CHART
Center for Health Analytics, Research & Transformation at NJHA

BULLETIN

What Does a Flu Season Look Like in the Time of COVID-19?

Some Clues About the Flu

Before the COVID-19 vaccine is widely distributed to a majority of the general population, these next few winter months will present some major hurdles when it comes to combating the virus. As individuals spend more time indoors and gather for the holiday season — even if in smaller numbers — seasonal influenza viruses will begin to circulate more rapidly within the general population.

While the full severity of the 2020-2021 flu season cannot be determined yet, NJHA's Center for Health Analytics, Research and Transformation (CHART) looks at how the virulence and infectiousness of flu viruses have differed across years. In doing so, this paper demonstrates that the difference between a "mild" versus "bad" flu season could mean thousands of additional infections, and even deaths.

CHART also examines how the peak and spread of each flu season varies; the disproportional toll that the 2019-2020 flu season had on children and younger adults; why those with asthma are at an increased risk of serve health outcomes from influenza; and the prevalence of the different types of influenza viruses throughout the last few seasons. As researchers continue to track influenza cases this flu season, this paper helps demonstrate how a variety of factors can impact the scale and spread of influenza.

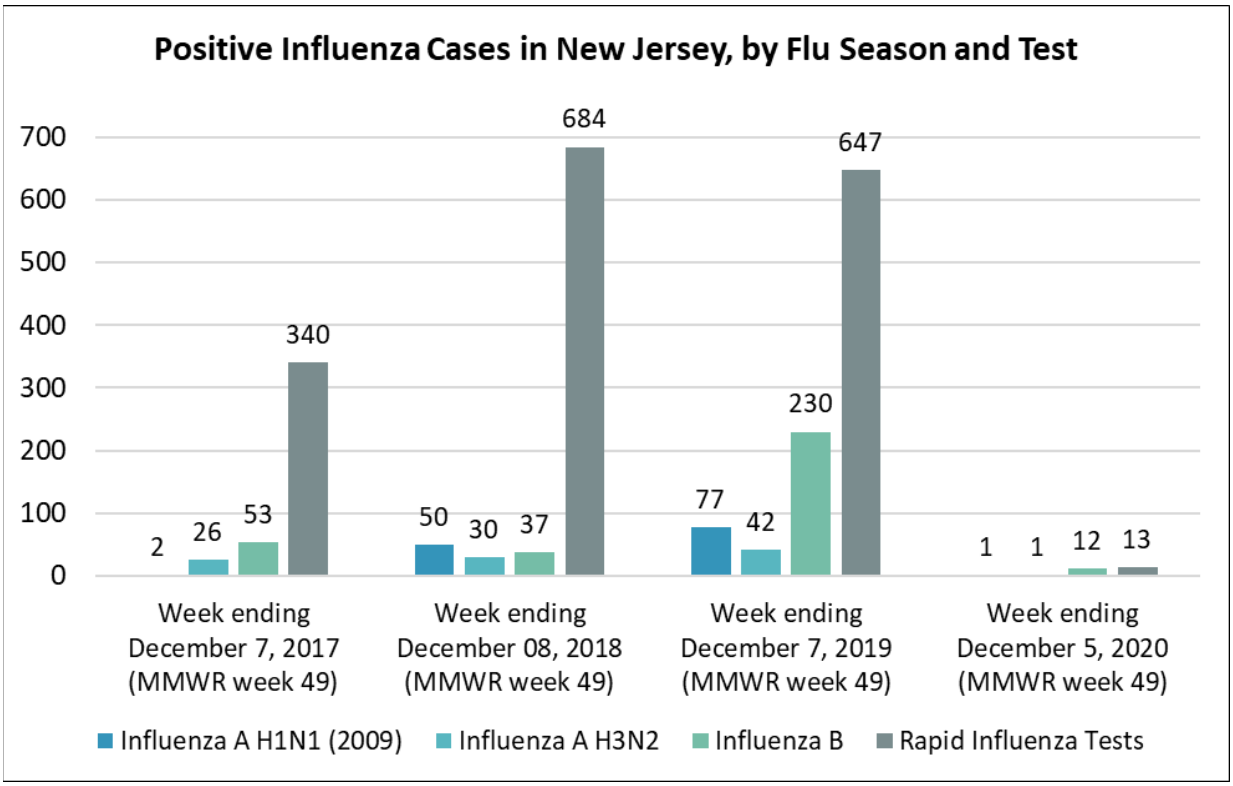
The 2020-2021 Flu Season Thus Far

The start of the 2020-2021 flu season, in both New Jersey and the United States, has been comparably more mild than previous flu seasons. This is unsurprising given social distancing measures, the use of masks and other face covings, the limiting of indoor gatherings, and improved sanitation practices such as hand washing.

According to the New Jersey Department of Health (NJDOH) weekly influenza reports, there were already more than 900 confirmed cases of influenza in New Jersey around the first full week of December 2019, and approximately 800 in early December of 2018. As of Dec. 5, 2020, — the latest data available at the time of this paper — there were 27 confirmed cases.[1]

In a December 2020 New York Times interview, Dr. Daniel B. Jernigan, director of the Centers for Disease Control and Prevention's (CDC) influenza division, noted that flu activity was low throughout the United States for this time of year.[2] That observation is borne out by NJDOH data. As of Dec. 5, 2020, all five regions had "low" flu activity.[2] However, prior years show that two out of five classified regions in New Jersey had "high" flu activity, while the three remaining regions had "moderate" activity on Dec. 7, 2017. During the same week of 2018, four regions had "moderate" activity, and in 2019 all five regions had "moderate" activity.[2]

Despite this year's influenza trends, the below data demonstrates that the worst of the flu season may be yet to come, and despite scientists' best efforts to model and identify new strains of influenza viruses, influenza's impact can vary substantially season to season.



SOURCE: *NJDOH Influenza-like Illness Weekly Reports*

Length, Peak and Severity of Seasons

CHART's previous paper noted the stark severity of the 2017-2018 flu season in the United States. Compared to the 2018-2019 season, there were approximately 320,000 more influenza-related hospitalizations and 27,000 more influenza-related deaths across the United States during the 2017-2018 season.[3]

Despite an estimated 2.5 million additional flu illnesses during the 2019-2020 season, there were fewer influenza-related hospitalizations and deaths across the United States compared to the 2018-2019 season.[3]

2017-2018 Flu Season

Illnesses	Hospitalizations	Deaths
• 45 million	• 810,000	• 61,000

2018-2019 Flu Season

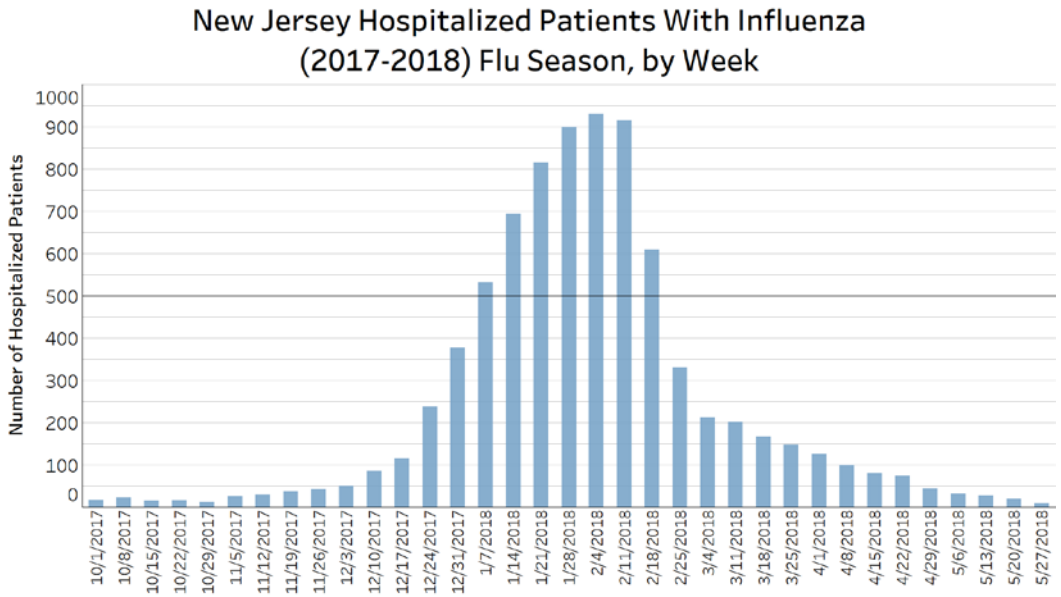
Illnesses	Hospitalizations	Deaths
• 35.5 million	• 490,000	• 34,000

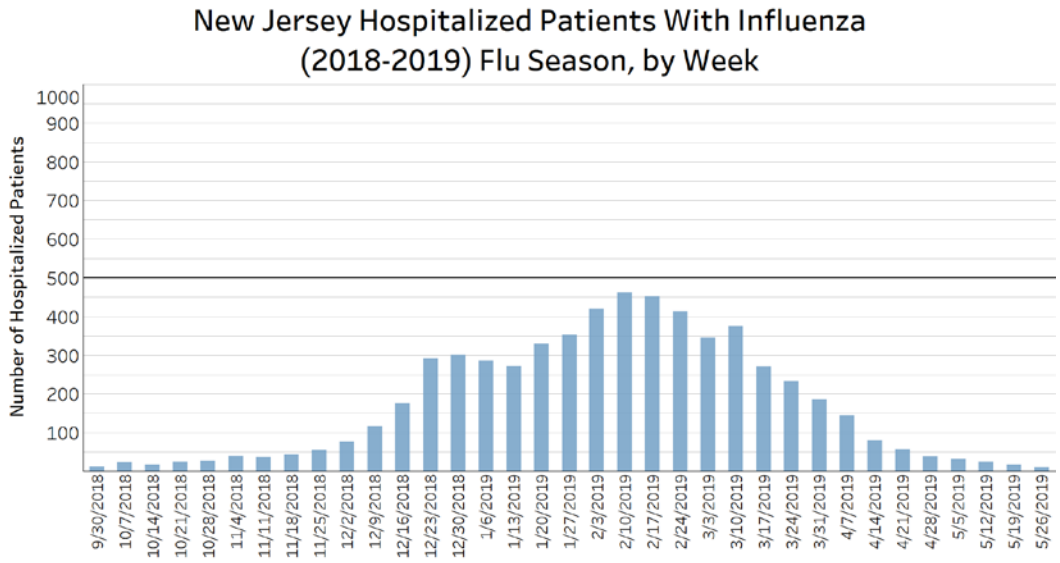
2019-2020 Flu Season

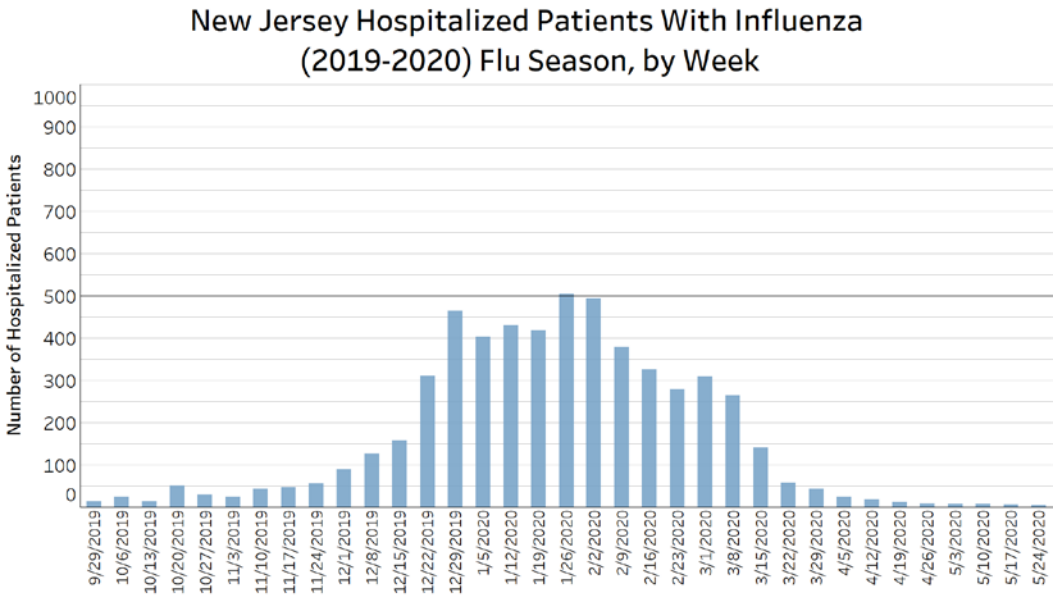
Illnesses	Hospitalizations	Deaths
• 38 million	• 405,000	• 22,000

According to the CDC, flu season typically begins around October and can continue into May the following year.[4] While a majority of flu infection typically occurs between December through February, trends in infection rates can vary substantially within the six months from October to May.

When looking at the weekly number of hospitalized patients with influenza in New Jersey, trends clearly differ by flu season. The 2017-2018 season was undoubtedly more severe compared to the two subsequent seasons. While influenza hospitalizations in New Jersey peaked around late January to mid-February during the last three seasons, hospitalizations were relatively high toward the last two weeks of December 2019. The low number of hospitalized patients with influenza in late March and throughout April and May of 2020 is likely due to COVID-19. While the CDC partially attributes national declines in influenza activity to preventative measures against COVID-19[3], the stark decrease in influenza hospitalizations from March 8, 2020, to March 22, 2020, may also indicate a public avoidance of hospitals.







SOURCE: *New Jersey Hospital Discharge Data Collection System*

Age

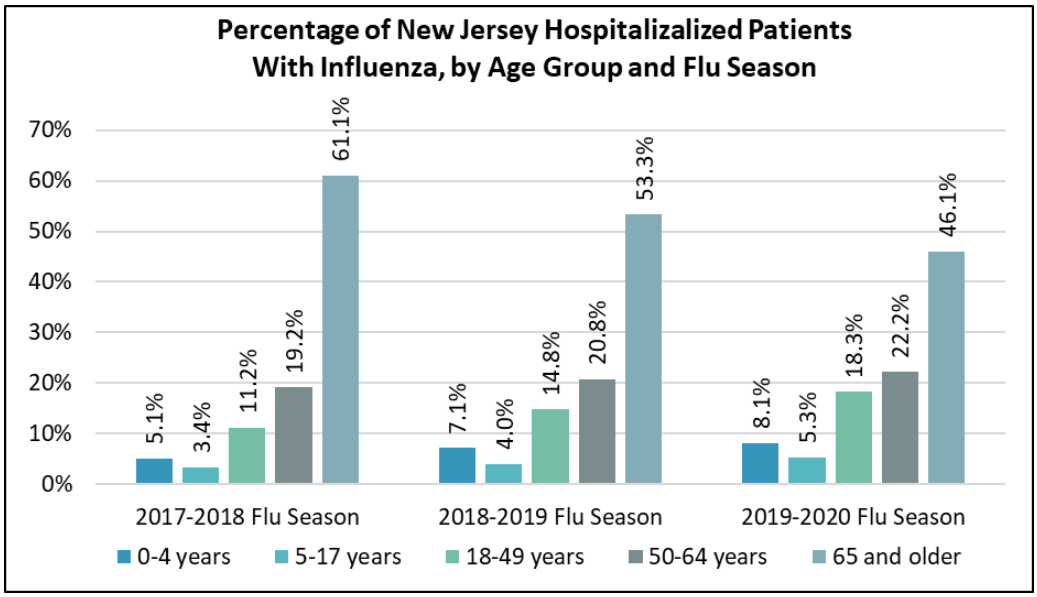
According to the CDC, the 2019-2020 season – while moderately severe – had a greater impact on younger age groups in terms of both overall infection rates and hospitalizations. During the 2017-2018 season, 0- to 4-year-olds accounted for roughly 3.2 percent of flu-related hospitalizations compared to 7.4 percent during the 2019-2020 season.[3] With the exception of the oldest age group, all other age groups account for a larger share of hospitalizations during the 2019-2020 season compared to the prior two seasons.

New Jersey hospital discharge data showed similar trends. When comparing the 2017-2018 and 2019-2020 seasons, the percentage of influenza-hospitalized patients 0-4 years old increased by approximately 60 percent (from 5.1 to 8.1 percent), while the percentage of those 65 years and older decreased by 25 percent (from 61.1 to 43.7 percent).

Percentage of United States Flu Hospitalizations, by Age Group and Flu Season

Age Group	2017-2018	2018-2019	2019-2020
0-4 years	3.2%	5.2%	7.4%
5-17 years	2.5%	4.3%	5.6%
18-49 years	10.0%	13.6%	21.3%
50-64 years	17.4%	20.0%	22.1%
65 and older	66.9%	57.0%	43.7%

SOURCE: *CDC Past Seasons Estimated Influenza Disease Burden*



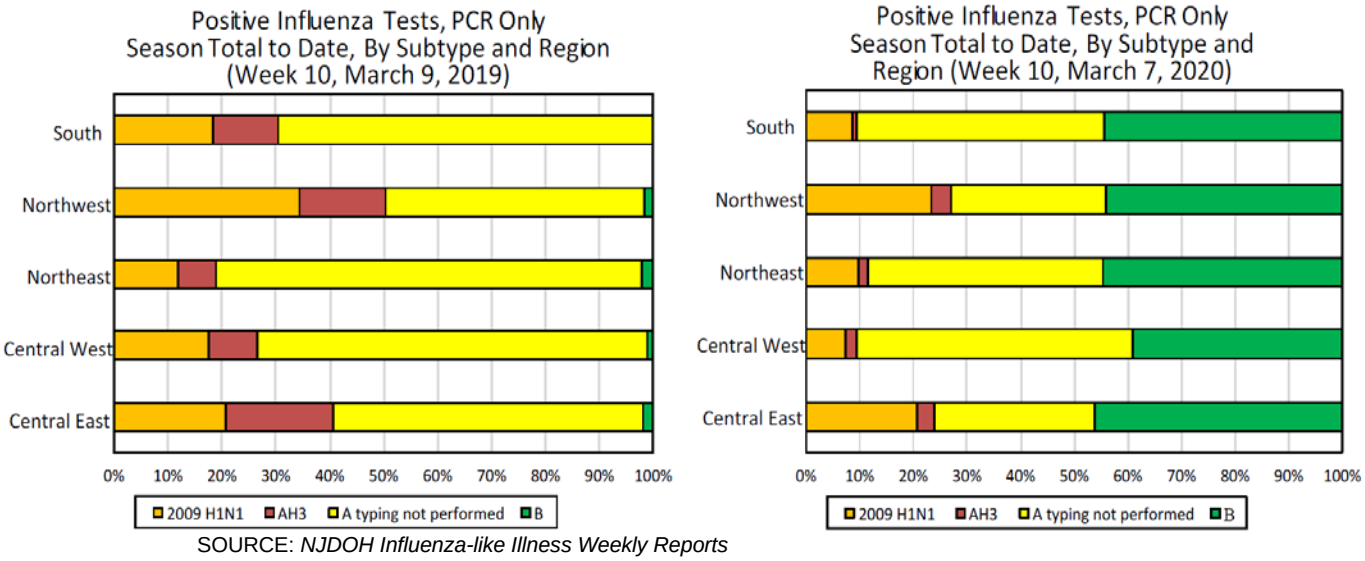
SOURCE: *New Jersey Hospital Discharge Data Collection System*

Types and Subtypes

While there are four types of influenza viruses, types A and B are the two responsible for the seasonal flu epidemics. Since influenza A viruses are also found in other mammals — while type B is common only among humans — type A viruses are the ones responsible for flu pandemics. Type A viruses are further categorized into two subtypes (H1N1 and H3N3).[5]

Until February 2018, the most common viruses seen during the 2017-2018 flu season were influenza A(H3N3) viruses, after which influenza B infections became more common.[5] During the 2018-2019 season, influenza A(H1N1) and influenza A(H3N3) were the predominate viruses circulating throughout the United States. Type B viruses were rare that season. As for the 2019-2020 season, the majority of infections were from influenza A(H1N1) and influenza B viruses.[5]

When comparing the prevalence of the different types/subtypes of influenza viruses throughout New Jersey during early March of 2019 and 2020 — as the NJDOH has not released data past March 7, 2020 — New Jersey's data supports the national trends mentioned above. By early March 2019, the percentage of Influenza B positive tests was marginal, even negligible, while type B viruses made up a much more substantial proportion of cases in early March 2020.[1]

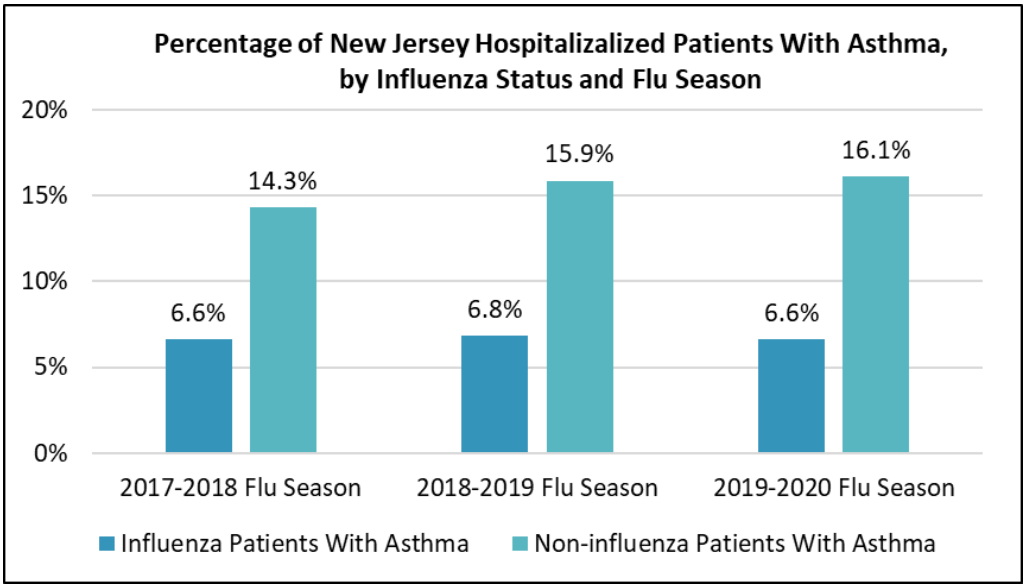


SOURCE: *NJDOH Influenza-like Illness Weekly Reports*

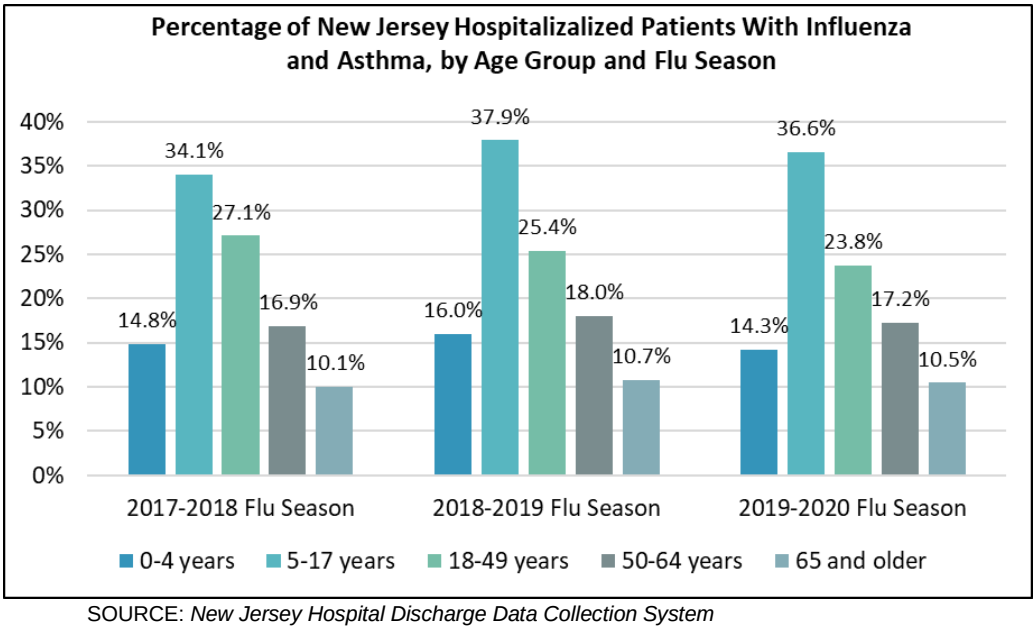
Who is Most Impacted?

It is well established that elderly adults and young children are known to be at an increased risk for severe illness from influenza. Despite this — according the CDC — those with asthma, heart disease, and chronic kidney disease are also at a higher risk for negative health outcomes.[6] While the latter two chronic conditions are more prevalent among older adults, per the CDC, "asthma is the most common medical condition among children hospitalized with flu and one of the more common medical conditions among hospitalized adults."[7]

During each of the three flu seasons between 2017 and 2020, asthma was two times more common among those with influenza compared to those without an influenza diagnosis. Despite this, a closer look at the prevalence of asthma by each age group shows the disproportionate impact of asthma on children and younger adults. Among those hospitalized patients with influenza, asthma was significantly more prevalent among 5- to 17-year-olds.



SOURCE: *New Jersey Hospital Discharge Data Collection System*



SOURCE: *New Jersey Hospital Discharge Data Collection System*

Per the CDC, racial/ethnic minority groups are also at an increased risk for complications from influenza.[6] After adjusting for age, the influenza-related hospitalization rate for Non-Hispanic Black individuals – from 2009 through 2019 – was 68.1 per 100,000 population.[8] Hispanic or Latino individuals had an age-adjusted rate of 44.0, while the rate for Non-Hispanic White persons was 38.3. Influenza may therefore further exacerbate the racial/ethnic disparities in COVID-19 infection and mortality rates.

Final Thoughts

A devastating "twindemic" does not appear to have materialized in New Jersey thus far, and the data on statewide flu cases seem promising and demonstrate the effect that public health measures can have against the spread of communicable diseases.

Despite this, New Jersey's healthcare system continues to remain vigilant and prepare for the worst-case scenarios. As the data above demonstrates, flu seasons can vary considerably. While current public health measures against COVID-19 will likely continue to help dampen the spread of the flu, influenza viruses are seasonal and will be circulating in the general population significantly more during the winter months than in the spring and summer. Furthermore, any effort to mitigate additional pressure on healthcare systems should be taken. Receiving this year's flu vaccine is therefore more important now than ever.

Visit www.njha.com/chart/ for additional resources.

Footnotes

1. New Jersey Department of Health: Communicable Disease Service. (n.d.). *Influenza-like Illness Weekly Reports*. Retrieved December 18, 2020, from https://www.nj.gov/health/cd/statistics/flu-stats/
2. McNeil, D. G. (2020, December 13). *Fears of a 'Twindemic' Recede as Flu Lies Low*. Retrieved from https://www.nytimes.com/2020/12/13/health/flu-coronavirus-twindemic.html
3. Centers for Disease Control and Prevention. (2020, October 01). *Past Seasons Estimated Influenza Disease Burden*. Retrieved from https://www.cdc.gov/flu/about/burden/past-seasons.html
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