



2018-2019 Influenza Season, Boston

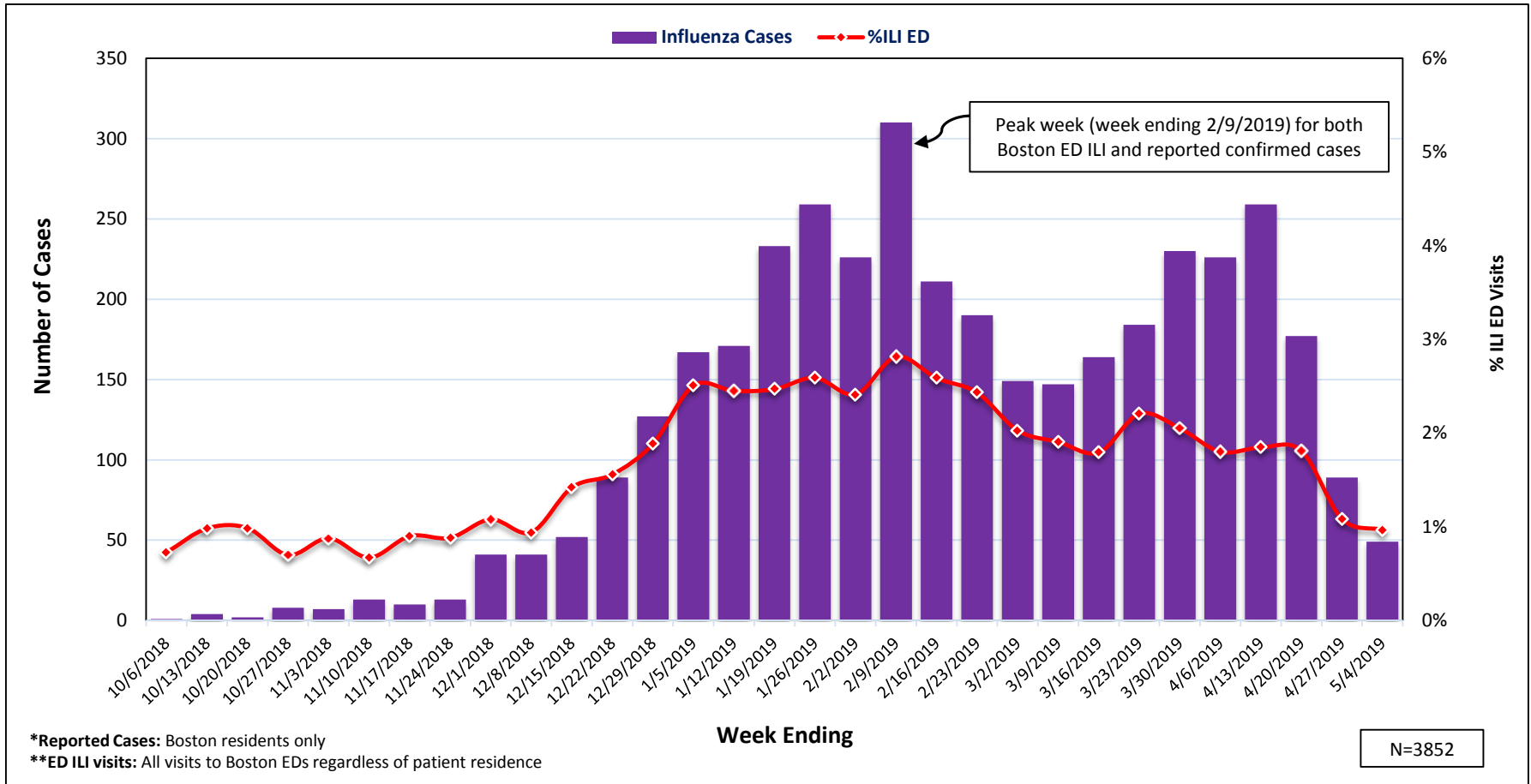
Communicable Disease Control Division
Infectious Disease Bureau

Boston Public Health Commission

Influenza Surveillance, Boston, 2018-2019

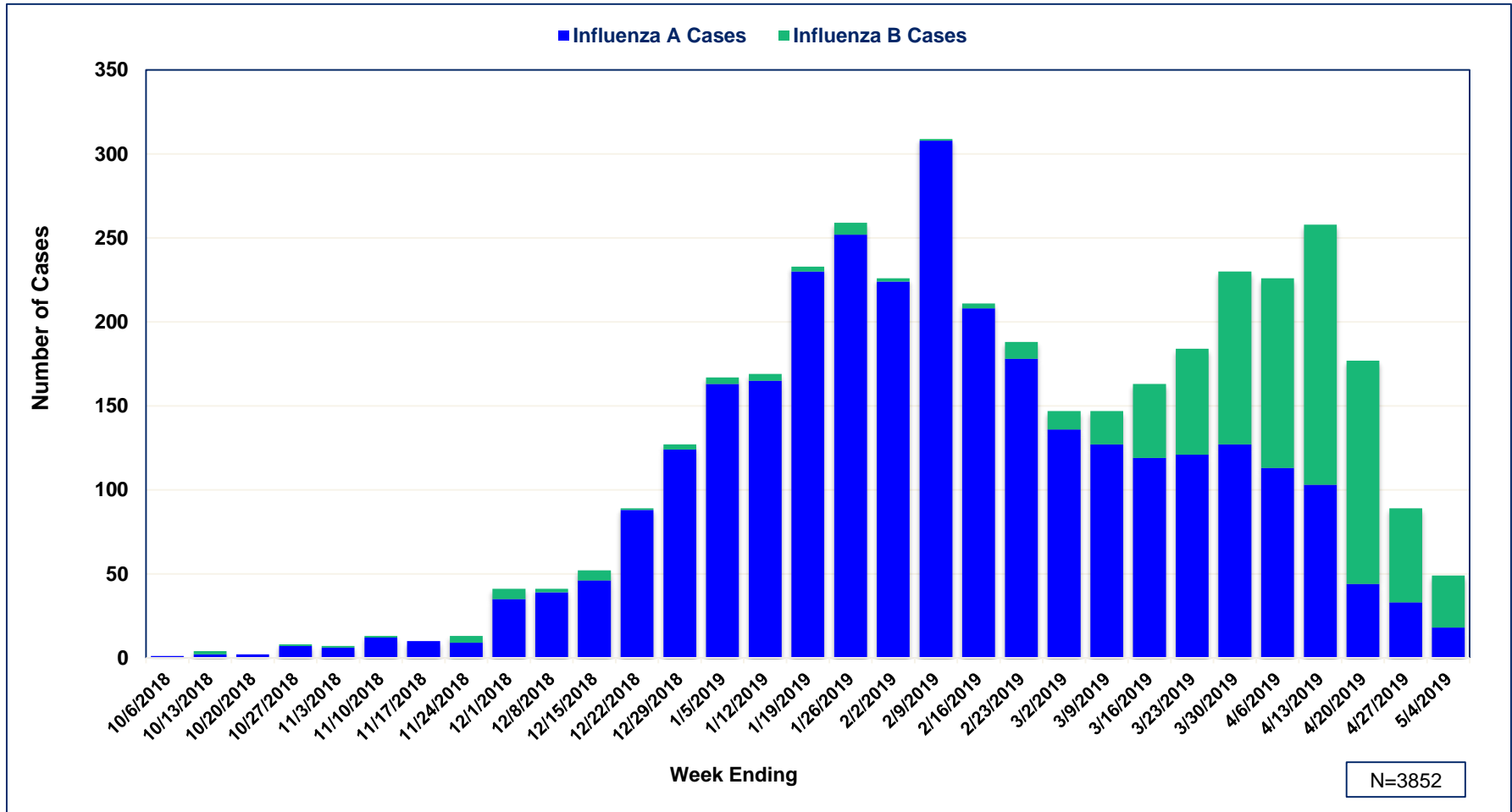
- Confirmed cases represent persons who seek health care and test positive for influenza.
- BPHC syndromic surveillance data are used to track influenza-like illness (ILI) visits at Emergency Departments (EDs) in Boston.
- The %ILI represents the percent of all ED visits attributed to ILI based on chief complaint data.
- During the season, data are used to inform control measures and provide community and stakeholder situational awareness.
- Data for this report were analyzed by BPHC at the conclusion of the influenza season.

Reported Influenza Cases* and Percent of Emergency Department Visits Due to Influenza-Like Illness (ILI)** , Boston, 2018-2019



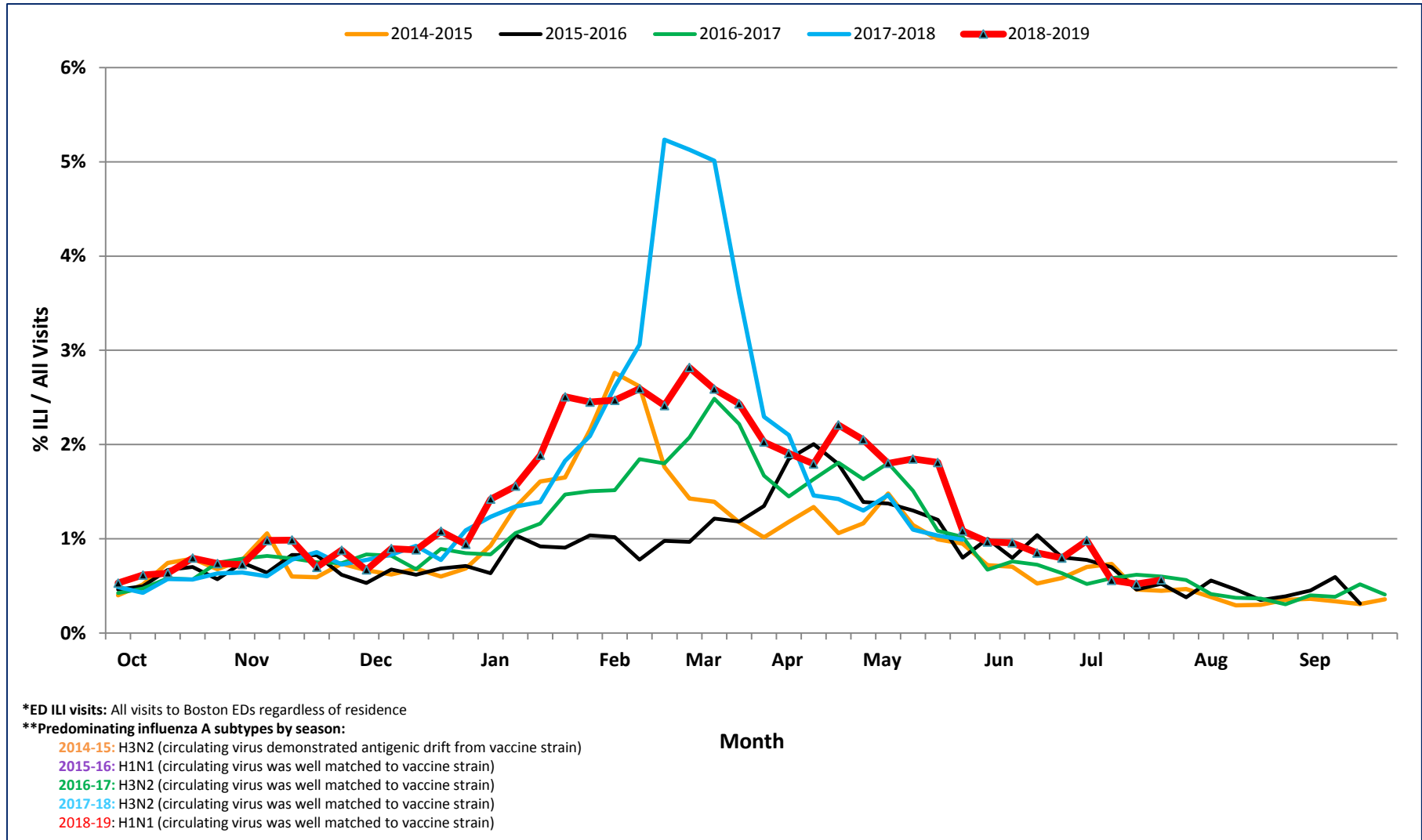
Boston ED ILI data tracks well with laboratory-confirmed reports of influenza. This season, flu activity in Boston was characterized by a bimodal peak in activity (based on two metrics of activity: influenza-like-illness [%ILI] and confirmed case counts). The 2018-19 season was a primarily A(H1N1)-predominant season. The last A(H1N1) predominant season was 2015-16. National flu subtyping data identified a wave of A(H3N2) activity that followed the initial peak of flu activity in February. A(H3N2) eventually superseded A(H1N1) as the predominant circulating strain as the 2018-19 season progressed. This, along with increased flu B activity, may have contributed to the second wave of overall flu activity. This reinforces the need for continual monitoring of flu activity even when activity appears to have subsided. A seemingly clear downward trend in activity is not always indicative that flu activity has resolved.

Reported Influenza Cases by Influenza Type, Boston Residents, 2018-2019



This season, influenza activity in Boston was characterized by a bimodal peak (based on two metrics: influenza-like-illness (ILI)% and confirmed case counts). The 2018-19 season was initially an A(H1N1)-predominant season and A(H3N2) became the predominant A type after February. The proportion of total cases due to influenza B increased as the season progresses which is consistent with what typically occurs during most influenza seasons. The less pronounced increase in emergency department ILL associated visits was likely due to visits to other sites such as clinic and urgent care centers. Co-circulation of a variety of influenza viruses reinforces the need for vaccination as the primary prevention strategy as seasonal influenza vaccine covers multiple strains of influenza viruses.

Percent of Emergency Department Visits* for Influenza-like Illness (ILI), Boston, 2014-2019**



The 2018-19 season was the longest flu season in 10 years, with **national** ILI at or above baseline for 21 weeks. Boston ED %ILI peaked the week ending 2/9/2019 at 2.82%, almost half that of the previous season's peak %ILI of 5.23%. The CDC has categorized the 2018-19 season as moderate.

Characteristics of Reported Influenza Cases, Boston Residents, 2018-2019

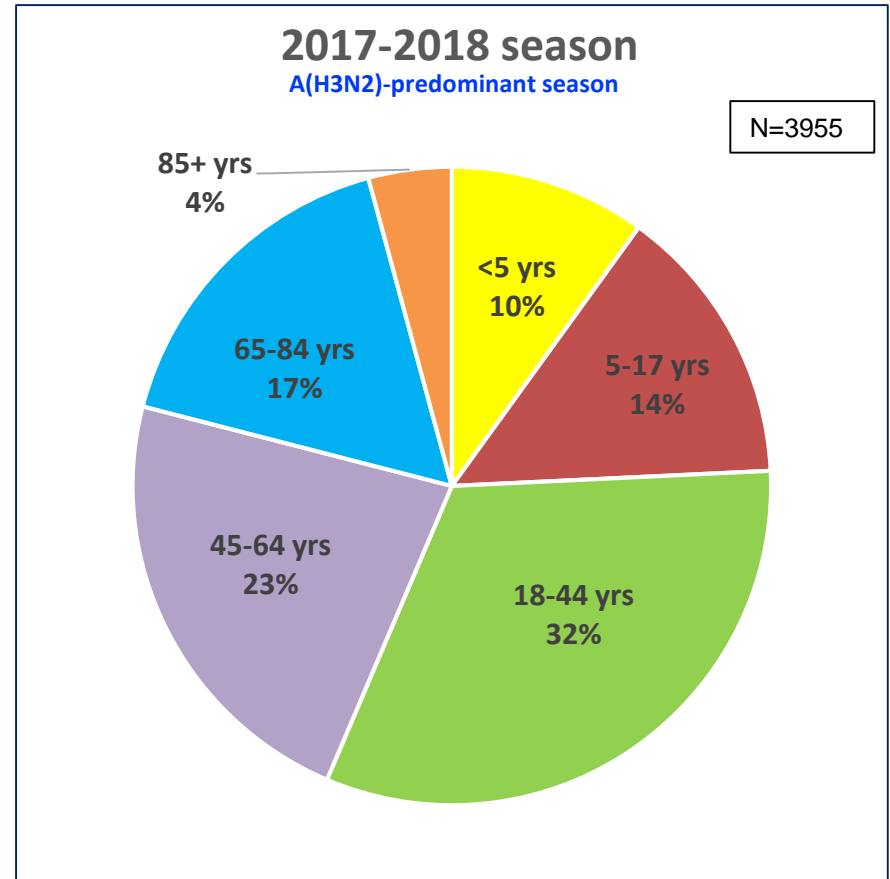
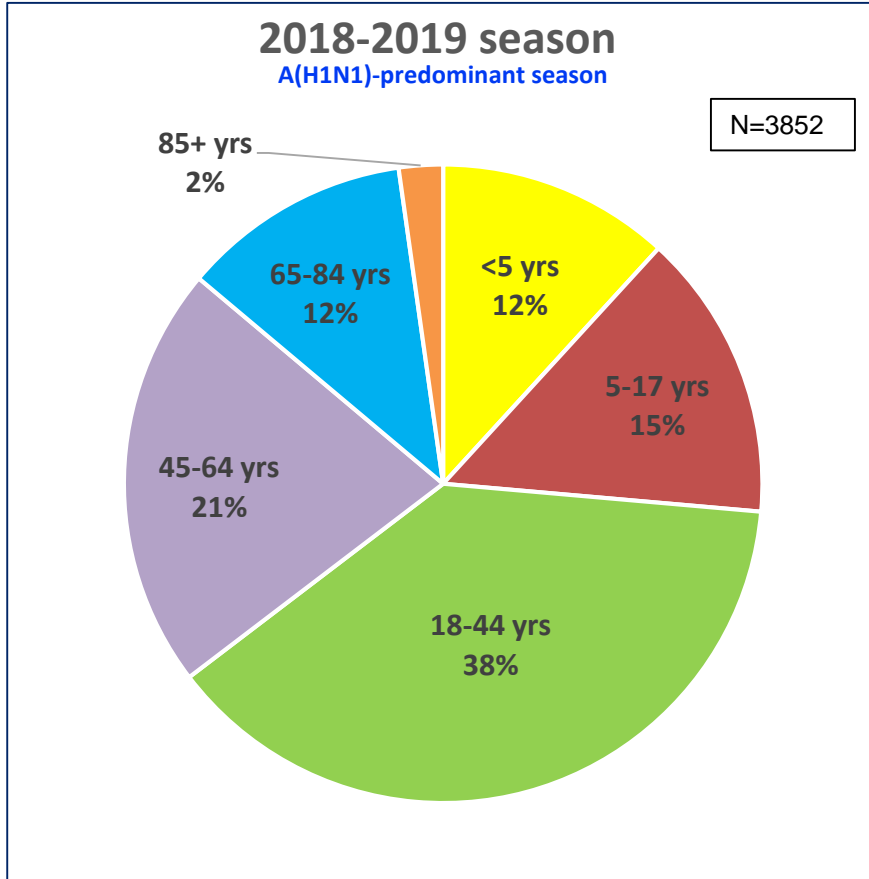
Total Cases	N=3852
	N (%)
Hospitalized	588 (15%)
Died* (among <u>total</u> cases)	9 (0.23%)
Died* (among <u>hospitalized</u> cases)	6 (1.02%)
	N (%)
Influenza A	3061 (79%)
Influenza B	791 (21%)
	N (%)
Male	1664 (43%)
Female	2188 (57%)

Persons hospitalized with influenza had a higher mortality rate (1.02%). Among non-hospitalized cases, the mortality rate was 0.03%. No pediatric influenza-associated deaths were identified in Boston residents.

*Only pediatric influenza-related deaths are nationally reportable. Through death certificate review and voluntary reporting by healthcare facilities, BPHC informally tracks influenza-related deaths among Boston residents. The numbers of deaths reported here are likely undercounts as no formal surveillance mechanism is in place to identify all Influenza-associated deaths.

Reported Influenza Cases, Boston Residents Comparison: 2018-2019 vs. 2017-2018 Seasons

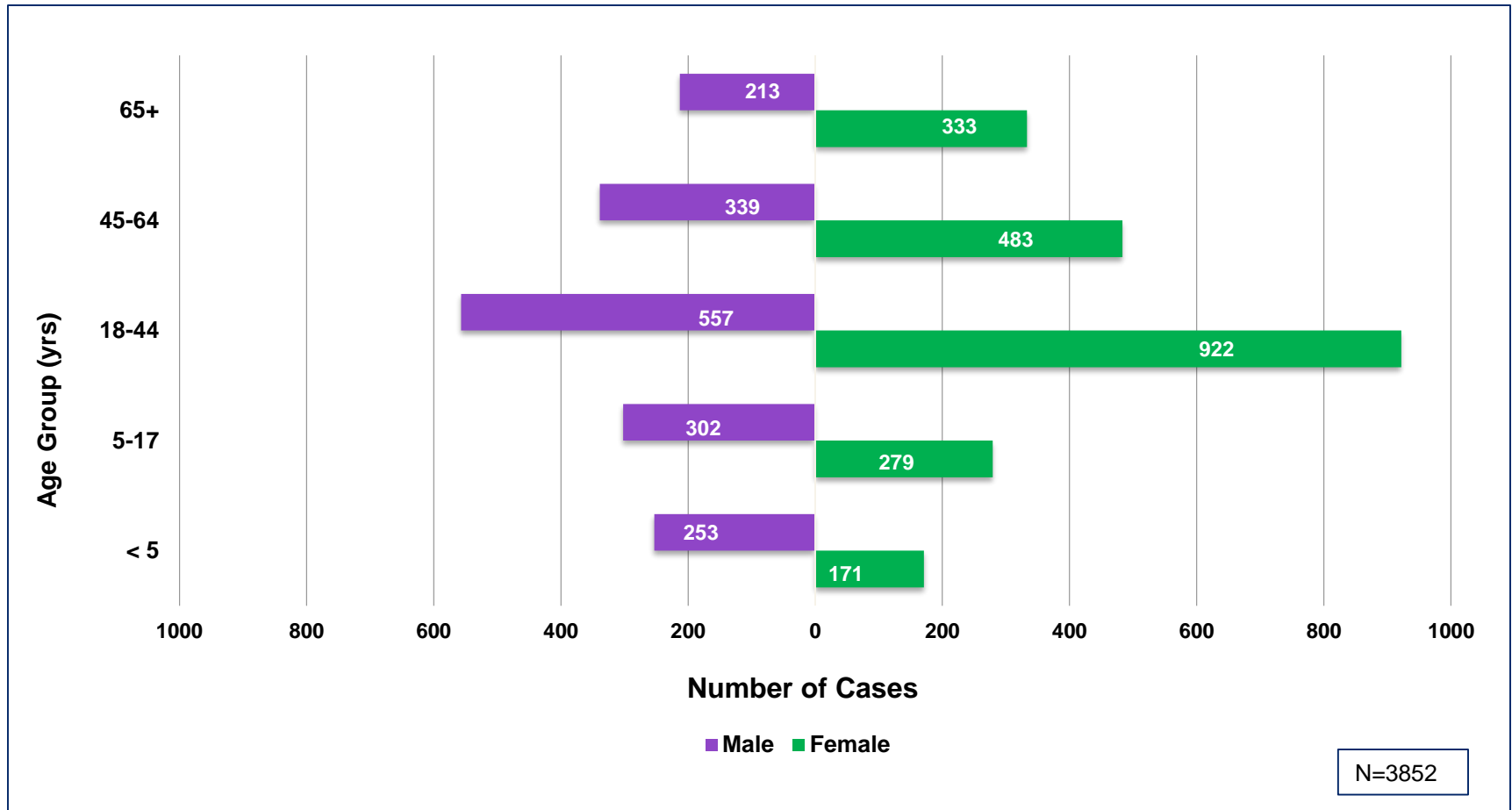
Distribution of Cases, by Age Group



For the 2018-19 season, adults 65 years of age and older accounted for 14% of confirmed influenza cases compared to 21% for the 2017-18 season. This is likely related to the predominant circulation of A(H1N1) viruses (which shifted to a predominance of A(H3N2) viruses around March) in contrast to the predominance of A(H3N2) viruses during the entirety of the 2017-18 season. Although all influenza A types disproportionately impact persons at each end of the age spectrum (especially those ≤ 5 and ≥ 65 years of age), A(H3N2)-predominant seasons tend to have an even greater impact on those of advanced age.

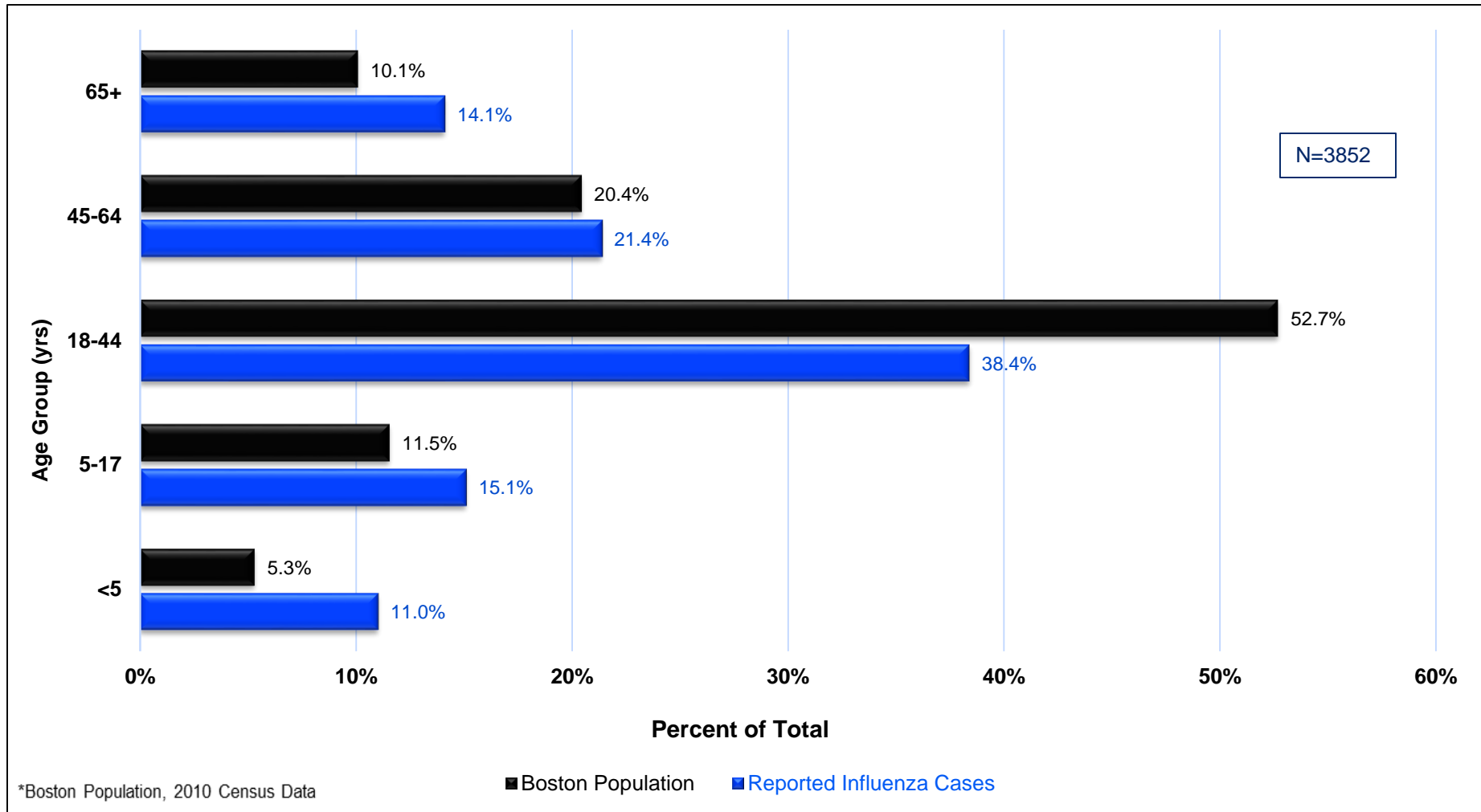
Reported Influenza Cases, Boston Residents, 2018-2019

Distribution of Cases, by Age Group and Gender



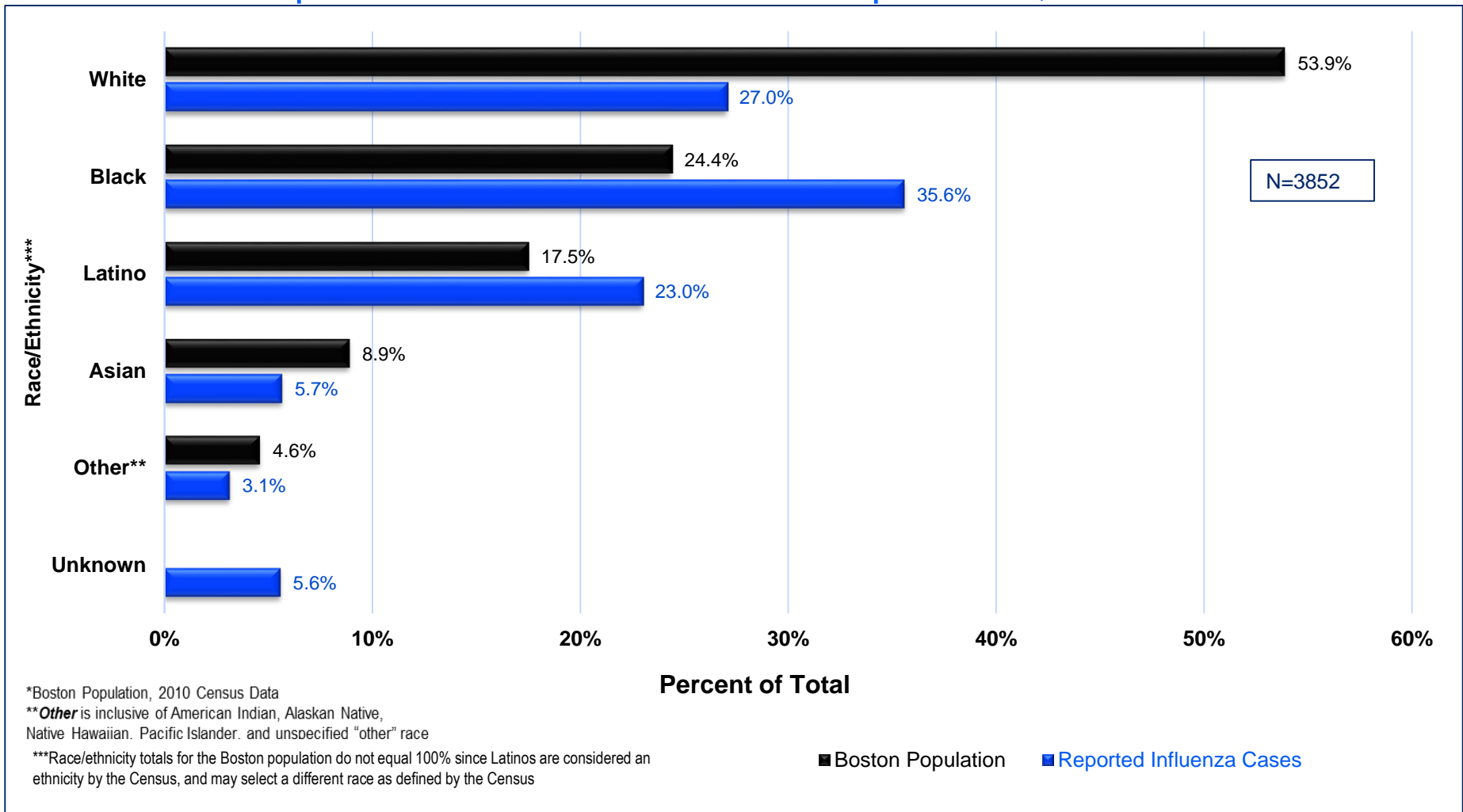
Females accounted for the majority (57%) of reported cases. This may be due to gender differences in healthcare seeking behavior and the fact that females outnumber males in Boston in the ≥65 year old age group. Persons 18 to 44 years of age accounted for the highest proportion of reported influenza cases, with females accounting for 62% of cases in that age group.

Reported Influenza Cases by Age in Boston Residents, Compared to the Overall Boston Population*, 2018-2019



Influenza disproportionately impacts extremes of age, specifically children ≤ 17 years of age, and persons ≥ 65 years of age.

Reported Influenza Cases by Race/Ethnicity in Boston Residents, Compared to the Overall Boston Population*, 2018-2019



Influenza disproportionately impacts Black residents, and to a lesser extent, Latino residents. This is consistent with data that BPHC has reported over the past several influenza seasons.

Influenza A vs. Influenza B Cases by Age Group, Boston Residents, 2018-2019

		Age Group (years)					Total
		<5	5-17	18-44	45-64	65+	
N=3852	Influenza A	77%	65%	75%	91%	91%	79%
	Influenza B	23%	35%	25%	9%	9%	21%

The likelihood of being diagnosed with influenza A vs. Influenza B increased with age. The overall distribution of influenza types by patient age was statistically significant ($p < 0.00001$).

Characteristics of Reported Influenza Cases*, by Age Range, Boston, 2018-2019

		Age Group (years)					
		<5	5-17	18-44	45-64	65+	Overall
N=3852							
# Cases		N=424	N=581	N=1479	N=822	N=546	N=3852
Gender	Male (%)	60%	52%	38%	41%	39%	43%
	Female (%)	40%	48%	62%	59%	61%	57%
Race	White (%)	20%	19%	27%	27%	40%	27%
	Black (%)	38%	38%	34%	41%	28%	36%
	Latino (%)	21%	25%	24%	22%	20%	23%
	Asian (%)	5%	5%	7%	3%	6%	6%
	Other** (%)	5%	5%	4%	2%	2%	3%
	Unknown (%)	11%	8%	4%	5%	4%	5%
Hospitalized		9.4%	4.0%	6.6%	22.1%	44.9%	15.3%
Died***		(N=0)	(N=0)	(N=0)	(N=4)	(N=5)	(N=9)
		0%	0%	0%	0.49%	0.92%	0.23%

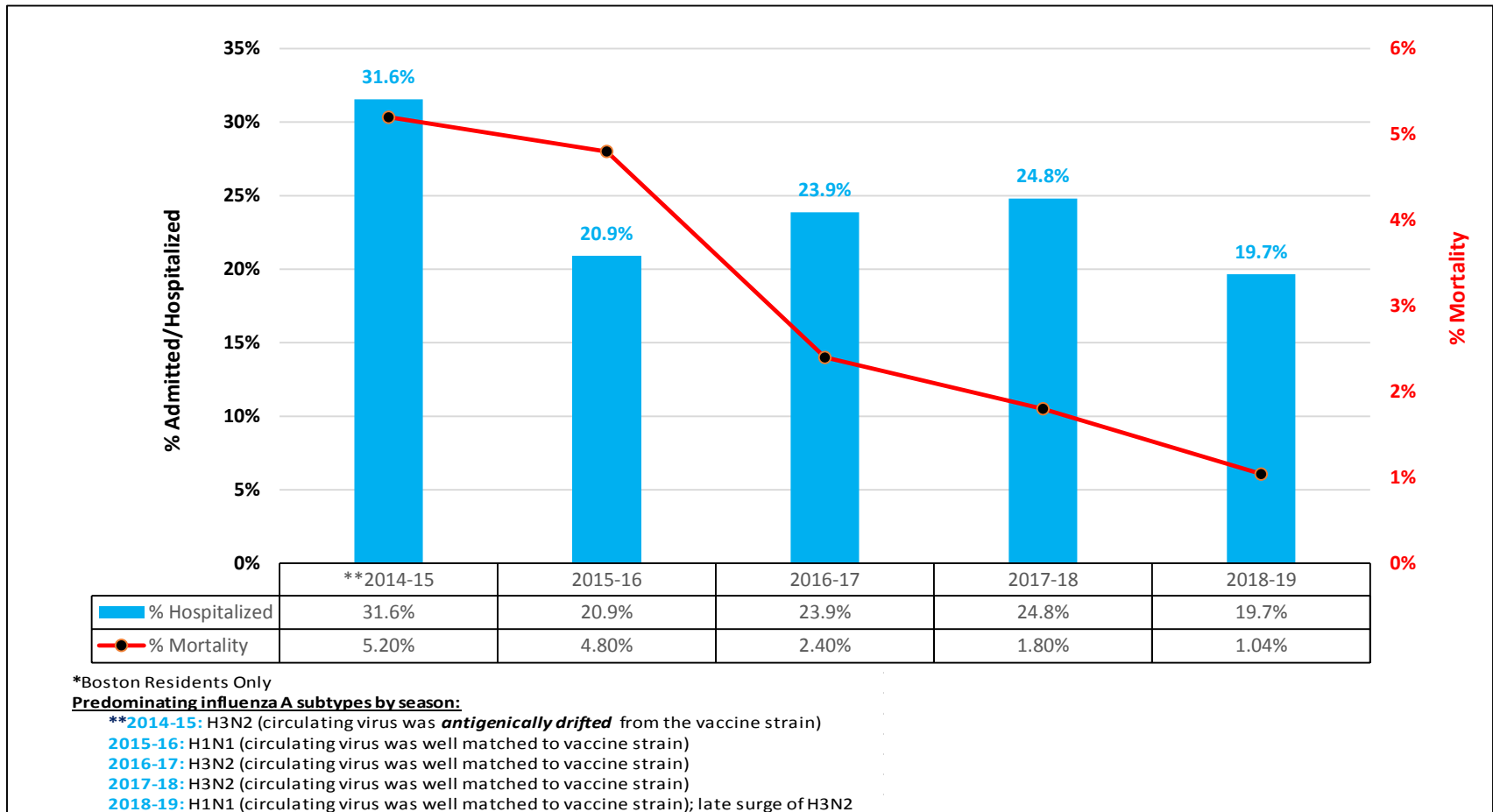
*Reported Cases: Boston Residents only.

**Other is inclusive of American Indian, Alaskan Native, Native Hawaiian, Pacific Islander, and unspecified "other" race.

Persons ≥45 years of age had higher hospitalization and mortality rates compared to younger age groups (p=0.0001). No pediatric influenza associated deaths were reported in Boston residents during the 2018-19 season. The last pediatric influenza associated death in a Boston resident occurred in 2012.

***Only pediatric influenza-related deaths are nationally reportable. Through death certificate review and voluntary reporting by healthcare facilities, BPHC informally tracks influenza-related deaths among Boston residents. The numbers of deaths reported here are likely undercounts as no formal surveillance mechanism is in place to identify all Influenza-associated deaths.

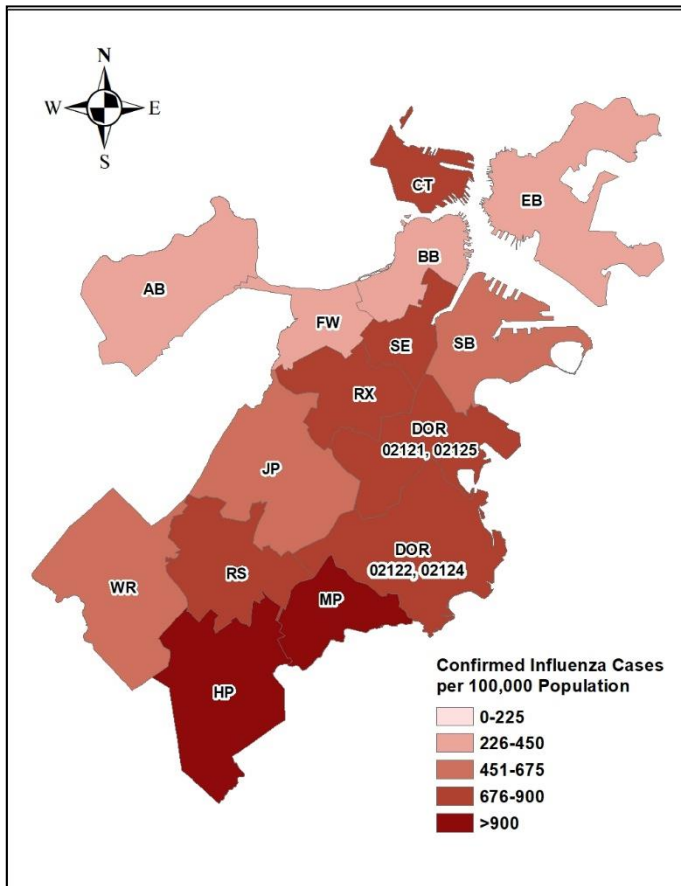
Hospitalization and Mortality Among Laboratory Confirmed Influenza Cases* Evaluated at Acute Care Hospitals, 2014-2019



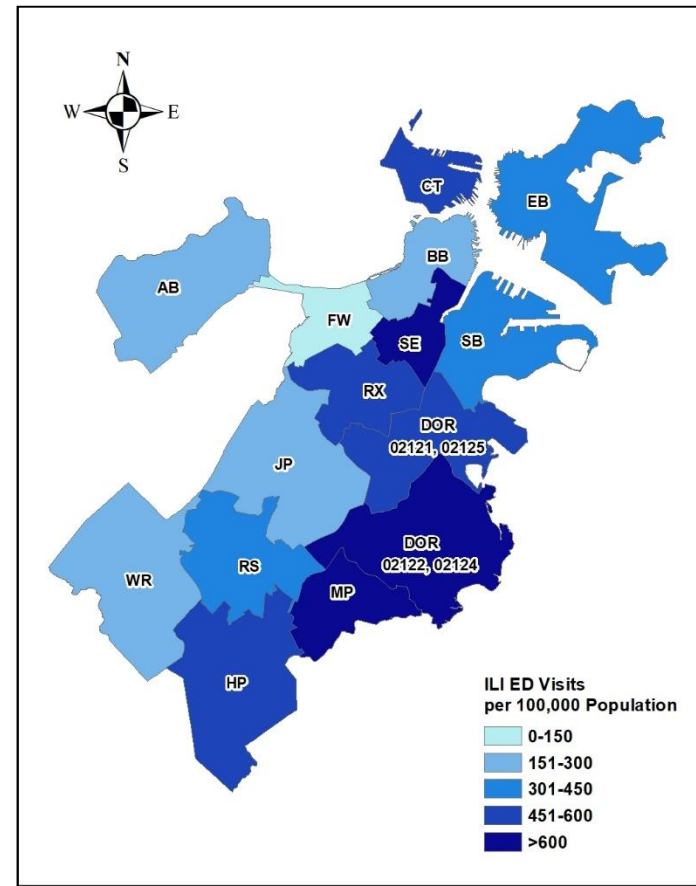
Over the past five influenza seasons, hospitalizations and mortality were highest during the 2014-2015 influenza season. The predominant circulating virus was influenza A(H3N2) with a demonstrated antigenic drift from vaccine strain. The 2018-2019 season, primarily an A(H1N1) predominant season with replacement by A(H3N2) beginning in March 2019, had the lowest hospitalization and mortality rate among cases seen at acute care hospitals over the past five seasons.

Confirmed Influenza Cases and ILI Emergency Department (ED) Visits, Boston Residents, 2018-2019

**Confirmed Influenza Cases,
per 100,000 population, 9/30/2018-5/4/2019**



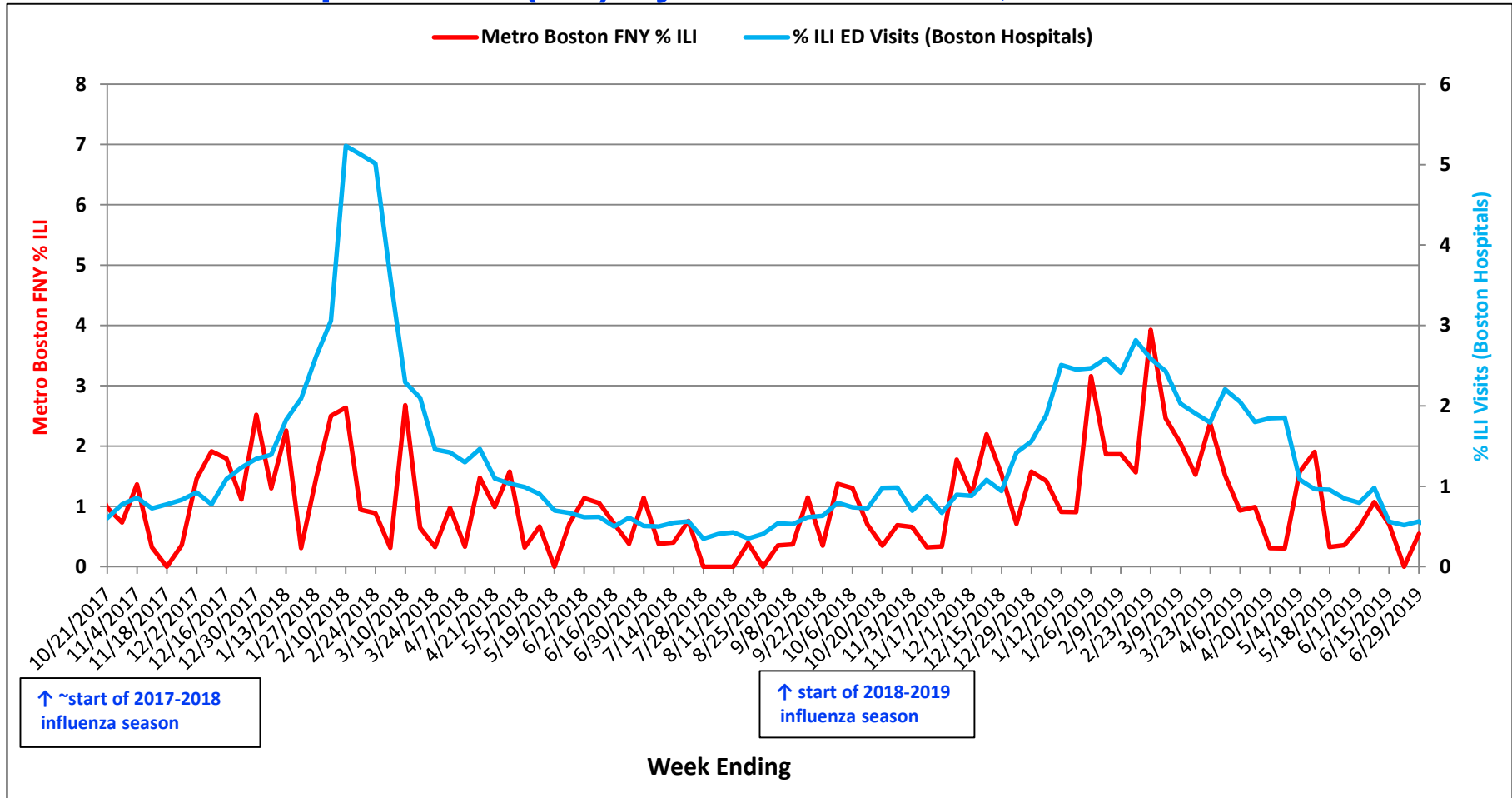
**ILI ED Visits,
per 100,000 population, 9/30/2018-5/4/2019**



Neighborhood Legend

*A/B=Allston/Brighton
BB=Back Bay
CH=Charlestown
DOR=Dorchester
EB=East Boston
FW=Fenway
HP=Hyde Park
JP=Jamaica Plain
MT=Mattapan
RS=Roslindale
RX=Roxbury
SB=South Boston
SE=South End
WR=West Roxbury*

Comparison of ILI Using Flu Near You (FNY)* and Boston Emergency Department (ED) Syndromic** Data, 2017-2019



While the 2018-2019 season matched well with Boston ED ILI data, the 2017-2018 influenza season’s extreme peak in Boston ED ILI percent was not well reflected in FNY data.

The public may participate by enrolling in FNY at: <https://flunearyou.org/>



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