



2017-2018 Influenza Season, Boston

Communicable Disease Control Division
Infectious Disease Bureau

Boston Public Health Commission

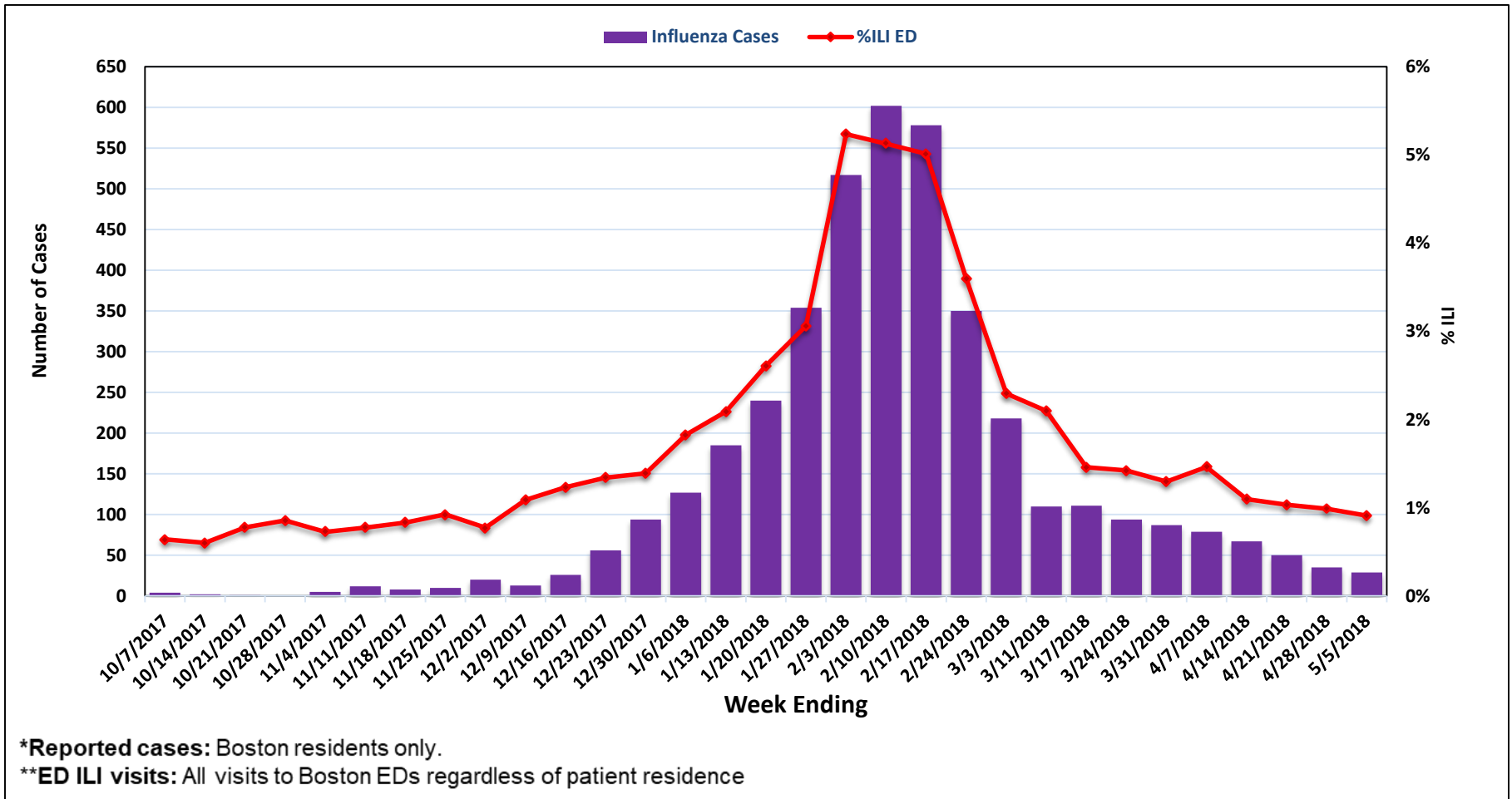
Influenza Surveillance, Boston, 2017-2018

- The **2017-2018 influenza season** refers to the period between **10/1/2017-5/5/2018**.
- Influenza cases diagnosed in Boston and confirmed by any laboratory test must be reported to the city health department (**Boston Public Health Commission, [BPHC]**).

Influenza Surveillance, Boston, 2017-2018

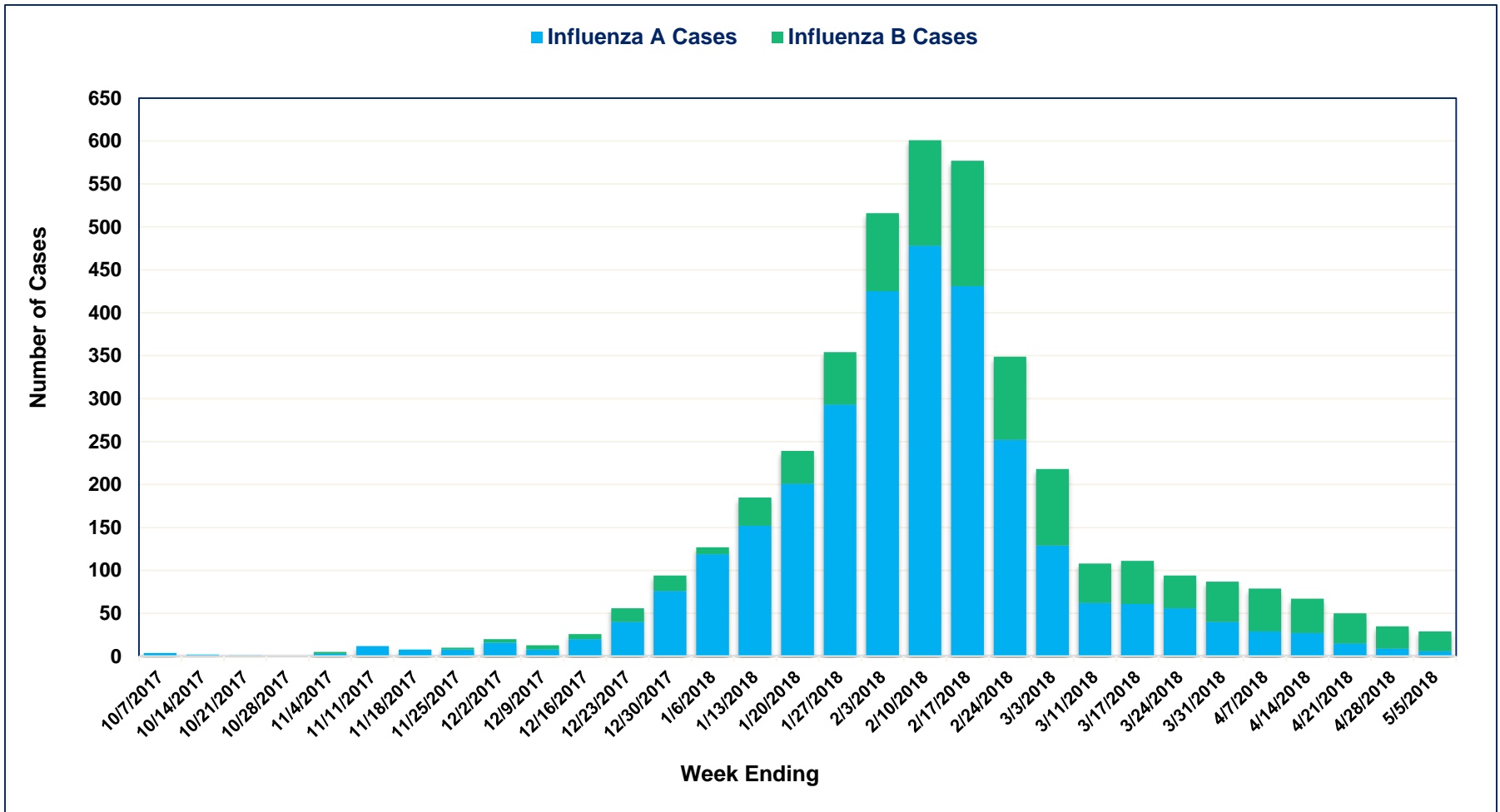
- BPHC syndromic surveillance data are used to track influenza-like illness (ILI) visits at Emergency Departments (EDs) in Boston.
- The %ILI represents the percent of all ED visits attributed to ILI based on chief complaint data.
- During the season, data are used to inform control measures and provide 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, 2017-2018



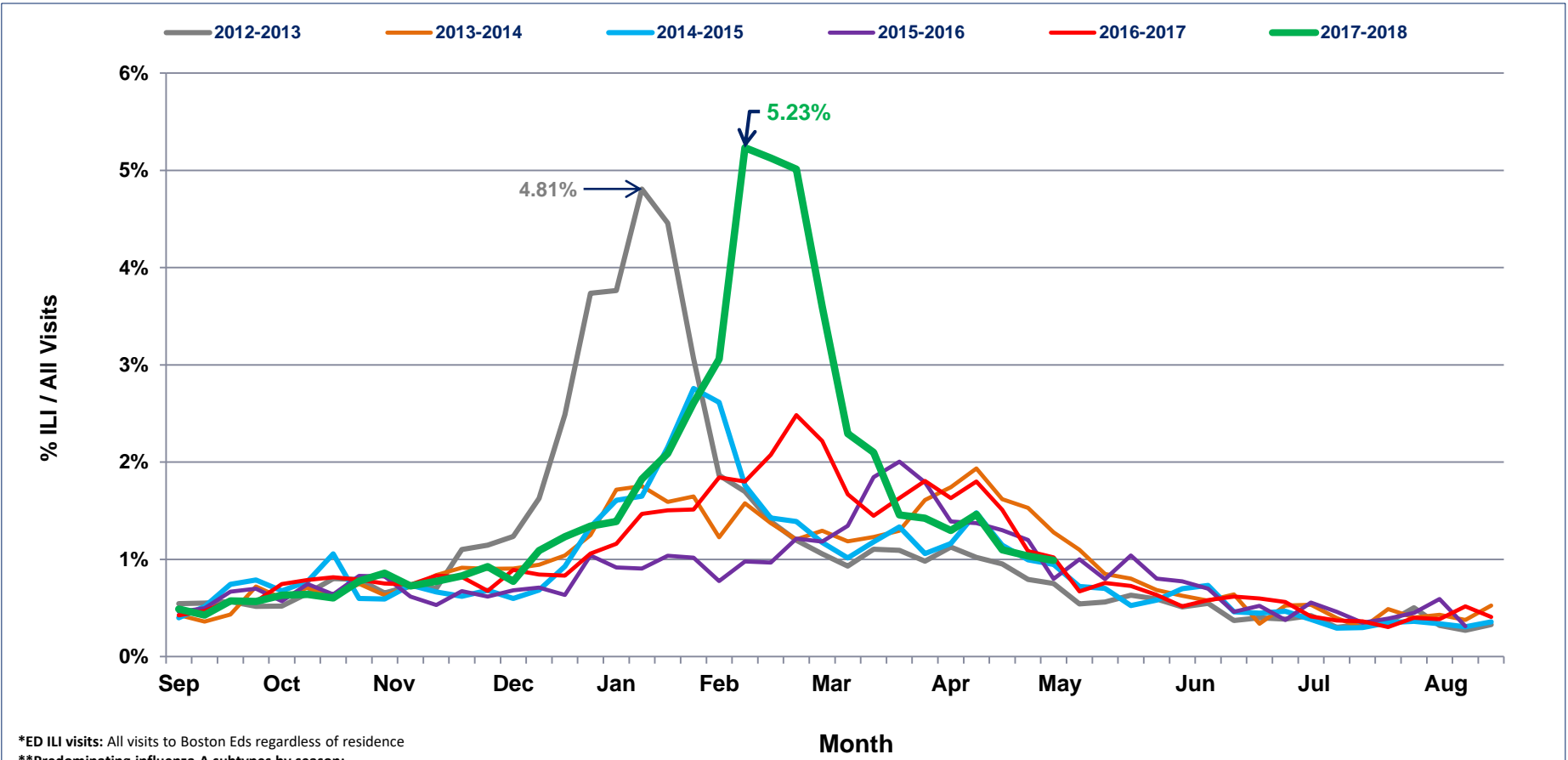
Boston ED ILI data tracks well with laboratory-confirmed reports of influenza.

Reported Influenza Cases by Influenza Type, Boston Residents, 2017-2018



The proportion of total cases due to influenza B increases as the season progresses. This does not constitute a second wave of influenza, but rather is consistent with what typically occurs during most influenza seasons.

Percent of Emergency Department Visits* for Influenza-like Illness (ILI), Boston, 2012-2018**



*ED ILI visits: All visits to Boston Eds regardless of residence

**Predominating influenza A subtypes by season:

- 2012-13: H3N2 (circulating virus was well matched to vaccine strain)
- 2013-14: H1N1 (circulating virus was well matched to vaccine strain)
- 2014-15: H3N2 (circulating virus demonstrated antigenic drift from vaccine strain)
- 2015-16: H1N1 (circulating virus was well matched to vaccine strain)
- 2016-17: H3N2 (circulating virus was well matched to vaccine strain)
- 2017-18: H3N2 (circulating virus was well matched to vaccine strain)

While the 2017-2018 influenza season had a high percentage of ED ILI visits over a longer period than most prior seasons, the 2012-2013 season also had a relatively long period of increased ILI activity. During the first wave of the 2009 influenza A(H1N1) pandemic (*not shown here*), Boston ED ILI peaked at 7.1%.



Characteristics of Reported Influenza Cases, Boston Residents, 2017-2018

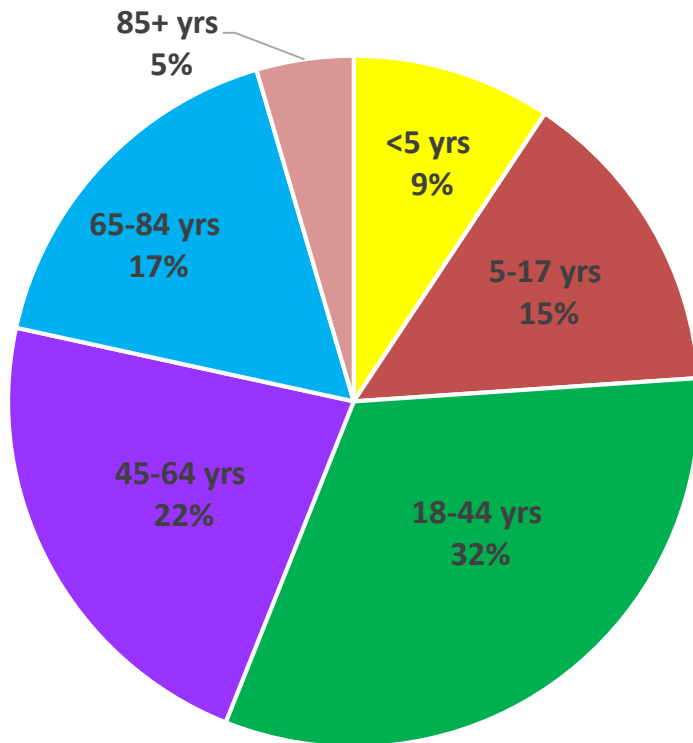
Total Cases	N=4138
	N (%)
Hospitalized	772 (19%)
Died (among <u>total</u> cases)	19 (0.5%)
Died (among <u>hospitalized</u> cases)	14 (1.8%)
	N (%)
Influenza A *	3022 (73%)
Influenza B *	1115 (27%)
	N (%)
Male	1778 (43%)
Female	2360 (57%)

*Excludes one case who tested positive with a rapid diagnostic test that does not differentiate between flu types

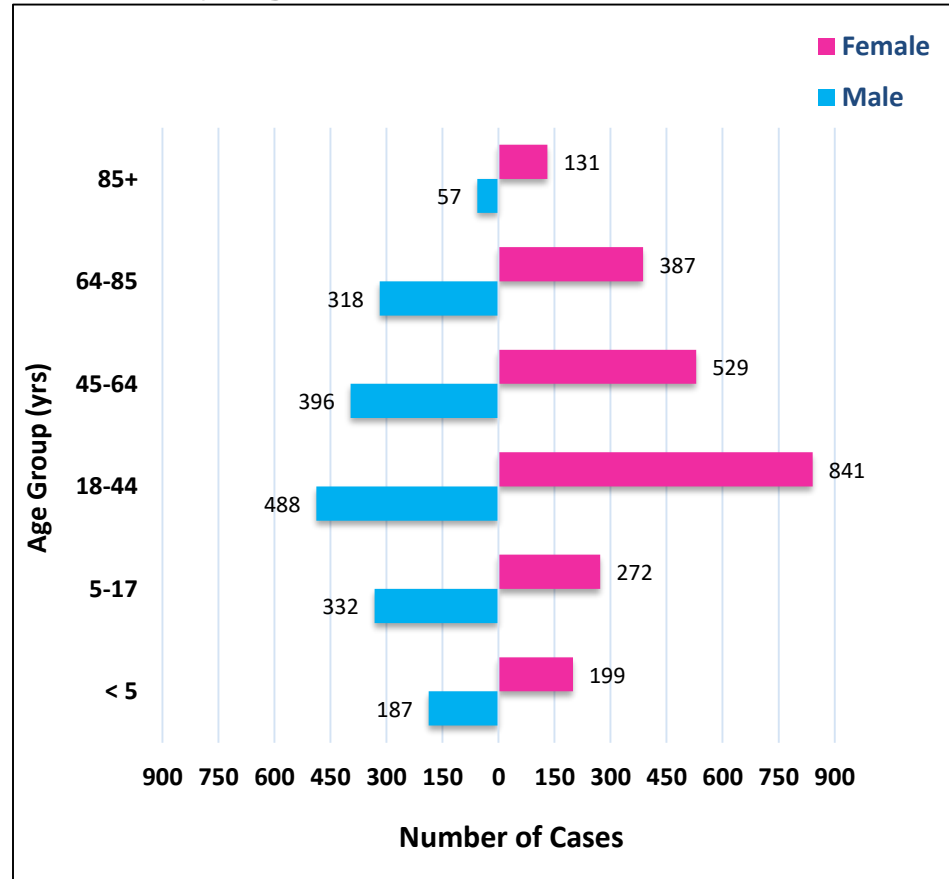
Persons hospitalized with influenza had the highest mortality rate.

Reported Influenza Cases, Boston Residents, 2017-2018

Distribution of Cases, by Age Group

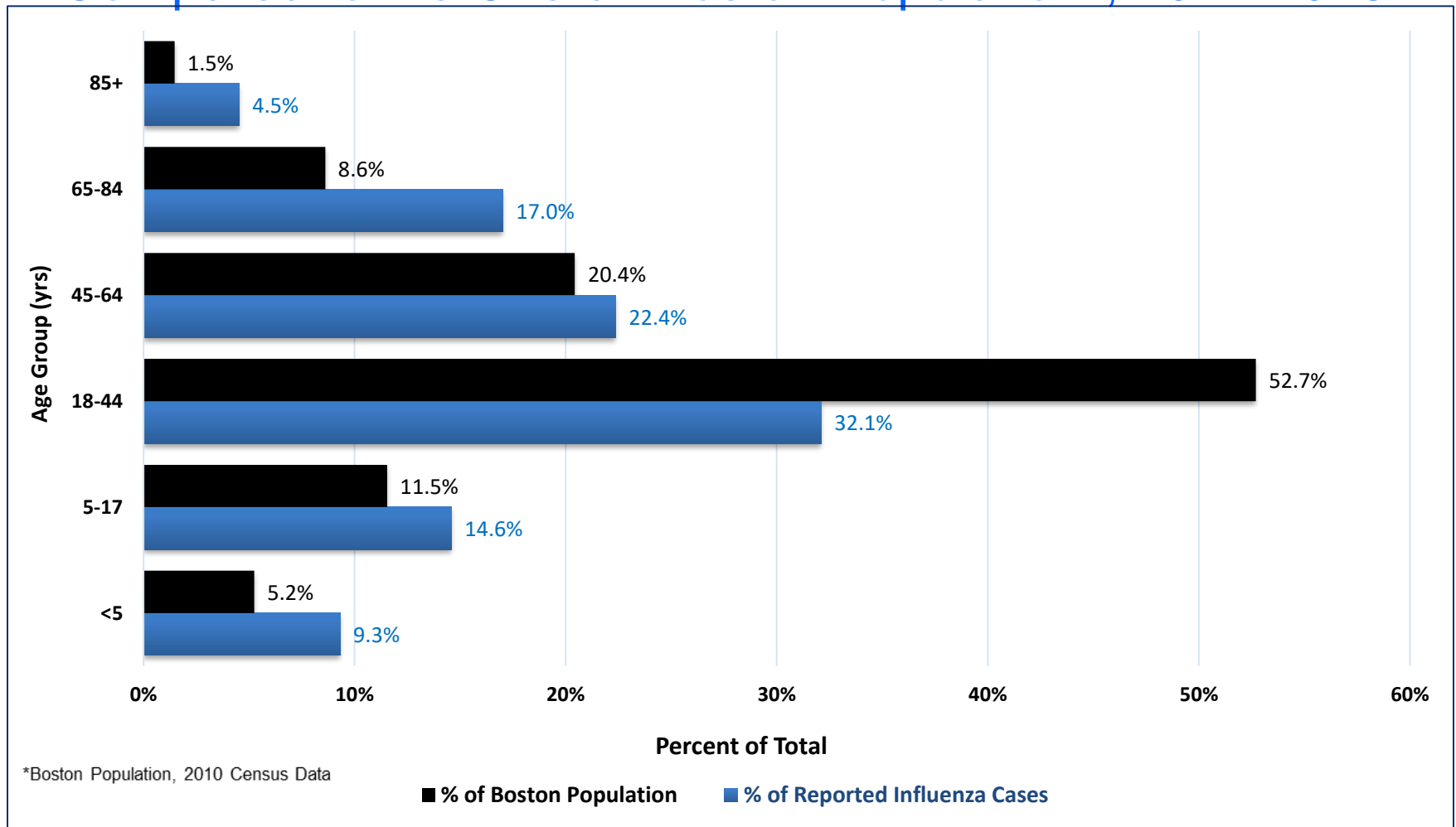


Distribution of Cases, by Age Group and Gender



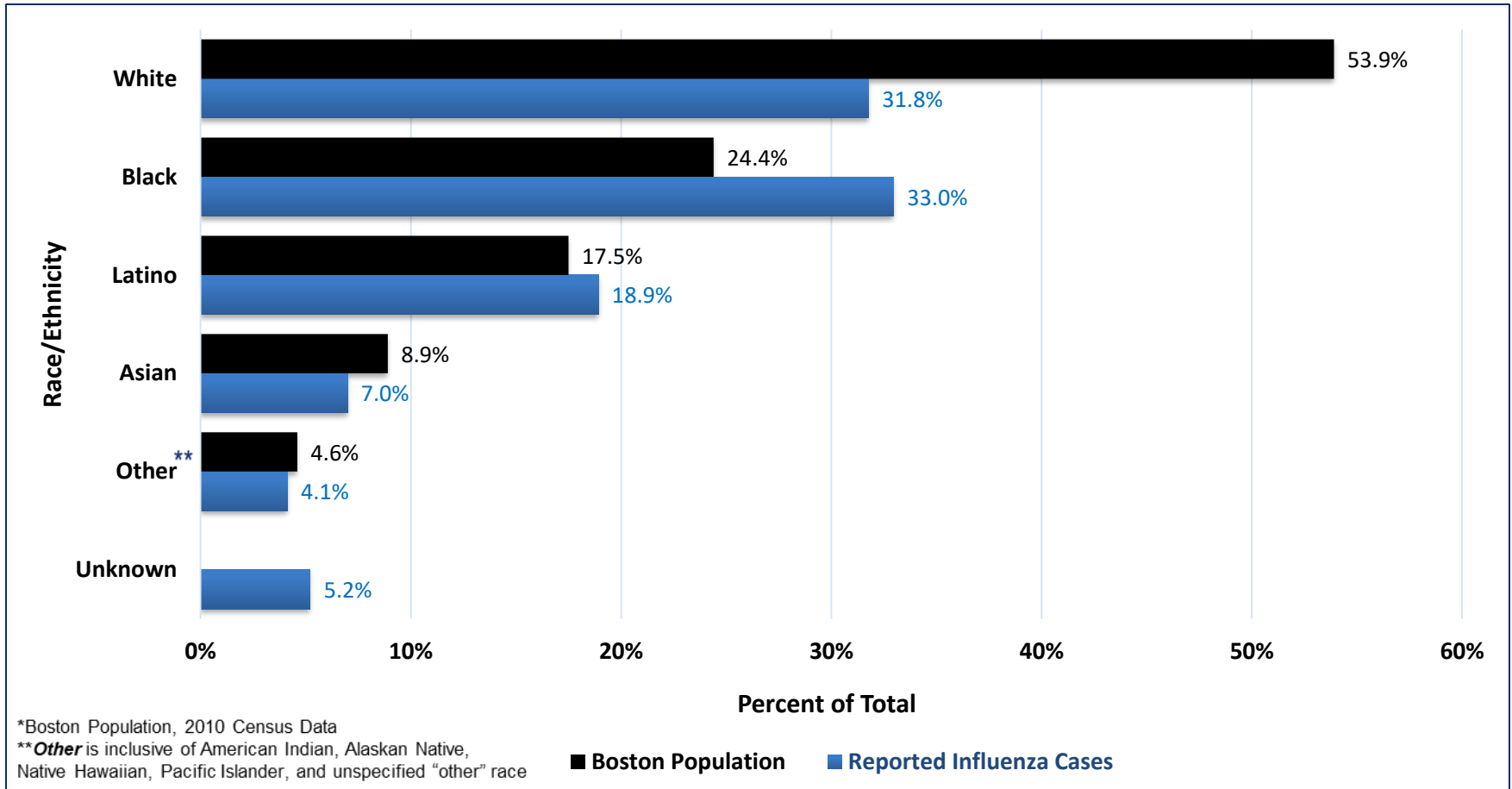
Persons 18 to 44 years of age accounted for the highest proportion of influenza cases.

Reported Influenza Cases by Age in Boston Residents, Compared to the Overall Boston Population*, 2017-2018



Influenza disproportionately impacts extremes of age, specifically children less than 5 years of age, and persons 65 years of age and older.

Reported Influenza Cases by Race/Ethnicity in Boston Residents, Compared to the Overall Boston Population*, 2017-2018



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

Influenza A vs. Influenza B Cases by Age Group, Boston Residents, 2017-2018

	Age Group (years)						
	<5	5-17	18-44	45-64	65-84	85+	Total
Influenza A	82%	72%	74%	71%	72%	66%	73%
Influenza B	18%	28%	26%	29%	28%	34%	27%

The overall distribution of influenza types by patient age was statistically significant ($p=0.0005$). Children less than 5 years of age were more likely to be infected by influenza A compared with other age groups ($p=0.0001$). Persons greater than or equal to 85 years of age had a higher proportion of influenza B than other age groups ($p=0.0249$).

Characteristics of Reported Influenza Cases*, by Age Range, Boston, 2017-2018

		Age Group (years)						Overall
		<5	5-17	18-44	45-64	65-84	85+	
	# Cases	N=386	N=604	N=1329	N=926	N=705	N=188	N=4138
Gender	Male (%)	48%	55%	37%	43%	45%	30%	43%
	Female (%)	52%	45%	63%	57%	55%	70%	57%
Race	White (%)	25%	16%	34%	33%	38%	55%	32%
	Black (%)	34%	37%	29%	39%	33%	20%	33%
	Latino (%)	16%	25%	20%	19%	17%	11%	19%
	Asian (%)	10%	10%	6%	4%	8%	10%	7%
	Other** (%)	6%	6%	6%	2%	2%	2%	4%
Hospitalized		8%	4%	7%	21%	42%	70%	19%
Died		(N=0) 0%	(N=0) 0%	(N=0) 0%	(N=4) 0.43%	(N=7) 1.00%	(N=8) 4.28%	(N=19) 0.46%

*Reported Cases: Boston Residents only.

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

Persons greater than or equal to 45 years of age had higher hospitalization and mortality rates. No pediatric influenza associated deaths were reported in Boston residents. The last pediatric influenza associated death in a Boston resident occurred in 2012.

Characteristics of Reported Influenza Cases* >64 Years of Age, by Age Range, Boston, 2017-2018

		Case Demographics	Overall Boston Population	Case Demographics	Overall Boston Population
		65-84 yrs	65-84 yrs	85+ yrs	85+ yrs
		N=705	N/A	N=188	N/A
Gender	Male	45%	42%	30%	30%
	Female	55%	58%	70%	70%
Race**	White	38%	55%	55%	68%
	Black	33%	24%	20%	17%
	Latino	17%	9%	11%	5%
	Asian	8%	9%	10%	7%
	Other***	2%	3%	2%	2%
Hospitalized	N/A	N=294 42%	N/A	N=132 70%	N/A
Died	N/A	(N=7) 1.00%	N/A	(N=8) 4.28%	N/A

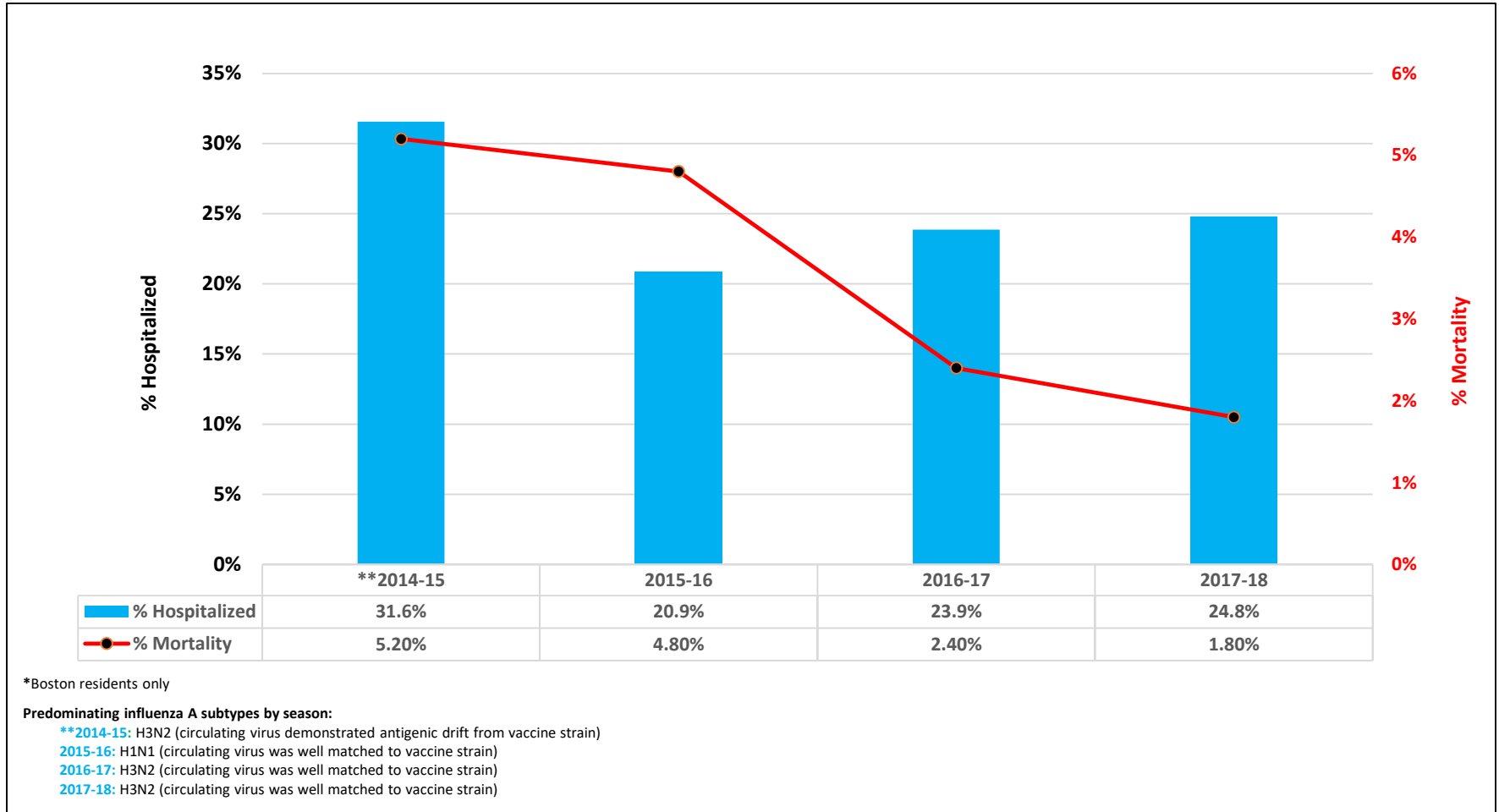
*Reported cases: Boston Residents only.

**Race totals do not total 100% as those with unknown race are not shown

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

Although racial and ethnic differences are noted in the 65 to 84 year old age group, disparities among Black and Latino residents persist in persons 85 years of age and greater. Persons 85 years of age and greater were more frequently hospitalized with increased mortality compared with persons between the ages of 65 and 84 years.

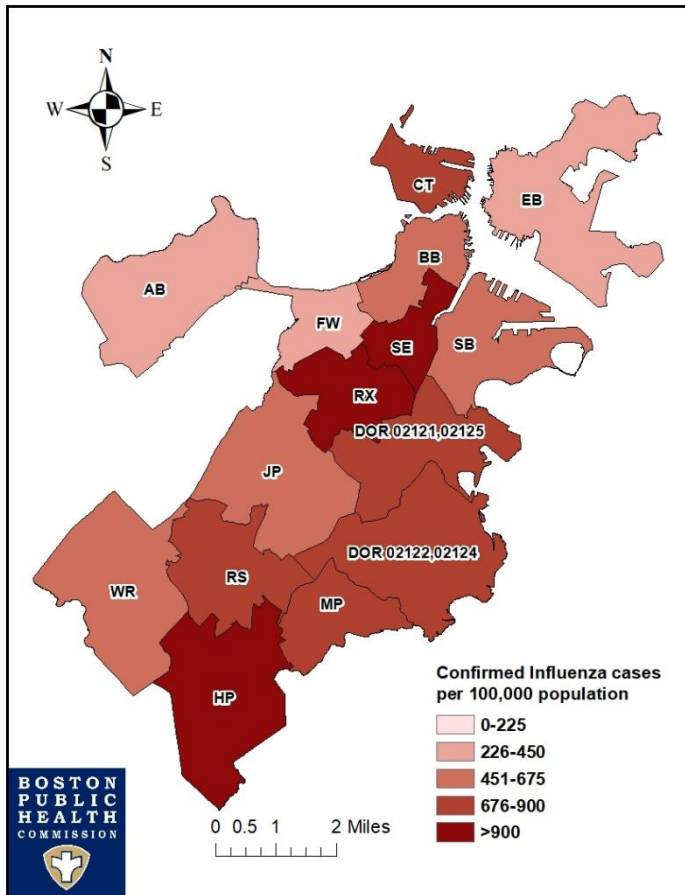
Hospitalization and Mortality Among Laboratory Confirmed Influenza Cases* Evaluated at Acute Care Hospitals, 2014-2018



Over the past four influenza seasons, the 2017-2018 influenza season had the highest percent of ILI visits. However, hospitalizations and mortality were highest during the 2014-2015 influenza season, which was also an influenza A(H3N2) predominant season, though characterized by antigenic drift from vaccine strain.

Confirmed Influenza Cases and ILI Emergency Department (ED) Visits in Boston Residents, 2017-2018

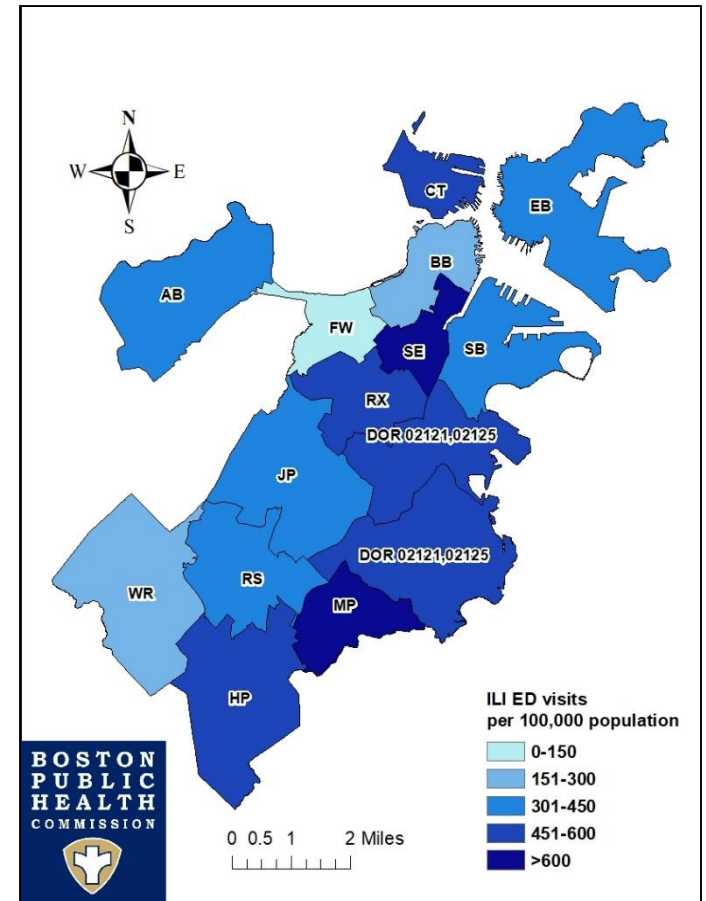
**Confirmed Influenza Cases,
per 100,000 population, 10/1/2017-5/5/2018**



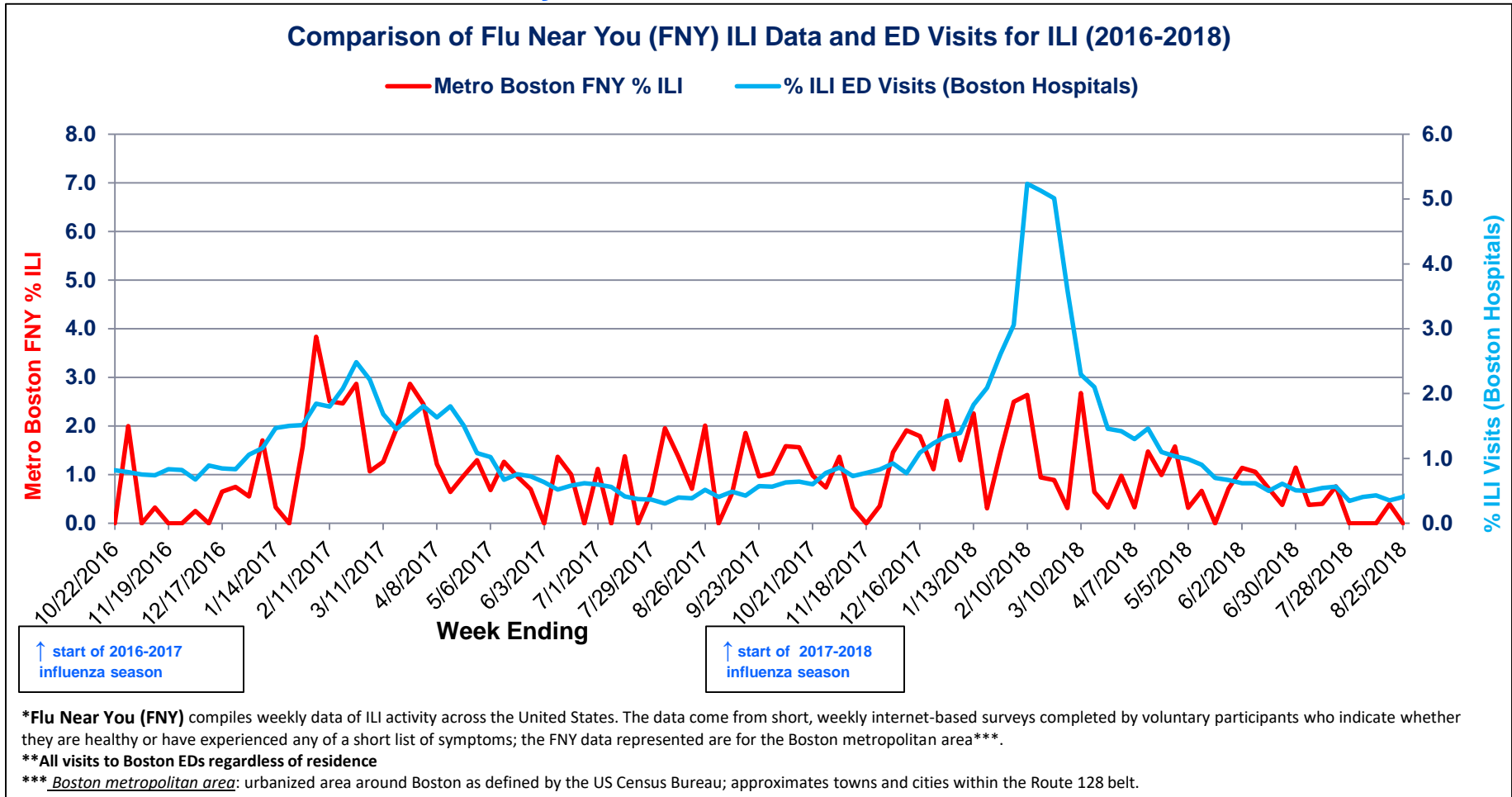
**ILI ED Visits,
per 100,000 population, 10/1/2017-5/5/2018**

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, 2016-2018



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

Crowd source data (FNY) overall tracks well with ILI. However, the 2017-2018 influenza season's extreme peak in Boston ED ILI percent was not well reflected in FNY data. Factors such as aging populations and public perceptions of severity likely impacted reporting to FNY.



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