



# Influenza Surveillance Report

2018-2019 Season Summary  
October 1, 2018-May 18, 2019  
Rhode Island

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# 2018-2019 Influenza Season: National Summary



- The 2018-2019 flu season was a prolonged season of moderate severity.
- It was the longest flu season in 10 years (21 weeks of influenza-like illness above baseline).
- Influenza-like illness (ILI) peaked the week ending February 18.
- There were 2 waves of influenza A activity, which is atypical.
  - Influenza A (H1N1) 2009 predominated October-mid February.
  - A (H3N2) predominated mid-February-May.
  - There was very little influenza B activity.
- There was less ILI, hospitalization, and child mortality compared with the 2017-2018 flu season.
- During the flu season, an H3N2 virus emerged that was different from the vaccine virus, leading to lower than typical vaccine effectiveness.
- Vaccine reduced the risk of having to seek medical care for influenza by 29% (interim vaccine effectiveness).\*

\*<https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2019-06/flu-3-flannery-508.pdf>

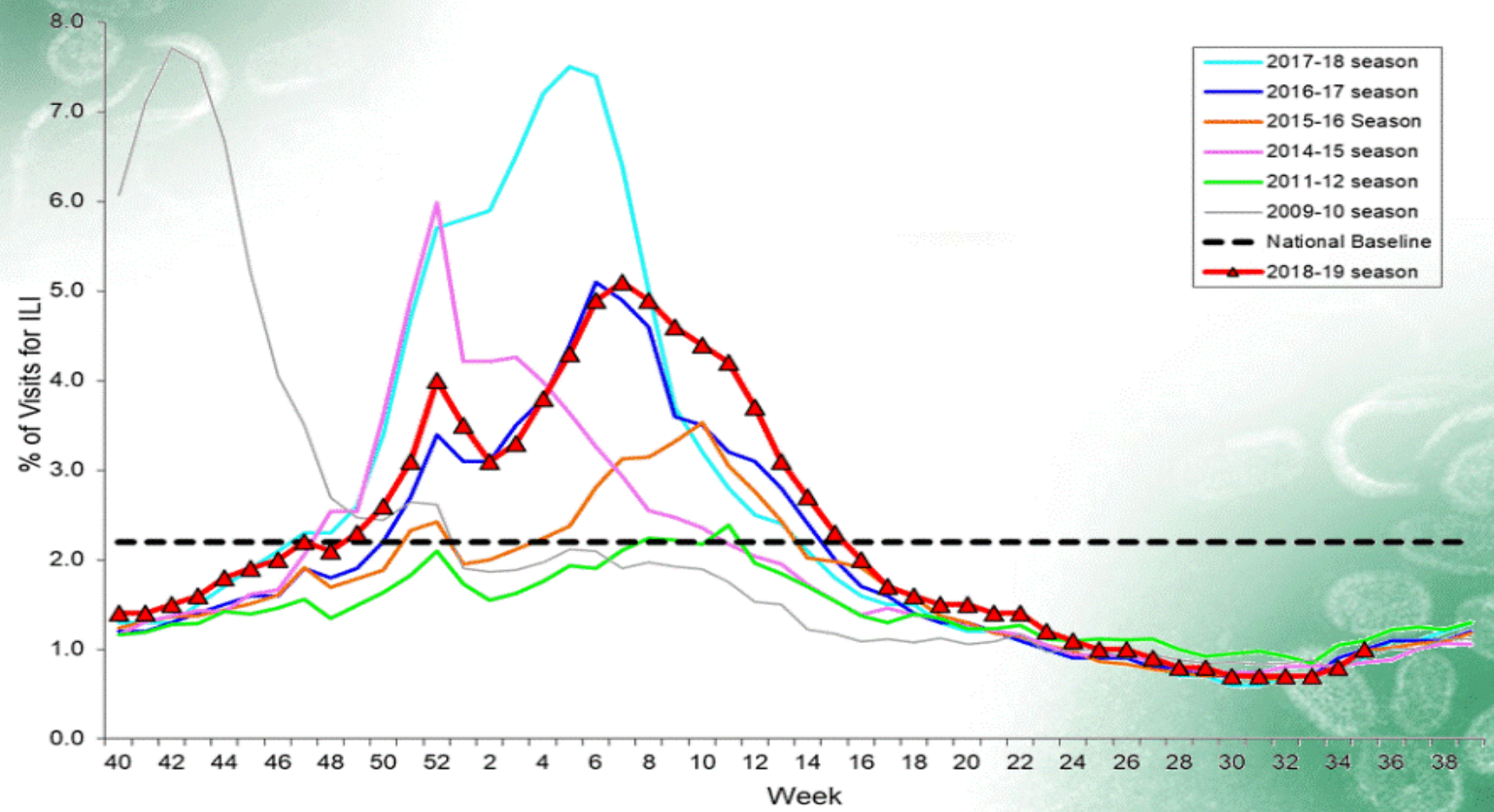
# National Percentage of Influenza-Like Illness (%ILI)



## FLUVIEW

A Weekly Influenza Surveillance Report Prepared by the Influenza Division

Percentage of Visits for Influenza-like Illness (ILI) Reported by the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Weekly National Summary, 2018-2019 and Selected Previous Seasons



# 2018-2019 Influenza Season: Rhode Island Summary



- Rhode Island maintains a robust, multipart system that provides a comprehensive picture of influenza statewide. Each component of the surveillance system is presented in the following slides.
- The 2018-2019 influenza season was a moderately severe season in Rhode Island, with high levels of influenza-like illness and moderate numbers of hospitalizations and deaths.
- All surveillance systems demonstrated less influenza activity than the 2017-2018 influenza season.
- Influenza A (H1N1) 2009 was the predominant circulating virus in Rhode Island, although influenza A (H3N2) also circulated.
- There were 39 influenza-associated deaths and 105 respiratory outbreaks in congregate living facilities.
- Most surveillance systems demonstrated a peak of influenza activity in February, although the exact week varied by system.



# U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet)

# ILINet: Sentinel Provider Surveillance



- ILINet provides information on outpatient **influenza-like illness**, independent of laboratory testing.
- **Influenza-like illness**: a fever **and** a cough **and/or** a sore throat in absence of a known cause other than influenza.
- **Percent influenza-like illness (% ILI)**: the number of patients seen with ILI over the number of patients seen for any reason.
- 23 community-based outpatient practices participate.
  - Urgent cares, family practitioners, pediatricians, university health services, and pharmacy clinics
- Data reported weekly to CDC and RIDOH and helps inform geographic spread.

# ILINet: Data Summary

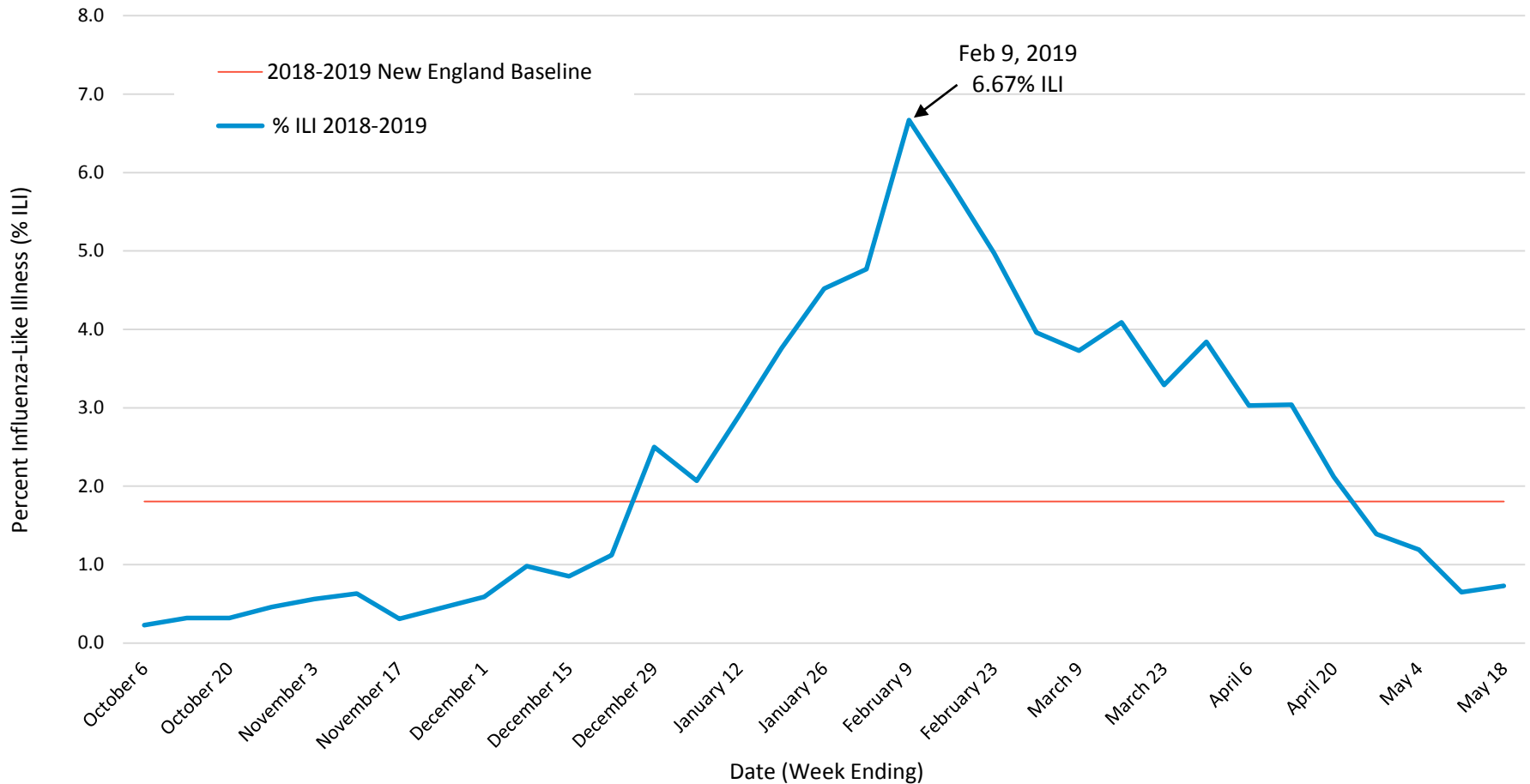


- The percentage of outpatient visits related to influenza-like illness (%ILI) peaked the first week of February, with 6.67% of all visits related to ILI.
- ILI remained above the regional baseline for 17 weeks, from the last week of December through the third week of April.
- The 2018-2019 season had high levels of ILI, but was both shorter and of lower magnitude compared with the 2017-2018 flu season.
- Rhode Island's peak ILI was higher than both the country and the region's peak ILI.
- The majority of ILI visits occurred in children and young adults between ages 5 and 24. This is a function of ILINet's representation of outpatient visits, rather than a reflection of the burden of influenza. Older adults are hospitalized at much higher rates than children for influenza, a fact reflected in later slides.

# ILINet: % ILI 2018-2019 Season



Influenza-like illness (ILI) as a percentage of all patient visits to ILINet sentinel providers, Rhode Island, 2018-2019 influenza season

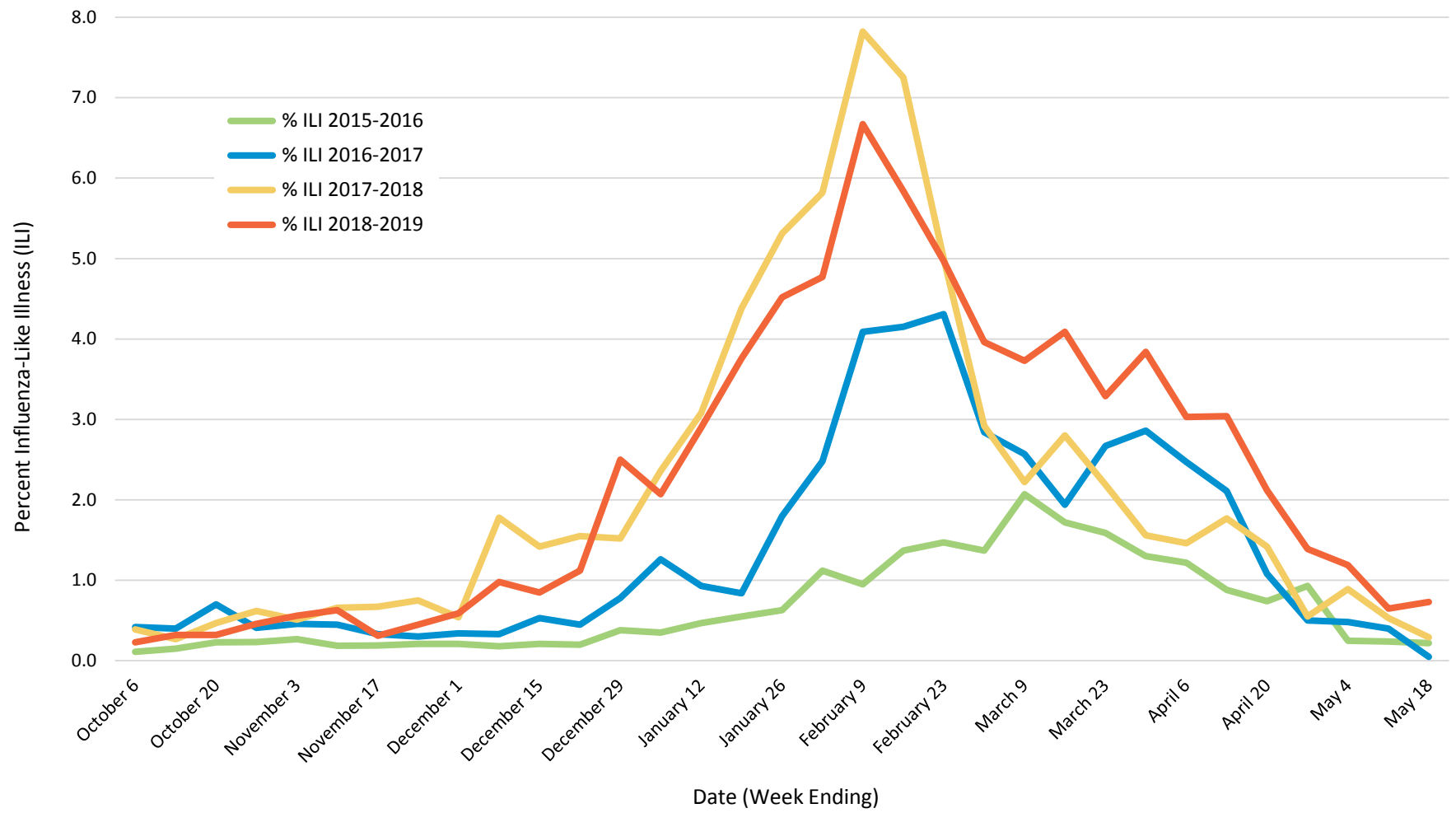




# ILINet: % ILI Comparison Among Seasons



Percentage of Visits for Influenza-like Illness (ILI) reported by ILINet:  
Rhode Island, Seasons 2015-2019

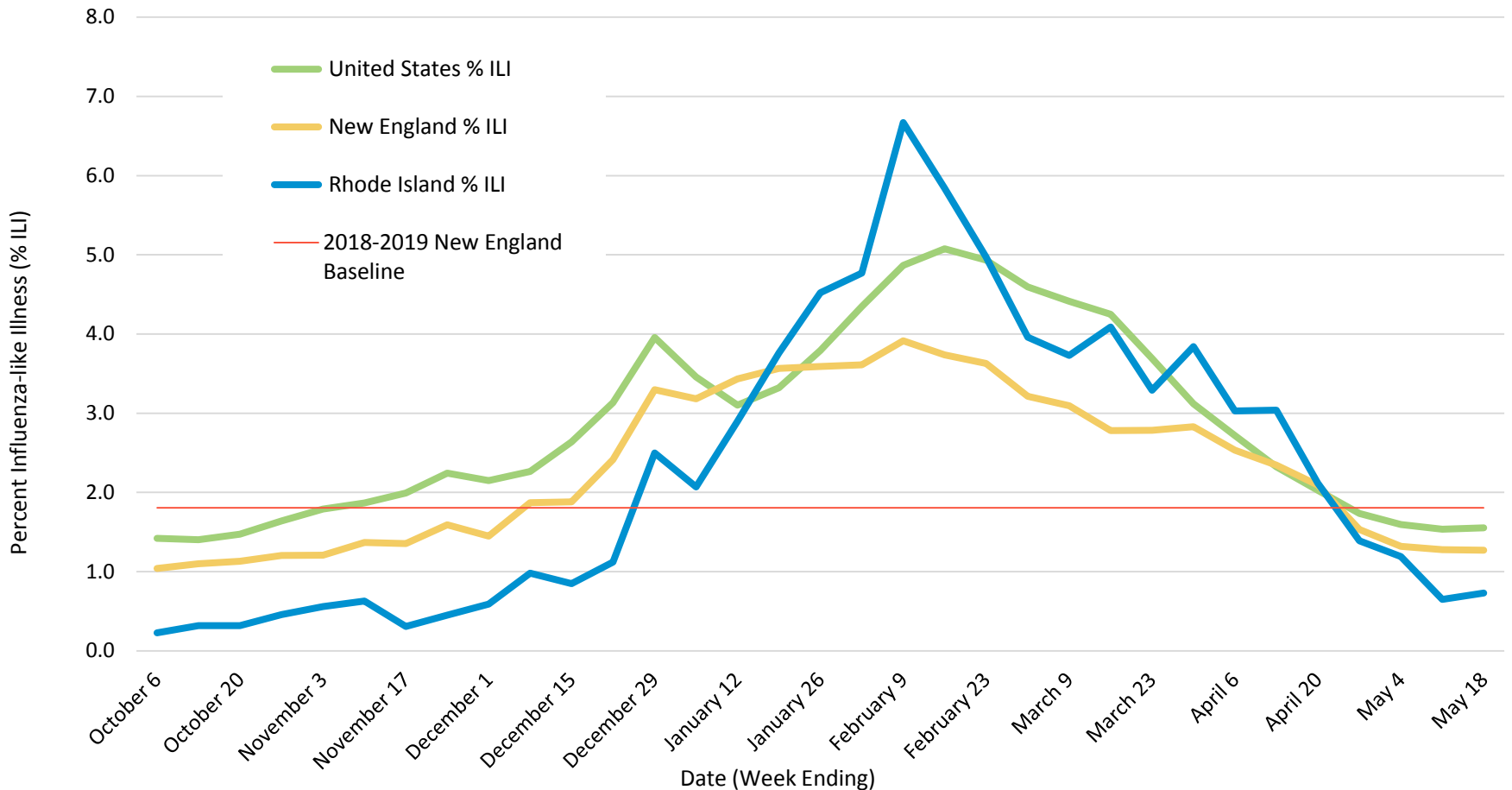


# ILINet:

## Comparison Among US, New England & RI



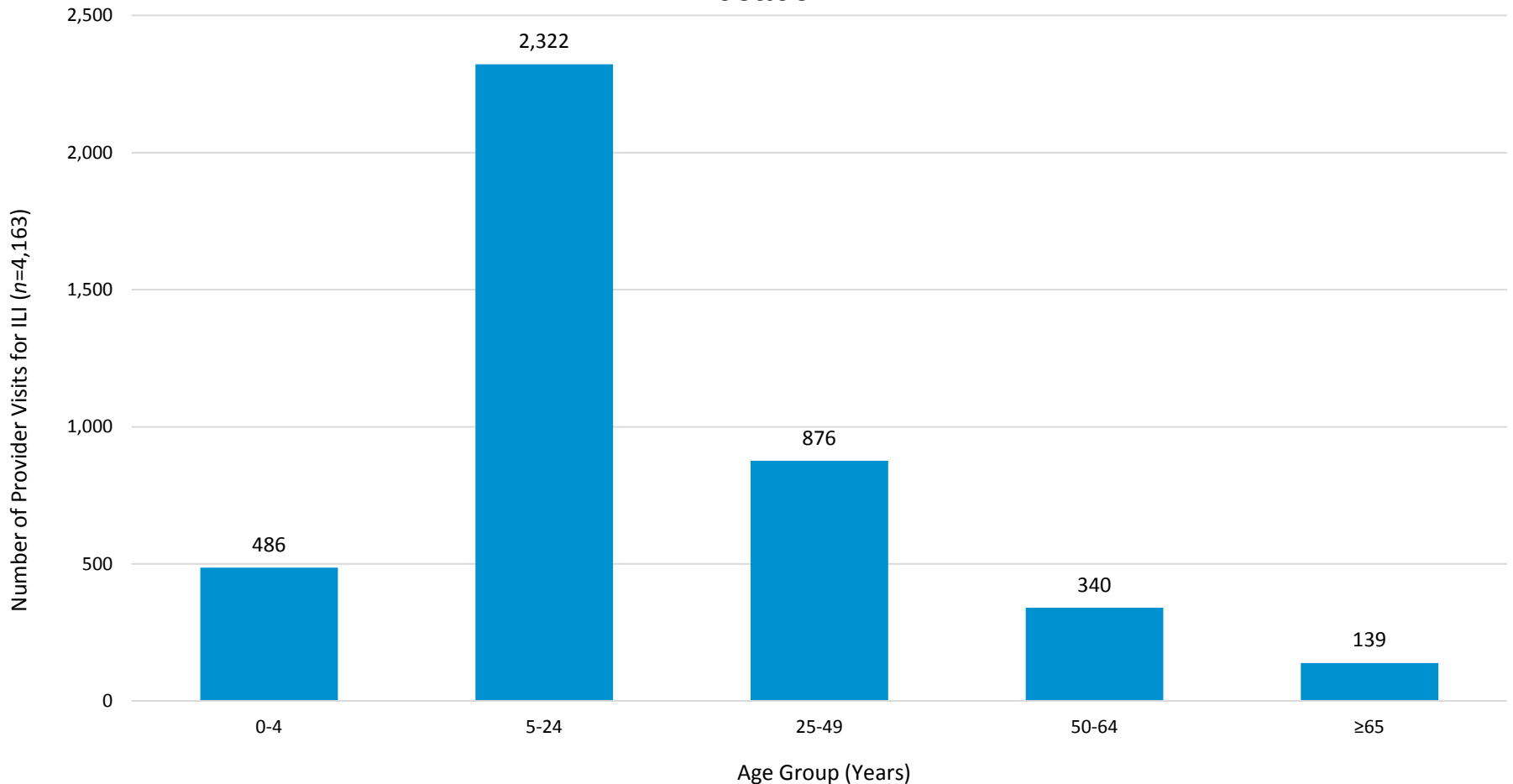
Percentage of Visits for Influenza-like Illness (ILI) reported by ILINet: Rhode Island, New England, and the United States, 2018-2019



# ILINet: Age Groups



Number of visits for influenza-like illness (ILI) reported by ILINet sentinel providers in Rhode Island by age group, 2018-2019 influenza season



# ILINet: Geographic Spread

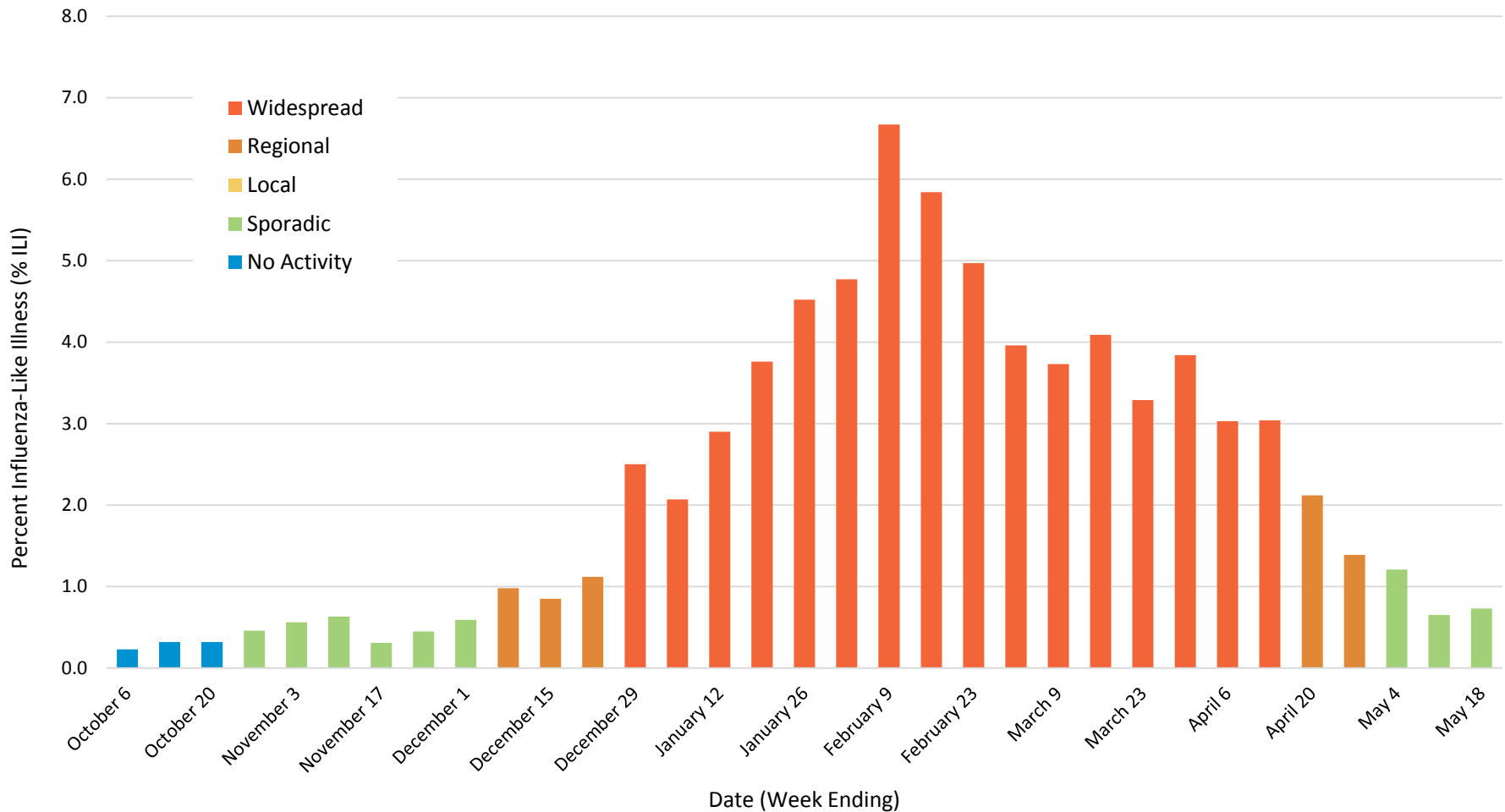


- Geographic spread describes the locational range of ILI activity within a state.
- Does not measure severity of influenza activity.
- Reported weekly by each state to CDC.
- Guided by a rubric that addresses the locations of increases in %ILI, positive influenza tests at hospitals, and respiratory outbreaks.
- Classifies geographic spread of ILI activity into No Activity, Sporadic, Local, Regional and Widespread Activity.
- In the 2018-2019 flu season, Rhode Island ILI activity remained widespread for 16 weeks.

# ILINet: % ILI and Geographic Spread



Percentage of visits for influenza-like illness (% ILI) and geographic spread of ILI activity, Rhode Island, 2018-2019 influenza season





# Rhode Island State Health Laboratories

# Rhode Island State Health Laboratories: Influenza Testing

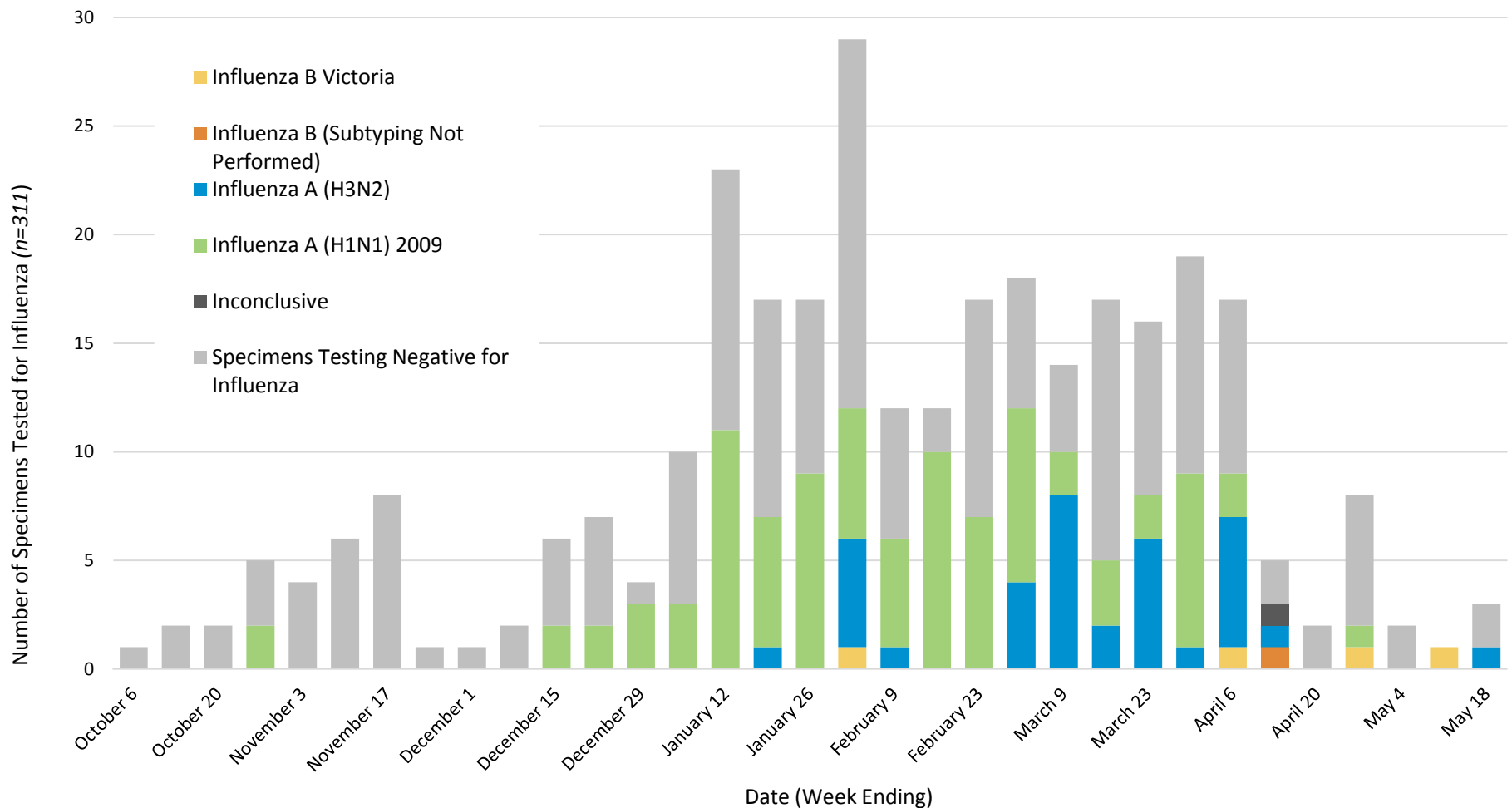


- Rhode Island State Health Laboratories (RISHL) performs molecular testing for influenza.
  - Provides important information on specific influenza strains circulating in Rhode Island.
  - Performs Influenza A subtyping and Influenza B lineage testing.
  - Helps CDC monitor antiviral susceptibility and identify novel viruses.
- Specimens are submitted by ILINet sentinel providers and congregate living facilities experiencing respiratory outbreaks.

# Rhode Island State Health Laboratories: Influenza Testing, 2018-2019



## Specimens Tested for Influenza at the Rhode Island State Laboratories, 2018-2019 Influenza Season





# Rhode Island State Health Laboratories: Data Summary



- 311 specimens tested; 138 positive for influenza (44%).
- Of positive specimens, 95% were influenza A.
- Of 131 influenza A specimens:
  - 70% influenza A (H1N1) 2009
  - 30% influenza A (H3N2)
- Low volume of influenza B in Rhode Island and US as a whole.
- Nationally, a season with a mix of influenza A H1N1 and H3N2 viruses.



# Respiratory Outbreaks in Congregate Living Settings

# Respiratory Outbreaks: Congregate Living Surveillance



- Within a congregate living setting, such as a long term care facility, a **respiratory outbreak** is defined as:
  - **One lab-confirmed case of influenza**
  - or
  - **Two cases of influenza-like illness (ILI)** within 72 hours of each other
- All respiratory outbreaks are reportable to RIDOH.
- RIDOH monitors outbreaks until 10 days have passed following the last illness onset and provides infection control recommendations.
- The Rhode Island State Health Laboratories tests specimens to determine the virus causing the outbreak.

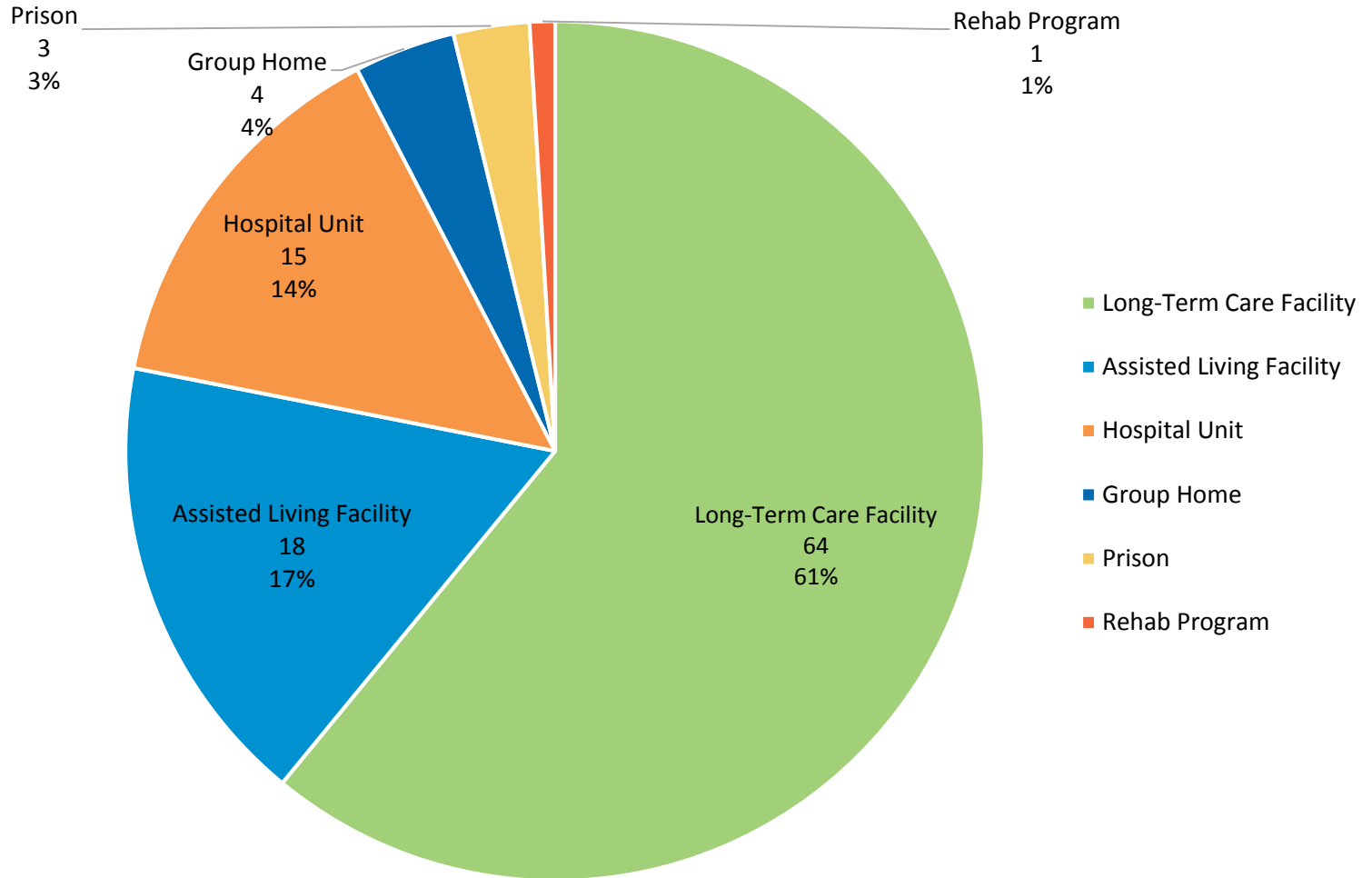


# Respiratory Outbreaks: Virus Types



Influenza Type	Respiratory Outbreaks (N=105)	
	N	%
Influenza A (not subtyped)	40	38.1%
Influenza A (H1N1) 2009	34	32.4%
Influenza B	10	9.5%
Influenza A and B (all subtypes)	8	7.6%
Influenza A (H3N2)	7	6.7%
Non-Influenza Respiratory or Influenza Type Unknown	5	4.8%
Influenza A (H1N1) 2009 and (H3N2)	1	1.0%

# Respiratory Outbreaks: Facility Types



# Respiratory Outbreaks: Data Summary



- During the 2018-2019 season there were 105 discrete outbreaks of respiratory illness in 79 different congregate living facilities. Many facilities had more than one outbreak.
- Outbreaks peaked the second week of February, with 10 outbreaks reported.
- The most common viruses in these outbreaks were influenza A (not subtyped) and influenza A (2009) H1N1, together accounting for 70.5% of all outbreaks.
- Some outbreaks were caused by more than one flu virus circulating simultaneously.

# Respiratory Outbreaks: Data Summary Continued



- **Outbreak duration:** the number of days between the first illness onset to 10 days after the last illness onset.
  - The average duration of outbreaks was shorter in the 2018-2019 flu season (mean duration=16.8 days) compared to the 2017-2018 season (mean duration=20.0 days)
- **Vaccination among residents (self-reported):**
  - Vaccination rates among facilities were lower in the 2018-2019 flu season compared with the 2017-2018 season
  - For 2018-2019 the mean vaccination rate was 80.3% and the median was 87.5%.
  - For 2017-2018 the mean vaccination rate was 87% and the median was 92%.





# Hospital Influenza Tests and Hospitalizations

# All Hospital Influenza Tests: Hospital Laboratory Surveillance



- All positive influenza tests at Rhode Island's 11 acute care hospitals are reported to RIDOH.
- Includes inpatient hospitalizations and emergency department visits.
- Influenza-positive hospitalizations are presented as a subset of all hospital data.
- All hospitals test virus types (influenza A or B) and some hospitals perform influenza A subtyping (H1N1 or H3N2).

# All Hospital Influenza Tests: Data Summary

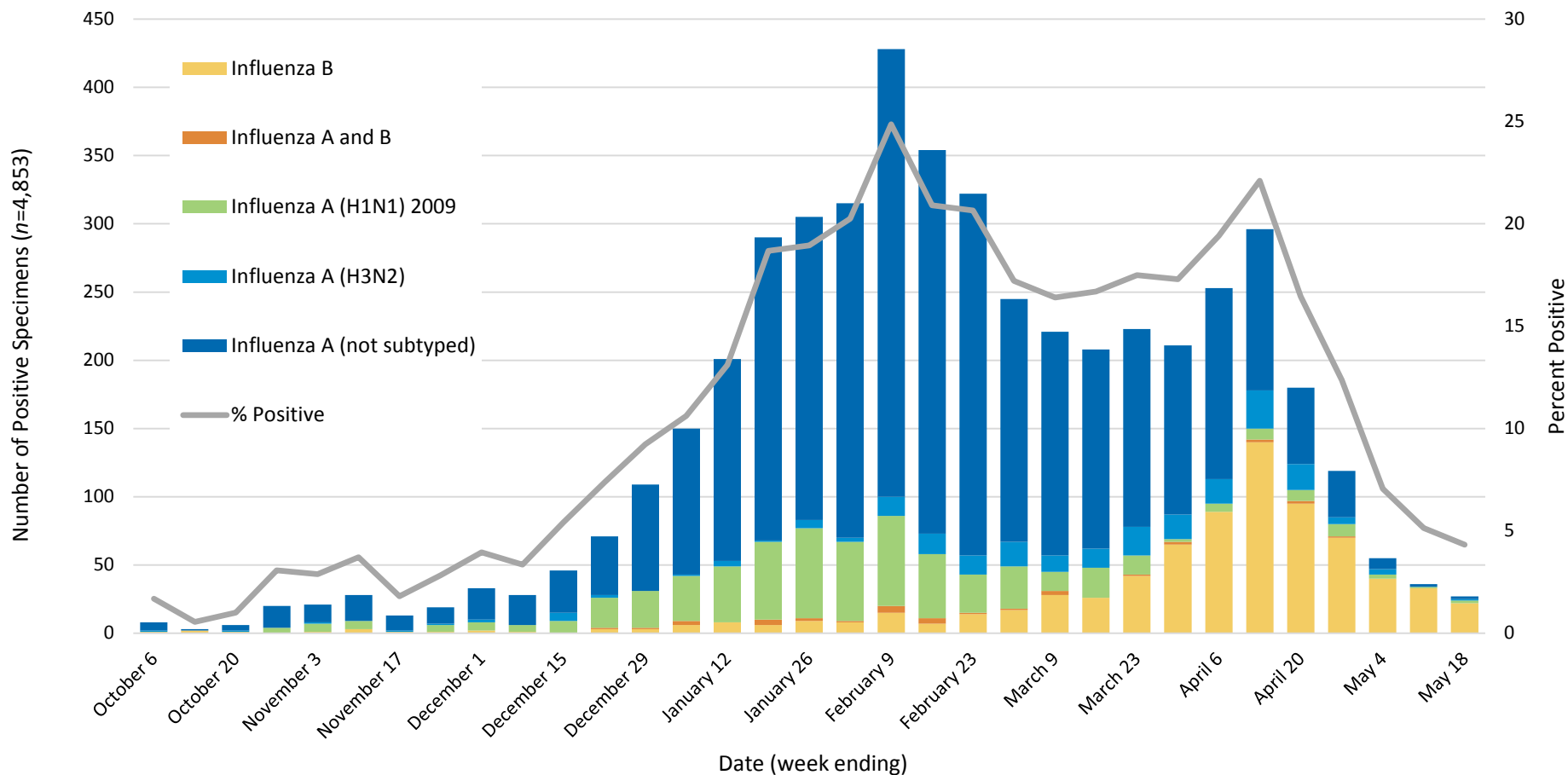


- There were fewer positive influenza tests in the 2018-2019 influenza season (n=4,853) than in the 2017-2018 season (n=6,577).
- Positive tests at hospitals peaked in early February, with 429 influenza tests. This peak was driven by influenza A viruses.
- There was a secondary peak (296 positive tests) in mid-April, driven by influenza B viruses.
- Compared to the 2017-2018 flu season, the 2018-2019 season was longer and had two smaller peaks instead of one large one.
- The most common virus type was influenza A (not subtyped).
- Of influenza A specimens that were subtyped, 72% were influenza A (H1N1) 2009 and 28% were influenza A H3N2. Nationally, both subtypes circulated, with H3N2 circulation increasing as the season progressed. This pattern was true in Rhode Island as well.

# All Hospital Influenza Tests: Strain and MMWR Week



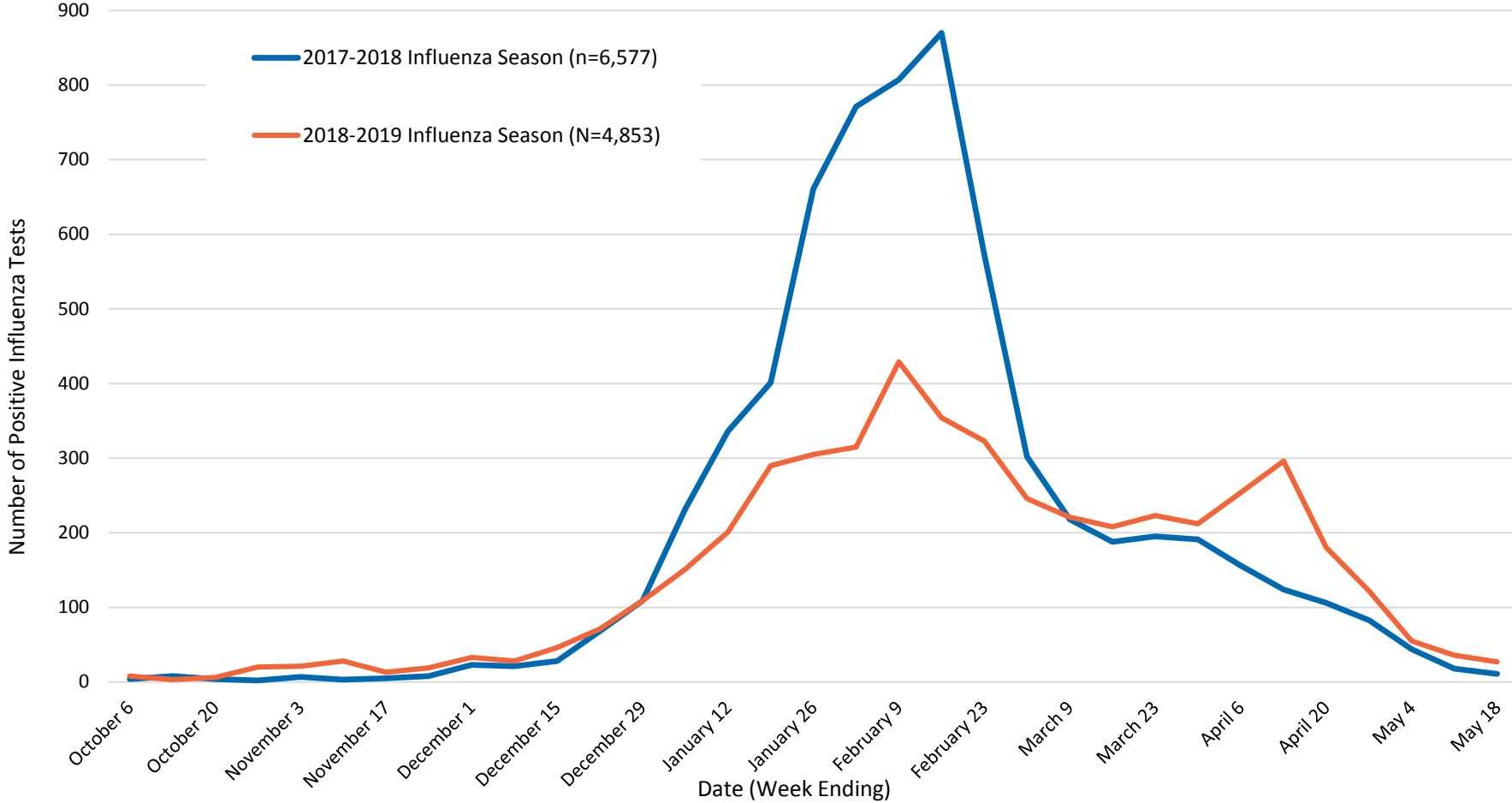
## All Positive Influenza Tests by Strain and MMWR Week, Rhode Island Hospitals, 2018-2019



# All Hospital Influenza Tests: Season Comparison



### Positive Influenza Tests by Week, Rhode Island Hospitals, Comparison of 2017-2018 and 2018-2019 Influenza Seasons



# All Hospital Influenza Tests: Strain and Season, 2017-2018 and 2018-2019



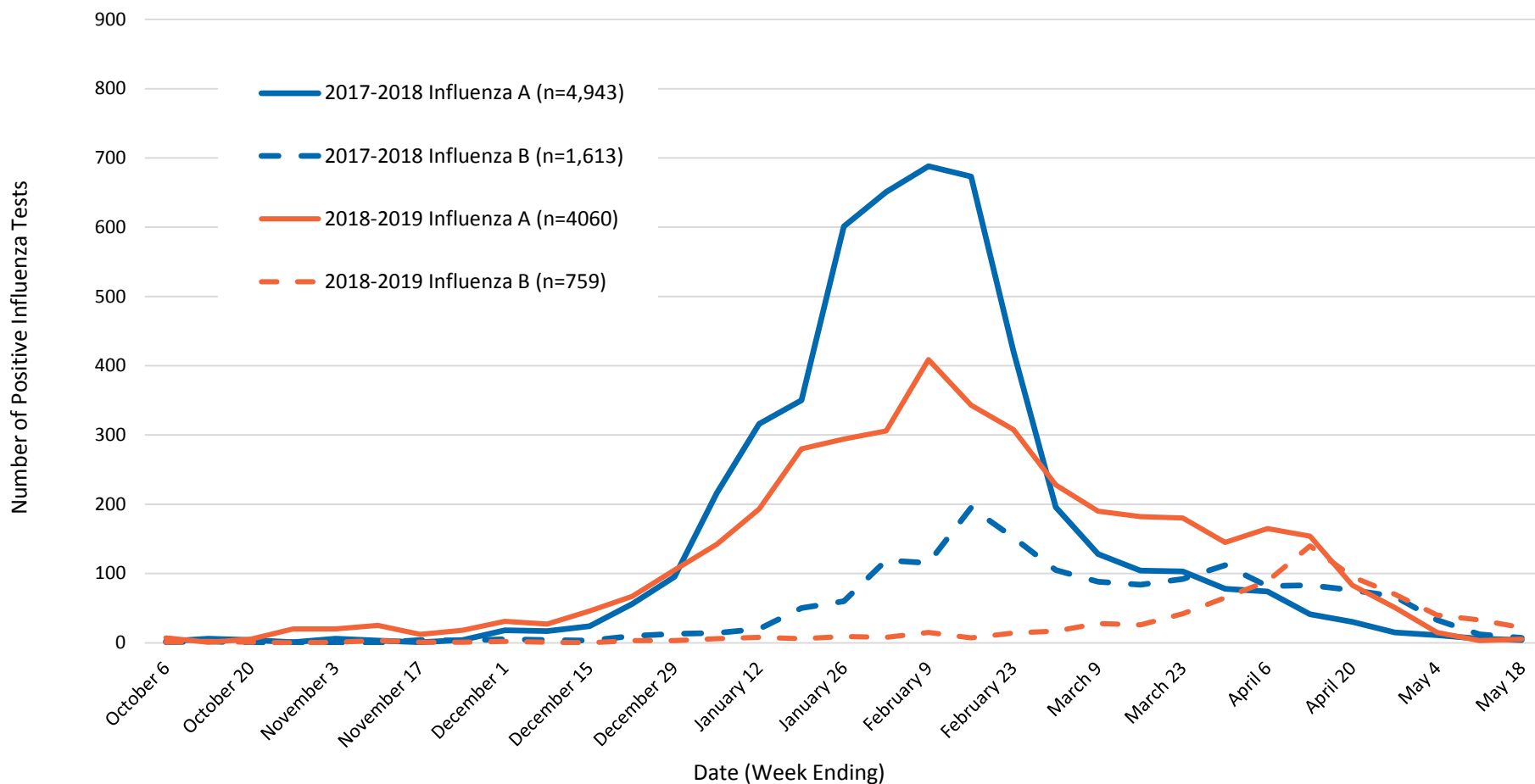
Positive influenza tests by strain, Rhode Island hospitals, comparison of 2018-2019 and 2017-2018 influenza seasons

Strain	2018-2019 (n=4,853)		2017-2018 (n=6,577)	
	N	%	N	%
Influenza A (not subtyped)	3214	66.2%	4,207	64.0%
Influenza A (H1N1) 2009	606	12.5%	108	1.6%
Influenza B	759	15.6%	1,613	24.5%
Influenza A (H3N2)	231	4.8%	594	9.0%
Influenza A and B	34	0.7%	19	0.3%
Influenza A, unsubtypeable	9	0.2%	34	0.5%
Inconclusive	0	0.0%	2	0.0%

# All Hospital Influenza Tests: Season Comparison by Strain



Positive Influenza Tests by Week and Strain, Rhode Island Hospitals,  
Comparison of 2017-2018 and 2018-2019 Influenza Seasons





# Influenza Hospitalizations

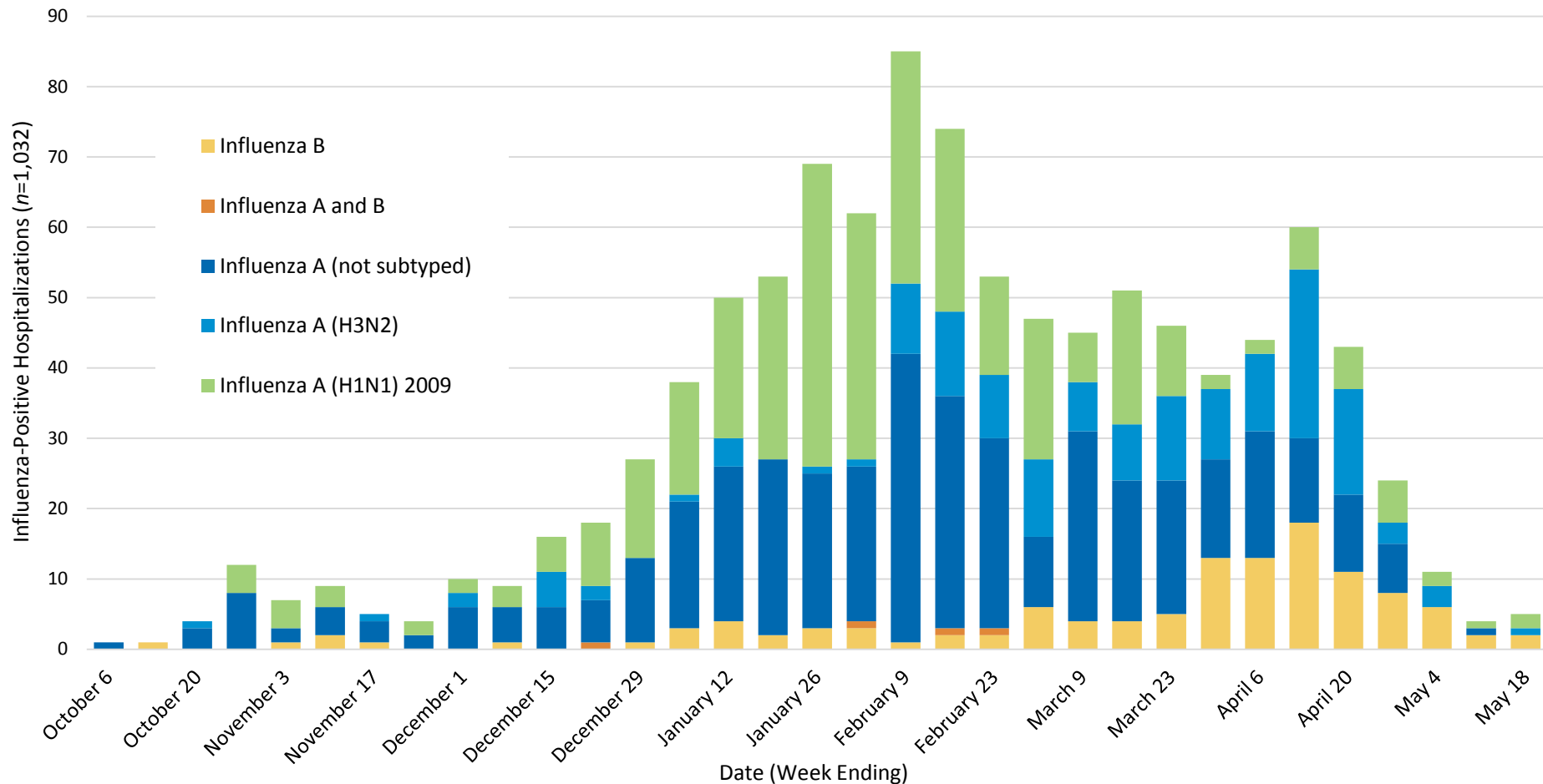
- Influenza hospitalization data are a subset of all positive hospital influenza tests and include those who tested positive for influenza and were hospitalized as inpatients.
- Hospitalizations peaked in early February, the same week as positive tests. There was a secondary peak in mid-April.
- There were fewer positive influenza tests in the 2018-2019 influenza season (n=1,032) than in the 2017-2018 season (n=1,390).
- Adults 65 years and older were hospitalized at higher rates than other age groups throughout the season, but the difference was not as dramatic as previous years.



# Influenza Hospitalizations: Strain and MMWR Week



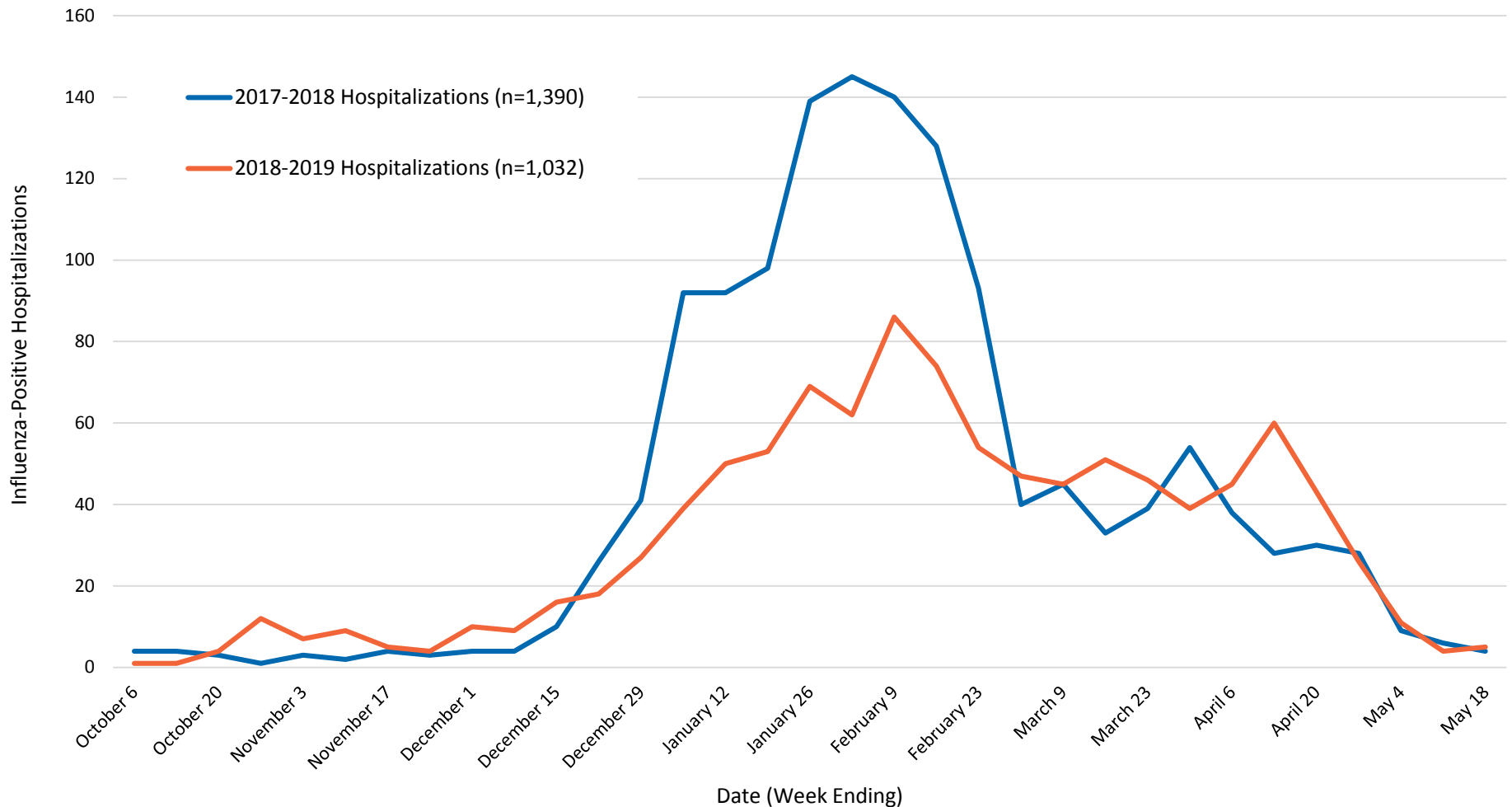
## Influenza Hospitalizations by Strain and MMWR Week, Rhode Island hospitals, 2018-2019



# Influenza Hospitalizations: Season Comparison



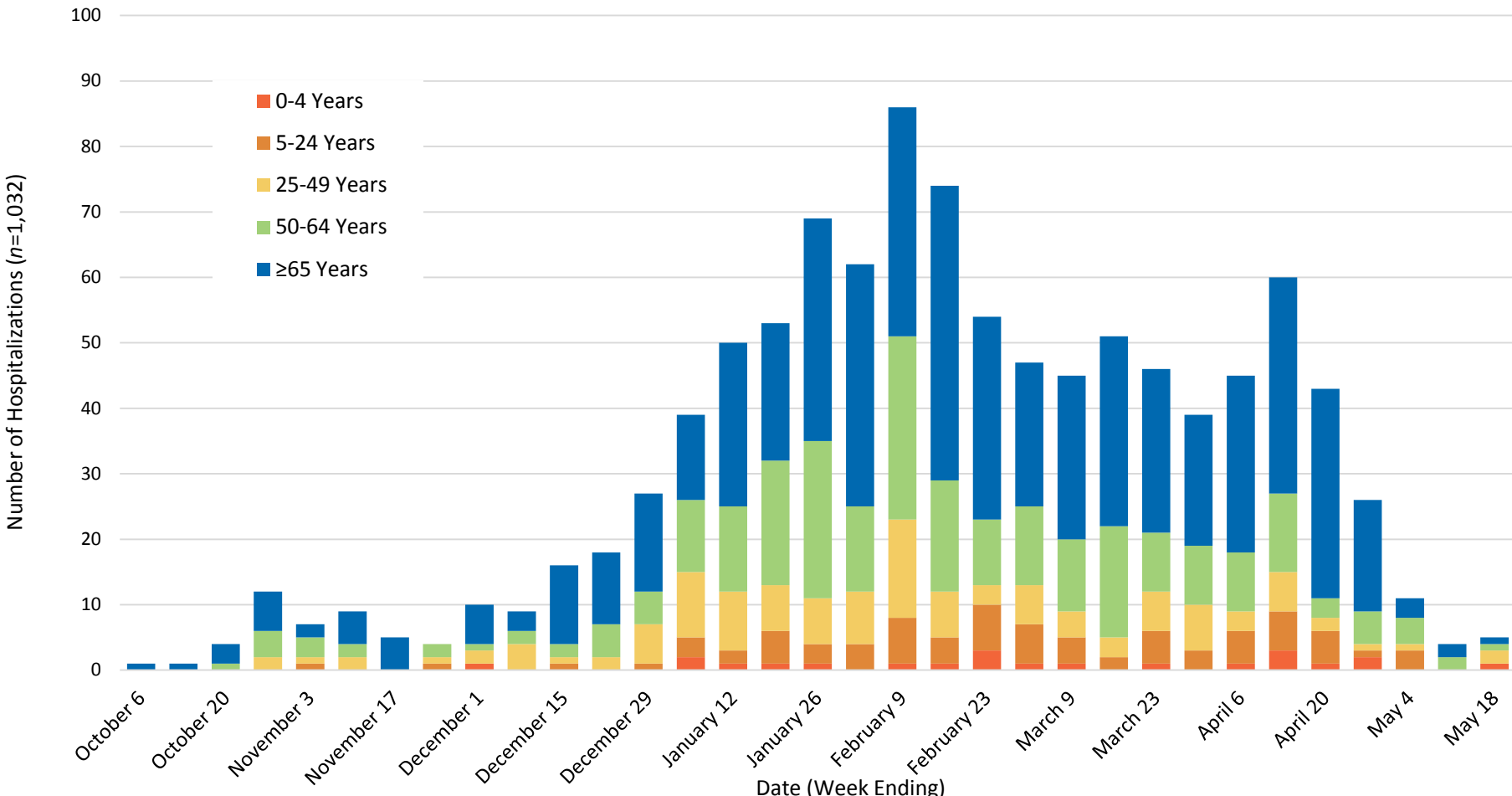
## Influenza hospitalizations by MMWR Week, Comparison of 2017-2018 and 2018-2019 influenza seasons



# Influenza Hospitalizations: Age and MMWR Week



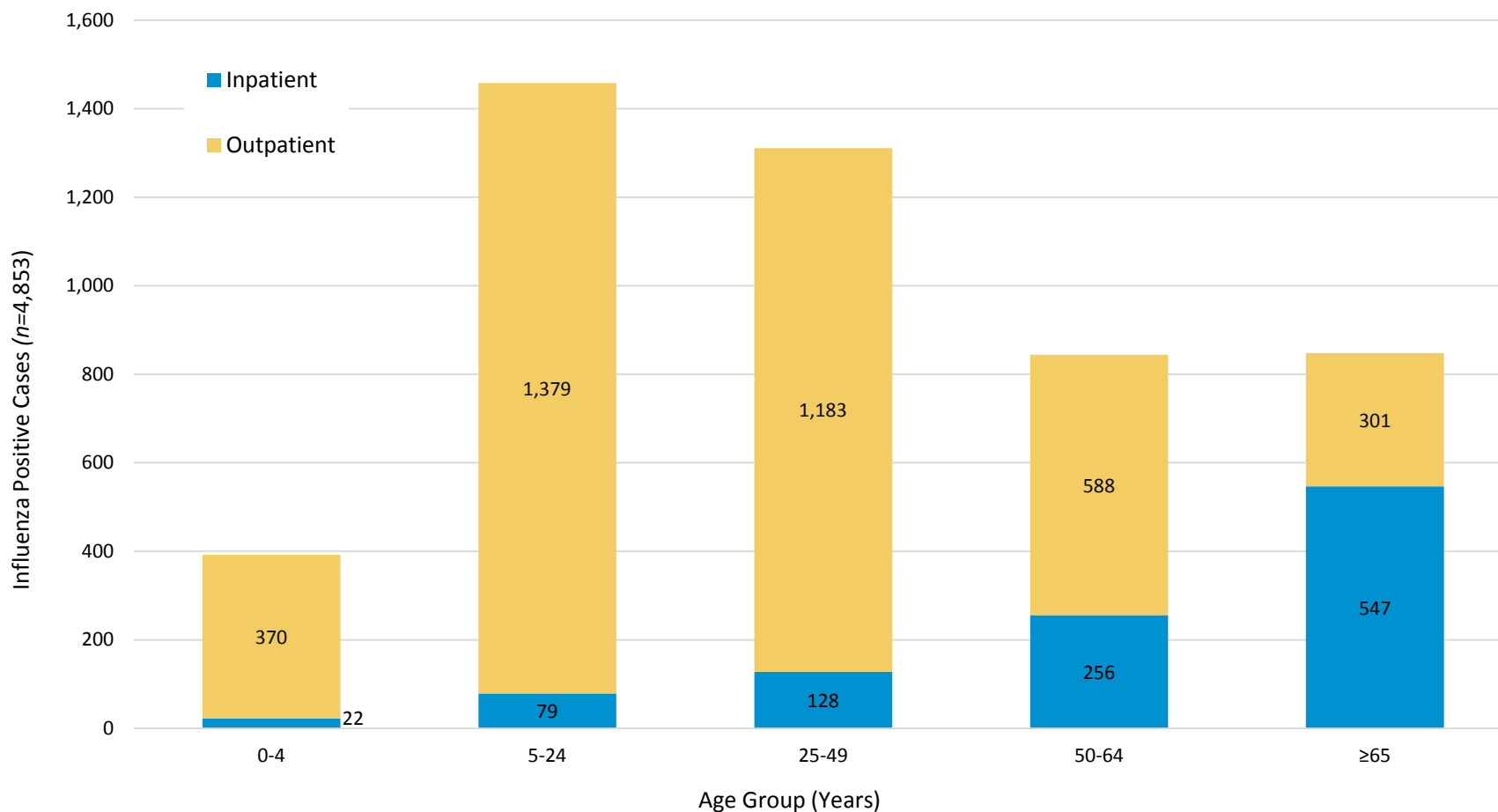
## Influenza Hospitalizations by Age and MMWR Week, Rhode Island hospitals, 2018-2019 Influenza Season



# All Hospital Influenza Tests: Age Group and Hospitalization Status



## Positive Influenza Tests by Hospitalization Status and Age, Rhode Island hospitals, 2018-2019





# Influenza-Associated Deaths



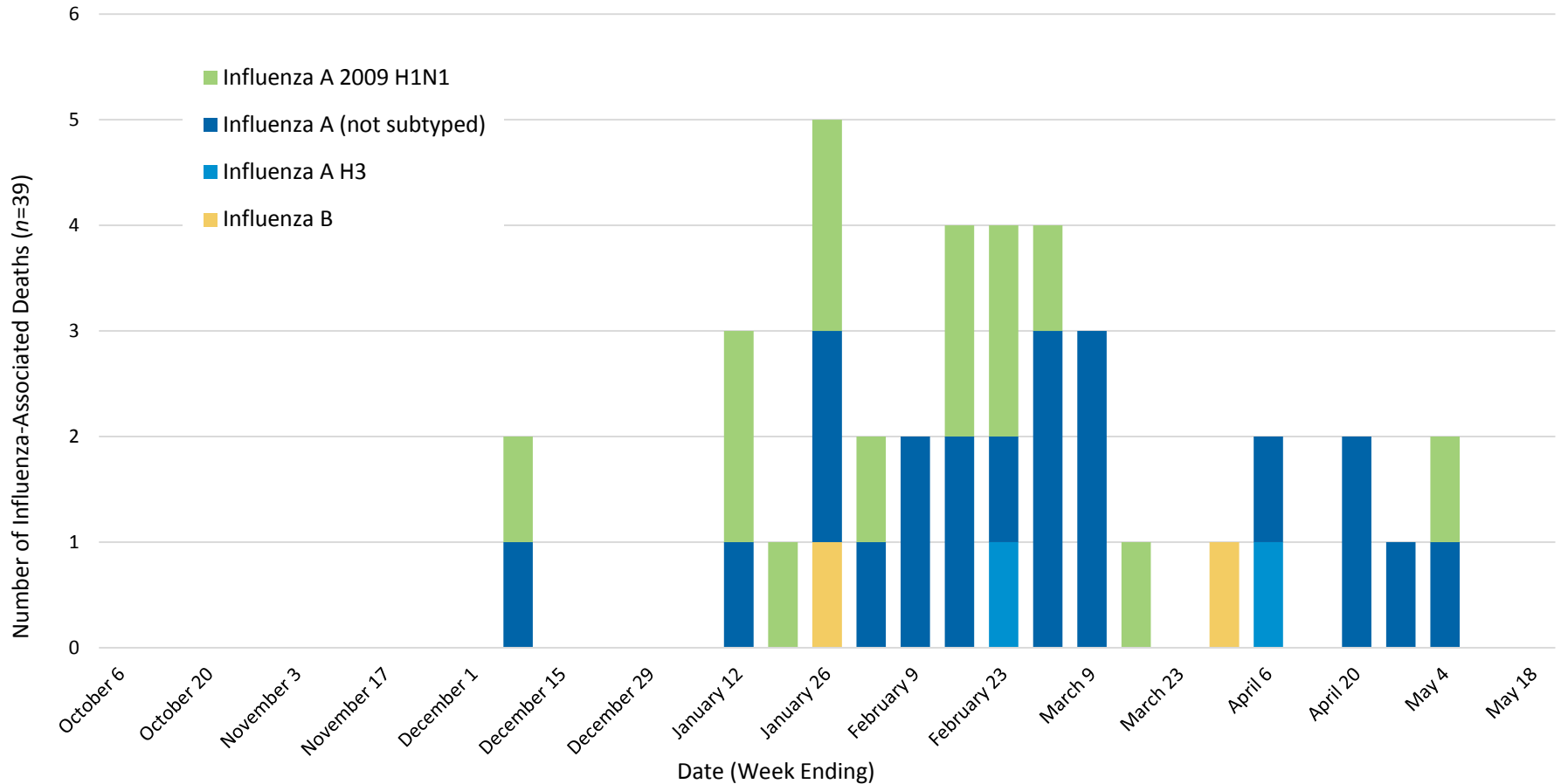
# Influenza-Associated Deaths

- There were 39 influenza-associated deaths reported in the 2018-2019 influenza season.
- 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 became reportable by regulation in Rhode Island in 2013.
- There were fewer deaths in the 2018-2019 season compared to the 2017-2018 influenza season, which had 60 influenza-associated deaths.

# Influenza-Associated Deaths: Strain and MMWR Week



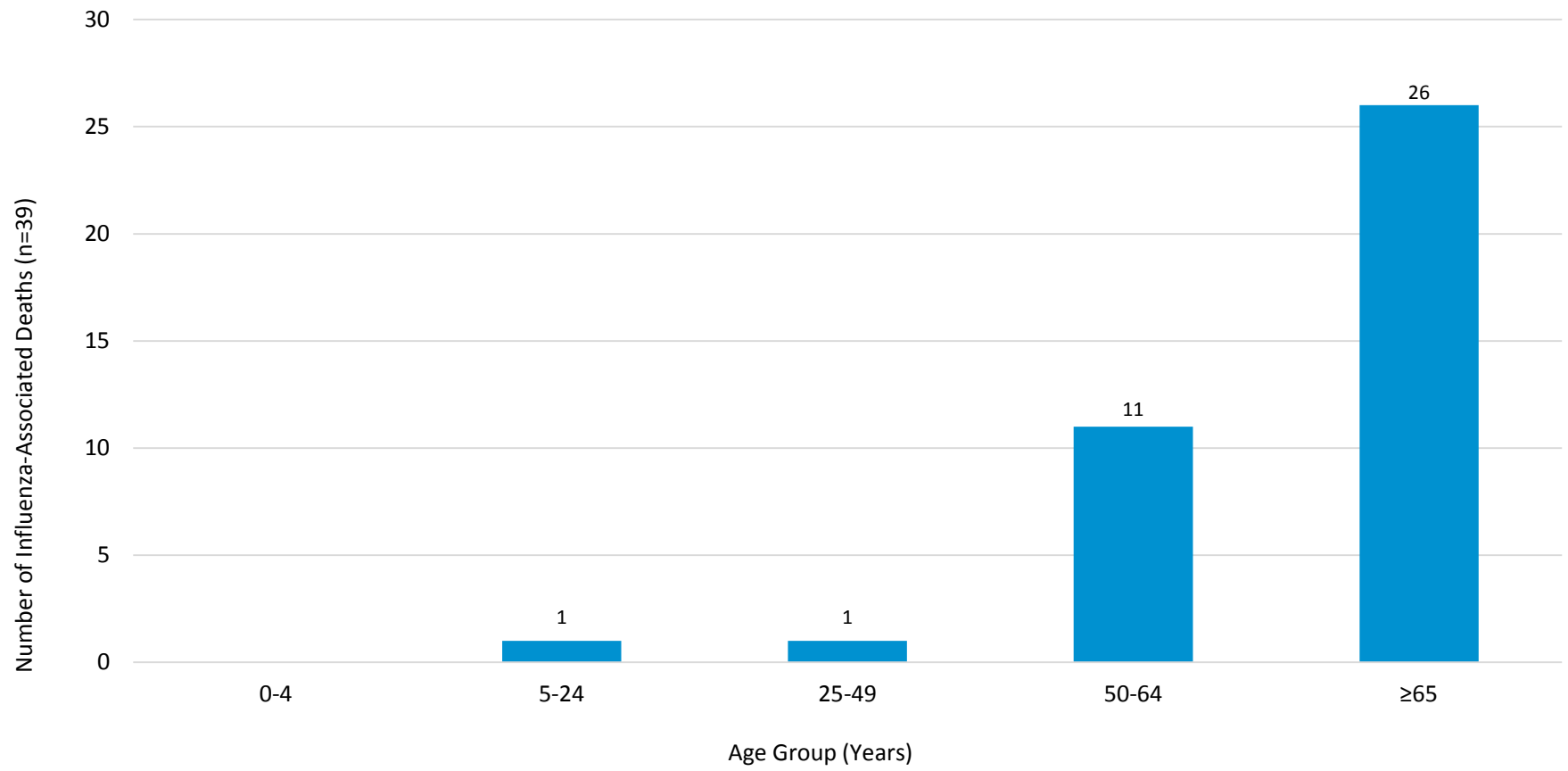
## Influenza-Associated Deaths by Strain and MMWR Week, Rhode Island, 2018-2019 Influenza Season



# Influenza-Associated Deaths: Age Groups



## Influenza-Associated Deaths by Age Group, Rhode Island, 2018-2019 Influenza Season





# Influenza-Associated Deaths: Data Summary



- Of the 26 deaths with known vaccination status, 58% were vaccinated this season.
- 67% of deaths in adults 65 years or older.
- 95% of deaths in adults 50 years or older.
- 95% of deaths caused by influenza A viruses.
- Individuals with underlying conditions are at increased risk of influenza mortality. Conditions commonly reported in the 2018-2019 flu season include:
  - COPD
  - Hypertension
  - Coronary artery disease
  - Congestive heart failure
  - Dementia
  - Kidney disease
  - Diabetes
  - Stroke
  - Being a current or former smoker
  - Atrial fibrillation
  - Cancer



# Acknowledgements

- Rhode Island's strong influenza surveillance system depends upon earnest participation by clinicians, laboratorians, administrators and staff at hospitals, laboratories, long term care facilities, universities, health care practices and urgent care. Thank you for all that you do.
- Influenza surveillance is conducted by a team in the Center for Acute Infectious Disease Epidemiology. Thank you to Diane Brady, Casandra Calcione, Karen Luther, Daniela Quilliam and Dr. Bandy for your skillful work on influenza surveillance.
- Questions can be directed to Abby Berns at the Rhode Island Department of Health ([abby.berns@health.ri.gov](mailto:abby.berns@health.ri.gov)) or by calling 401-222-2577.



# Methods and References

- Rhode Island data source description
- Rhode Island real-time [influenza data](#)
- CDC's [ILINet](#)
- [Overview](#) of available influenza laboratory tests
- CDC [summary](#) of the 2018-2019 influenza season