2018-19 Flu Season in Review

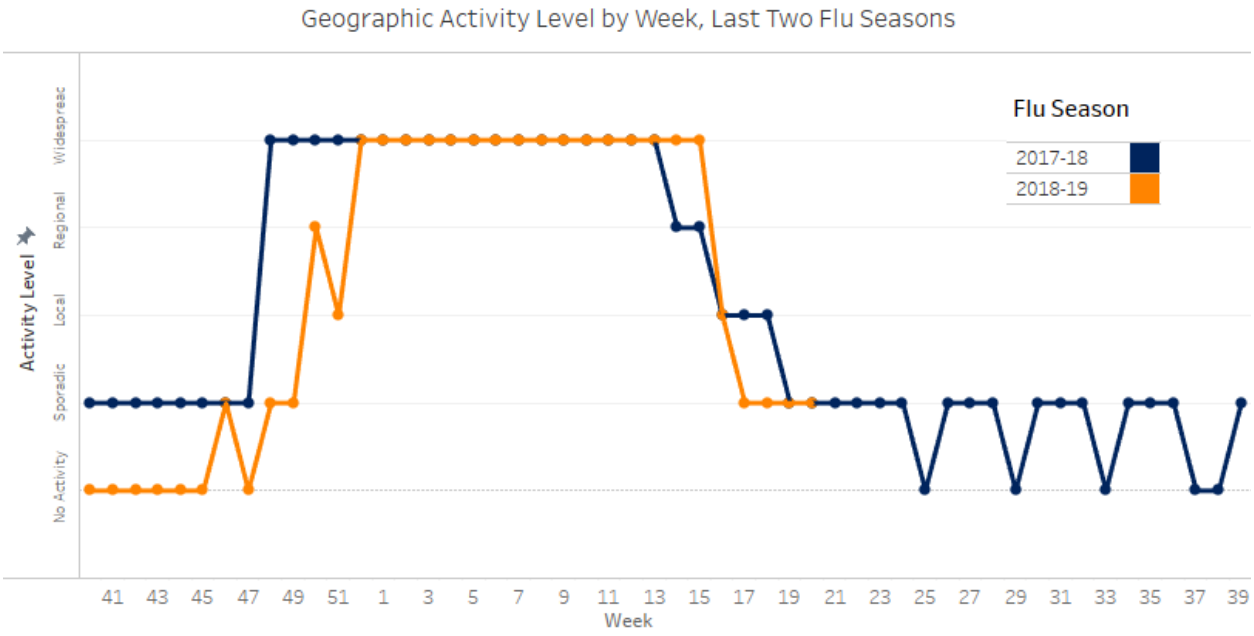
The Virginia Department of Health (VDH) monitors the state of influenza year-round, but for this season, week 20 marked the end of the flu season for public health surveillance. This report is intended to summarize the 2018-19 flu season and identify trends from September 30, 2018 (week 40) through May 18, 2019 (week 20). The weeks referred to in this report come from the Centers for Disease Control and Prevention's (CDC) *Morbidity and Mortality Weekly Report* (MMWR) publication schedule found in Appendix 1.

2018-19 Flu Season

Geographic Spread

VDH calculates the geographic spread of influenza activity by identifying the number of regions found in Appendix 2 that have laboratory reports, outbreaks, and/or elevated influenza-like illness activity. These data provide a quick snapshot of how prevalent the disease is around the state. The five levels are No Activity, Sporadic, Local, Regional, and Widespread.

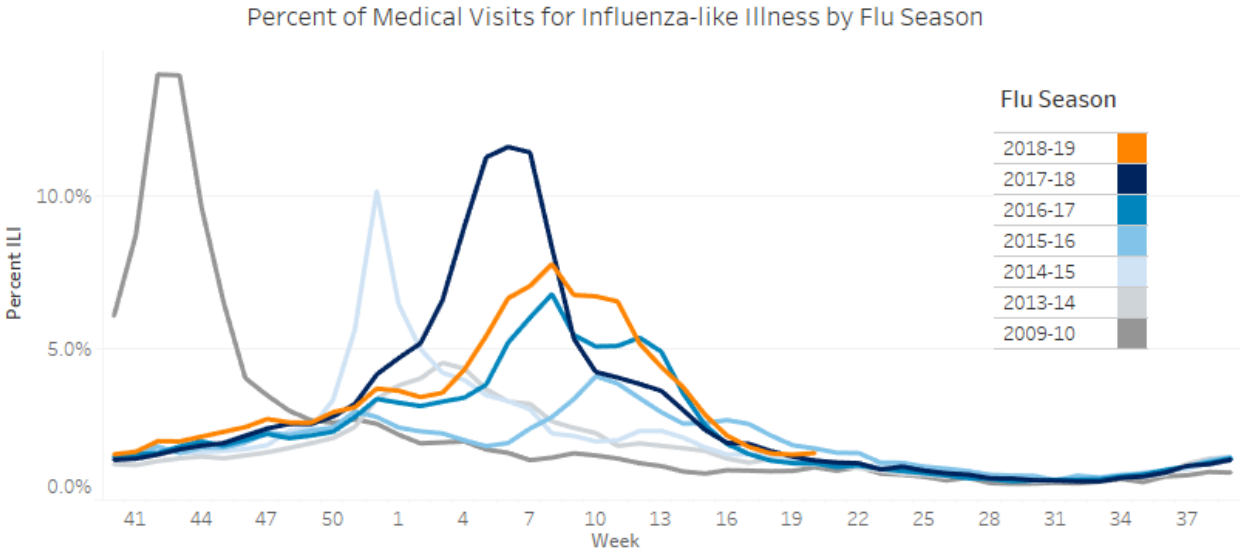
Widespread influenza activity is defined as flu activity in more than half of the regions in the state. In a typical Virginia flu season, the average time the state is at widespread status is 12 weeks (range 3-18 weeks). During the 2018-19 flu season, Virginia was at widespread status for 16 weeks, from week 52 through week 15. The 2018-2019 flu season was longer and lasted farther into the spring than usual, due to waves of two different virus subtypes.



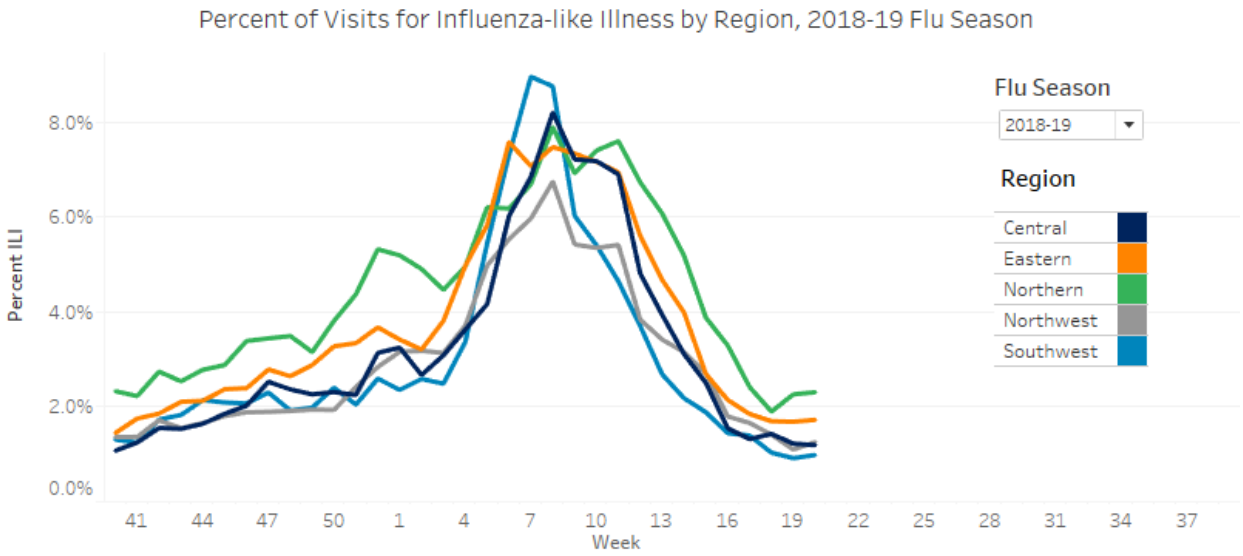
Influenza-like Illness (ILI)

An influenza-like illness (ILI) is a cough or a sore throat with a fever. Visits to emergency departments and urgent care centers that are for an ILI are presented as a percent of total visits to estimate the timing and relative burden of the flu. These data represent illnesses that result in a doctor's visit.

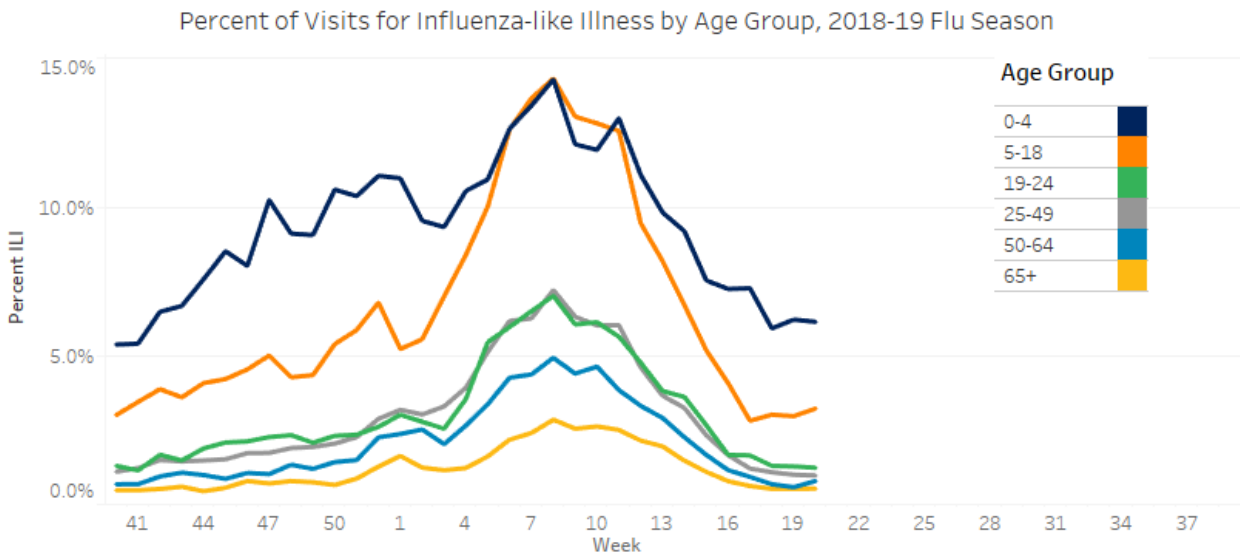
During the 2018-19 flu season, the percent of ILI peaked at 7.8% during week 8. This peak was higher than three of the five most recent flu seasons, but was lower than the peaks of the 2017-18, 2014-15, and 2009-10 flu seasons.



By region, the percent of visits for ILI peaked highest in the Southwest region with 8.9% (14.8 standard deviations above the region-specific baseline). Central region peaked at 8.2% (11.9 standard deviations above baseline), Eastern at 7.6% (9.7 standard deviations above baseline), Northwest at 6.7% (9.3 standard deviations above baseline), and Northern at 7.9% (7.2 standard deviations above baseline).



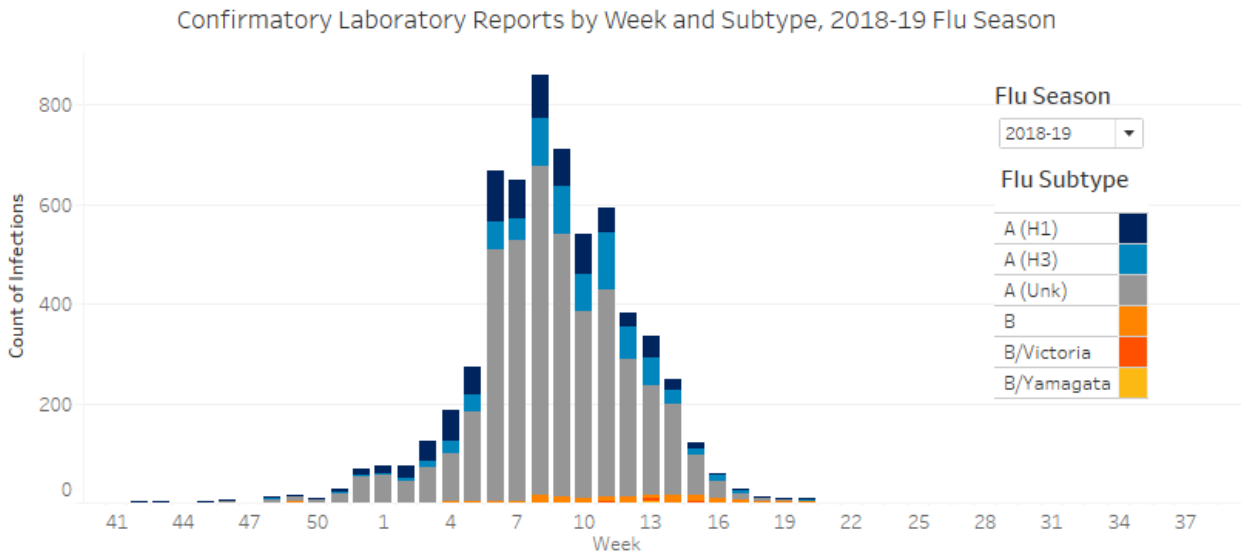
Stratified by age, the percent of visits for ILI peaked in week 8 for all age groups. The 5-18 year-old age group saw a large increase beginning around week 2 when grade-school students returned to class after the holidays, eventually overtaking the 0-4 year-olds from week 7 through week 10.



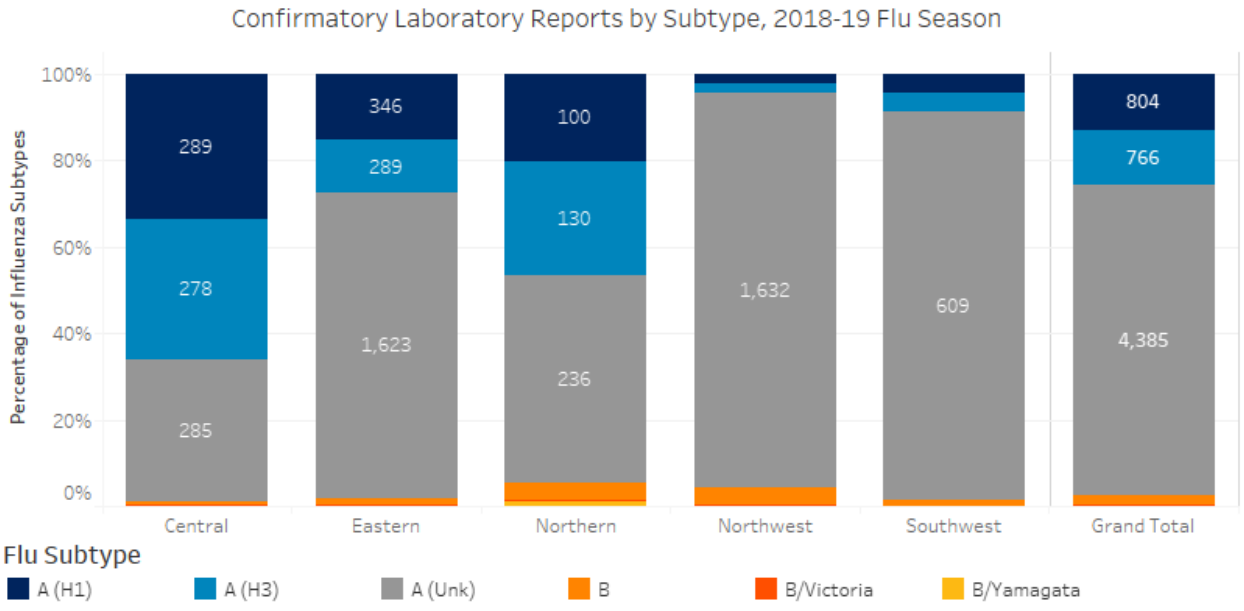
Confirmatory Lab Reports

VDH collects data on the specific viruses that circulate during a flu season through laboratory reports using reverse transcriptase polymerase chain reaction (RT-PCR), viral culture, and direct fluorescent antibody (DFA) test methods. Influenza viruses can be categorized by type (i.e. A or B), subtype (i.e. A(H1N1) or A(H3N2)), and strain (i.e. A/Michigan/45/2015). The laboratory data are useful in identifying new strains of the virus, understanding the seasonal vaccine's effectiveness, and selecting components for the next season's vaccine.

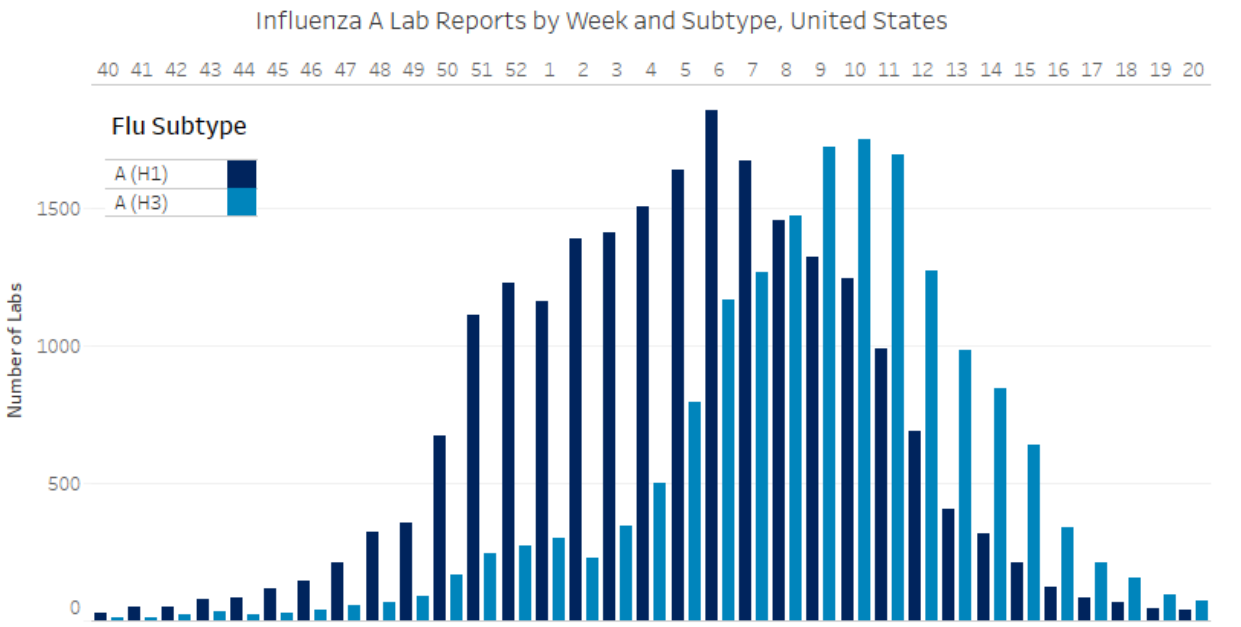
The predominant virus type during the 2018-19 flu season was influenza A (5,955 reports, 97.4%). This was an unusually mild season for influenza B, with only 159 reports (2.6%). From the 2010-11 flu season until the 2017-18 season, influenza B made up an average of 20.1% of total lab reports per flu season. The majority of influenza A specimens this season were not subtyped (4,385 reports, 73.6%). Those specimens that were subtyped were split more evenly between A(H1) (804 reports, 13.5%) and A(H3) (766 reports, 12.7%) than in previous seasons.



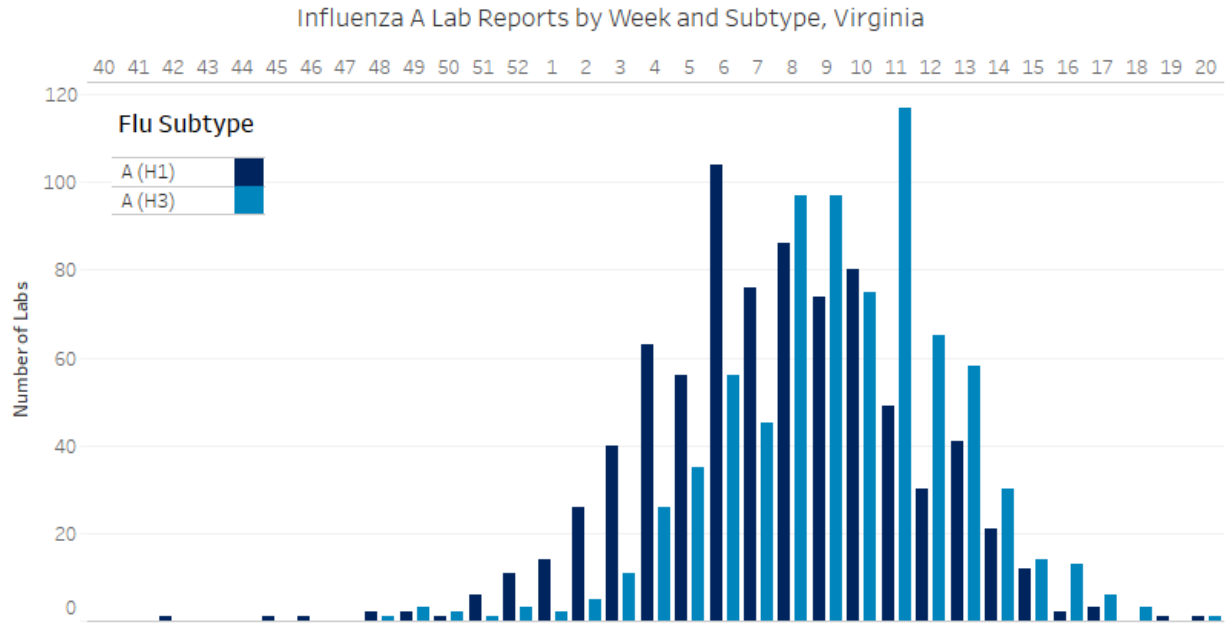
For the first time since Virginia began surveillance of influenza virus subtypes, the predominant subtype for the season differed by region. Of subtyped specimens, Northern and Northwest saw primarily A(H3) while Central, Eastern, and Southwest saw primarily A(H1). This was also observed on the national scale. Some states saw more A(H1), some saw more A(H3). All states, however, saw an increasing proportion of A(H3) as the season progressed.



The national data show two overlapping waves of influenza A. The first wave, A(H1), was antigenically similar to the vaccine component and peaked in week 6. The second wave, A(H3), peaked in week 10 and consisted of several different strains, the majority of which were not similar to the vaccine component. This pattern was also observed in Virginia, with A(H1) peaking in week 6 and A(H3) peaking in week 11.



Data source: CDC FluView

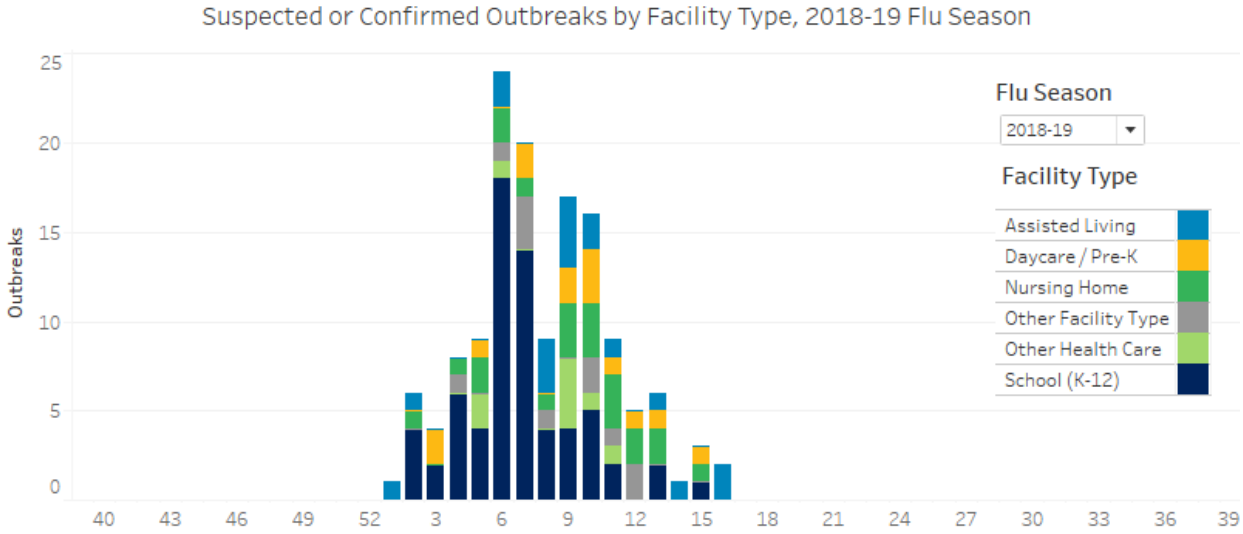


This second wave is an example of genetic drift, where small mutations add up over time, eventually resulting in a new version of the virus strain. The World Health Organization watched this increase in the new version of A(H3) and changed its recommendations for the 2019-20 seasonal vaccine component to better match this virus strain.

Outbreaks

All outbreaks are reportable in Virginia, allowing VDH to investigate and provide recommendations for controlling the spread of disease in communal settings like schools and nursing homes.

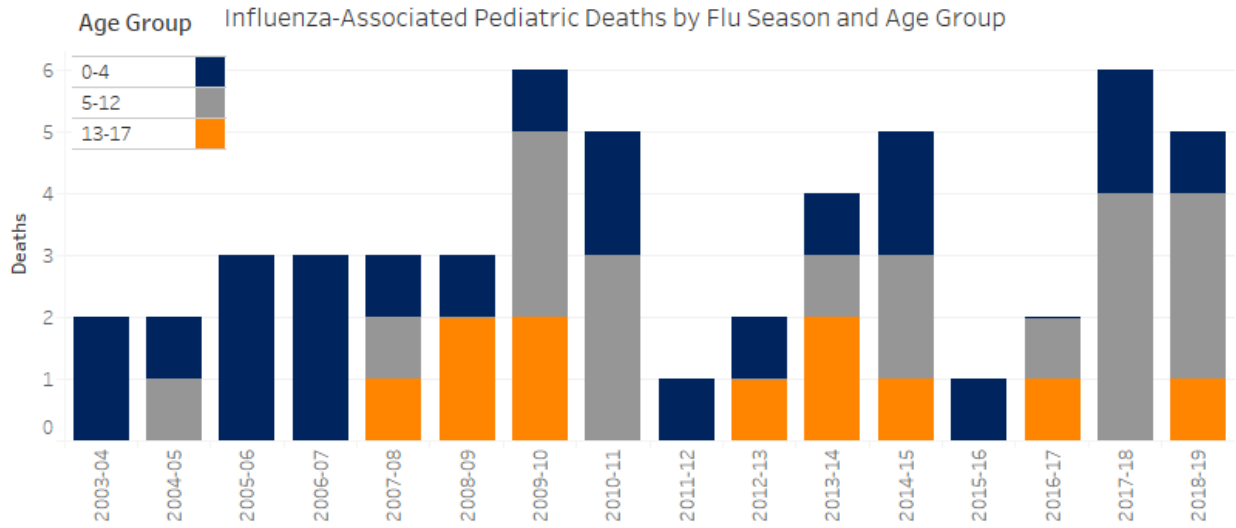
There were 143 flu outbreaks reported during the 2018-19 season. Of these, 54 (37.8%) were confirmed through laboratory testing. The largest proportion of outbreaks occurred in K-12 school settings with 68 outbreaks (47.6%), followed by nursing home settings (23 outbreaks, 16.1%), assisted living (18 outbreaks, 12.6%), daycare or pre-kindergarten (14 outbreaks, 9.8%), other healthcare (11 outbreaks, 7.7%), and other facility types (9 outbreaks, 6.3%). The number of outbreaks per week peaked earliest for K-12 school settings in week 6, followed by other facility types (week 7), other health care, assisted living, and nursing homes (all during week 9), and daycare or pre-kindergarten in week 10.



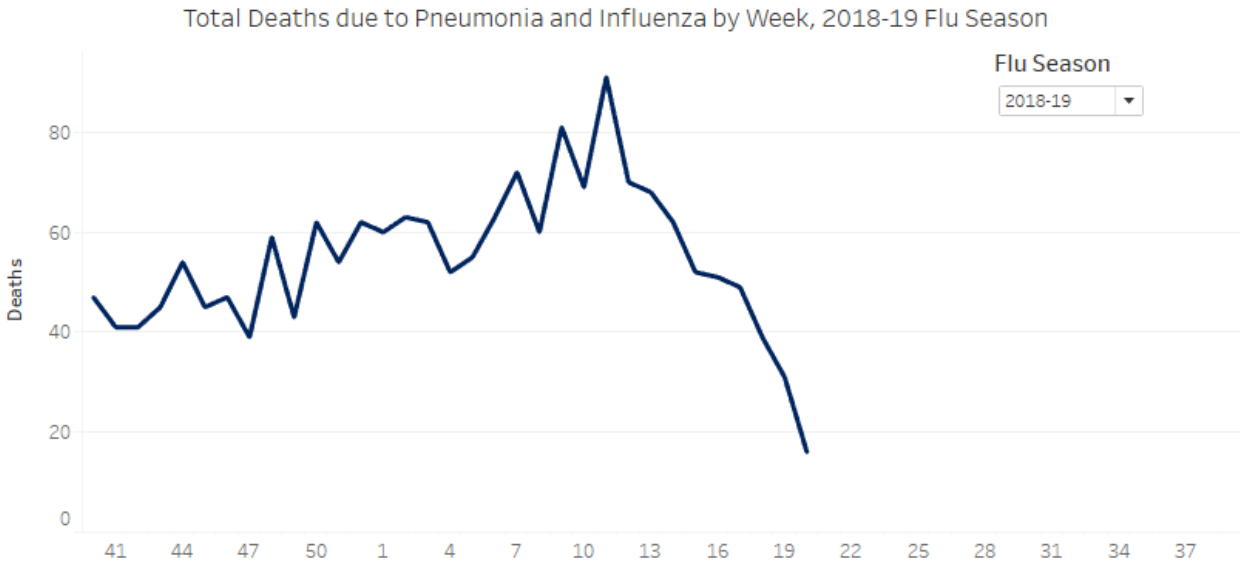
Deaths

Data on deaths are captured through two different sources. Influenza-associated deaths in children less than 18 are individually reported to the health department and investigated. All death certificates (pediatric and adult) are sent to the National Center for Health Statistics (NCHS) to be coded with a cause of death. Data on adult deaths due to pneumonia and influenza, together with reported cases of influenza-associated pediatric deaths are used to estimate the mortality burden due to flu.

There were five influenza-associated pediatric deaths reported to VDH. Two were young school-age children (5-12 years) in the Northwest region, one was a preschool-age child (0-4 years) in the Southwest region, one was a young school-age child in the Northern region, and one was a teenager (13-17) in the Northern region.



Influenza infection generally causes a self-limiting illness, but serious complications can occur. Pneumonia is used to help estimate deaths as it is the most common complication. During the 2018-19 flu season, there were 1,813 deaths in Virginia due to pneumonia and influenza. The greatest number of deaths occurred during week 11 with 91 deaths.



Summary

The 2018-19 flu season was unique in the co-circulation of A(H1) and A(H3) viruses, notable absence of influenza B, and relatively prolonged flu activity. The burden of morbidity and mortality, however, was relatively moderate. Even moderate seasons of influenza have a major impact on the health of Virginians. The CDC estimates that during the 2018-19 flu season in the US, 37.4 million – 42.9 million people got sick with

the flu, 17.3 million – 20.1 million visited a doctor for their illness, 531,000 – 647,000 were hospitalized for the flu, and 36,400 – 61,200 died from the flu and its complications.

There are effective measures available to prevent and control the spread of flu. Vaccination is recommended for everyone six months of age and older. Those who become ill and are at risk for complications should see a doctor as soon as possible for antiviral drugs. Staying home when you are ill protects others from getting sick, and regular hand washing prevents the spread of flu germs.

Appendix 1: MMWR Publication Schedule

2018		2019	
Week	**Week Ending Date**	**Week**	**Week Ending Date**
1	1/6/2018	1	1/5/2019
2	1/13/2018	2	1/12/2019
3	1/20/2018	3	1/19/2019
4	1/27/2018	4	1/26/2019
5	2/3/2018	5	2/2/2019
6	2/10/2018	6	2/9/2019
7	2/17/2018	7	2/16/2019
8	2/24/2018	8	2/23/2019
9	3/3/2018	9	3/2/2019
10	3/10/2018	10	3/9/2019
11	3/17/2018	11	3/16/2019
12	3/24/2018	12	3/23/2019
13	3/31/2018	13	3/30/2019
14	4/7/2018	14	4/6/2019
15	4/14/2018	15	4/13/2019
16	4/21/2018	16	4/20/2019
17	4/28/2018	17	4/27/2019
18	5/5/2018	18	5/4/2019
19	5/12/2018	19	5/11/2019
20	5/19/2018	20	5/18/2019
21	5/26/2018	21	5/25/2019
22	6/2/2018	22	6/1/2019
23	6/9/2018	23	6/8/2019
24	6/16/2018	24	6/15/2019
25	6/23/2018	25	6/22/2019
26	6/30/2018	26	6/29/2019
27	7/7/2018	27	7/6/2019
28	7/14/2018	28	7/13/2019
29	7/21/2018	29	7/20/2019
30	7/28/2018	30	7/27/2019
31	8/4/2018	31	8/3/2019
32	8/11/2018	32	8/10/2019
33	8/18/2018	33	8/17/2019
34	8/25/2018	34	8/24/2019
35	9/1/2018	35	8/31/2019
36	9/8/2018	36	9/7/2019
37	9/15/2018	37	9/14/2019
38	9/22/2018	38	9/21/2019
39	9/29/2018	39	9/28/2019
40	10/6/2018	40	10/5/2019
41	10/13/2018	41	10/12/2019
42	10/20/2018	42	10/19/2019
43	10/27/2018	43	10/26/2019
44	11/3/2018	44	11/2/2019
45	11/10/2018	45	11/9/2019
46	11/17/2018	46	11/16/2019
47	11/24/2018	47	11/23/2019
48	12/1/2018	48	11/30/2019
49	12/8/2018	49	12/7/2019
50	12/15/2018	50	12/14/2019
51	12/22/2018	51	12/21/2019
52	12/29/2018	52	12/28/2019

Appendix 2: Regions of Virginia