by surveillance sites statewide compare.





Due to a low sample size of samples tested by the Alere Binax RIDT, a comparison split by influenza subtype was unable to be calculated. The below graph show how the 4 RIDTs used in the state compare for all influenza positives.

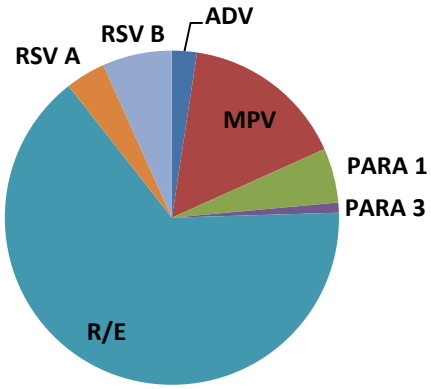


VI. Surveillance for Other Respiratory Viruses

All nasopharyngeal swabs submitted for virologic surveillance that were influenza negative were tested for other circulating respiratory viruses. The Luminex xTag assay is used for Respiratory Virus Panel (RVP) testing at the state public health laboratory. The panel tests for the following non-influenza pathogens: RSV A, RSV B, Parainfluenza (PARA) 1, 2, 3, Metapneumovirus (MPV), Adenovirus (ADV), and Rhino/Enterovirus (R/E).

There were 1,435 influenza negative samples at the state laboratory; 688 (47.9%) were acceptable samples for RVP testing. Of those 688, 480 (69.8%) were negative for other respiratory viruses; 208 (30.2%) were positive (see graph below).

RVP results from State Laboratory, 2013 - 2014



The majority of positive samples, 135 (65.0%) were Rhino/Enterovirus. Other viruses identified included: Adenovirus, Metapneumovirus, Parainfluenza 1, Parainfluenza 2, Parainfluenza 3, RSV A, and RSV B.

The distributions by month of respiratory viruses other than influenza are shown below.