

Neurological Manifestations Associated with Post-COVID-19 Test Positivity in Pediatrics and Adults Following Hospitalization in the United States

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Background

Individuals with Coronavirus Disease 2019 (COVID-19) test positivity presented various clinical signs/symptoms from mild to severe physical, psycho, and mental conditions.

The main neurological sign/symptom seeking emergency medical attention was new confusion. Moreover, the neurological disorder is associated with post-COVID-19 test positivity in pediatrics (n=1981, 15.3%) and adults (n=2809, 21.7%) based on hospital admissions (n=6,169,122) from 300 hospitals in 13 states in the United States from August 2020 to May 2023, Centers for Disease Control and Prevention (CDC) COVIDNet.

REGIONS: California, Texas, Florida, and New York had the highest hospitalization record in Jan 2021 and 2022.

NEUROLOGICAL SIGNS/SYMPTOMS: predominantly headaches, seizures, peripheral neuropathy, stroke, demyelinating disorder, and encephalopathy.

GENDER DIFFERENCES: The females were significantly more likely to report neurological symptoms, including anxiety, fatigue, depression, headache, myalgia, and vertigo, compared to males as long-lasting symptoms like pediatrics.

Objectives

To detect the pathogenetic mechanisms of COVID-19 neurological manifestations associated with the personalized predisposition of positive COVID-19 adults and pediatrics in the USA.

Methods

SAMPLE: 6,169,122 hospitalized individuals were presented from the CDC COVID-NET data from August 2020 to May 2023.

DATA COLLECTION: Demographics included: age, gender, race (American Indian/Alaska Native, Asian/Pacific Islander, Black, Hispanic, and White), vaccination, hospitalizations, death, and emergency visits. post-COVID condition, pregnancy, seroprevalence, social impact, & health equity.

COVID-19 GENOME VARIANTS: variant proportions, variants & genomic surveillance, traveler-based genomic surveillance.

BIOSAMPLE: COVID-19 virus saliva specimen collection was to aim for genomic surveillance and types of variant proportion.

TEST: The polymerase chain reaction and antigen tests.

Figure 1: New COVID-19 Hospital Admissions 2020-23

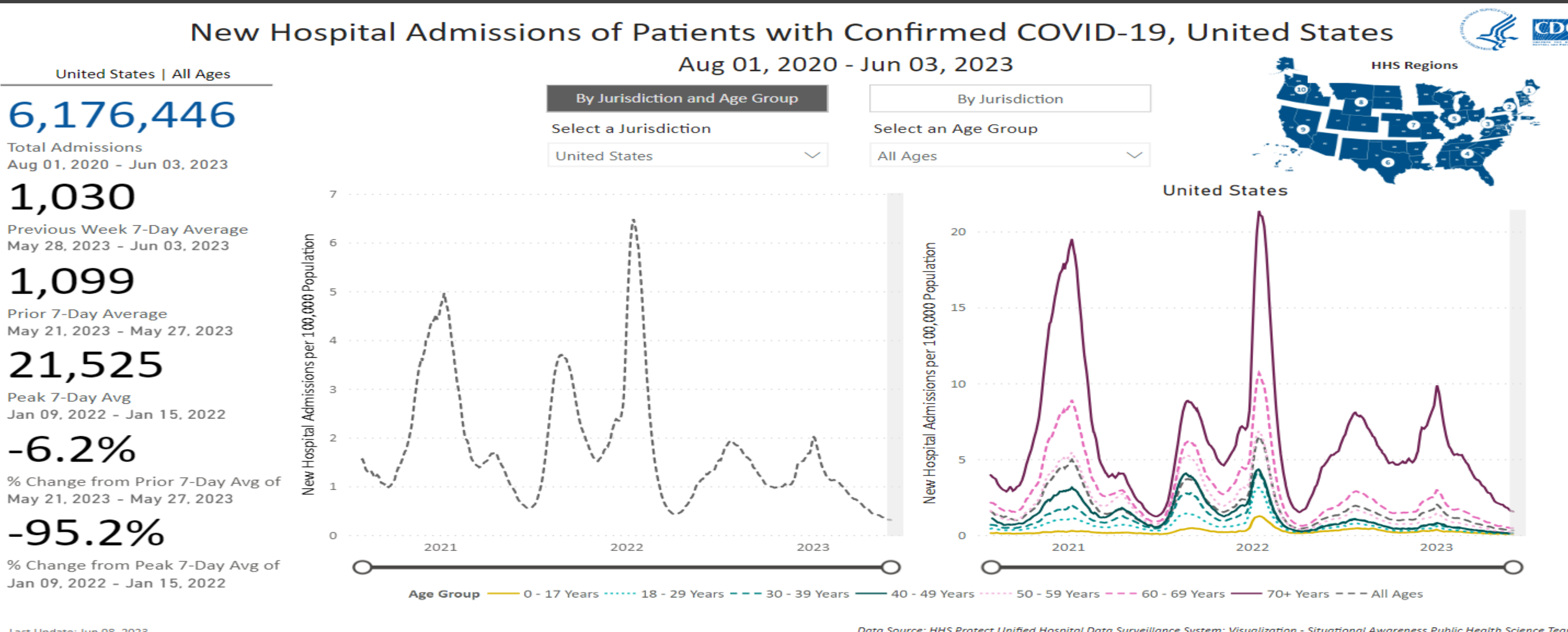


Figure 2: COVID Condition Associated with Diseases

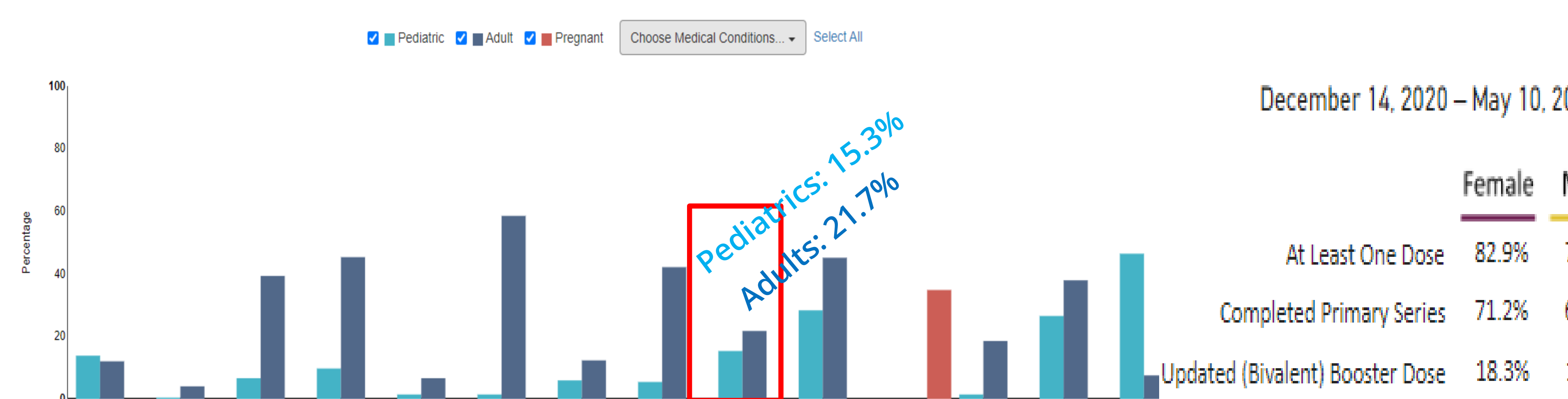


Figure 3: Percent of People Receiving COVID-19 Vaccine by Sex & Date Administrated.

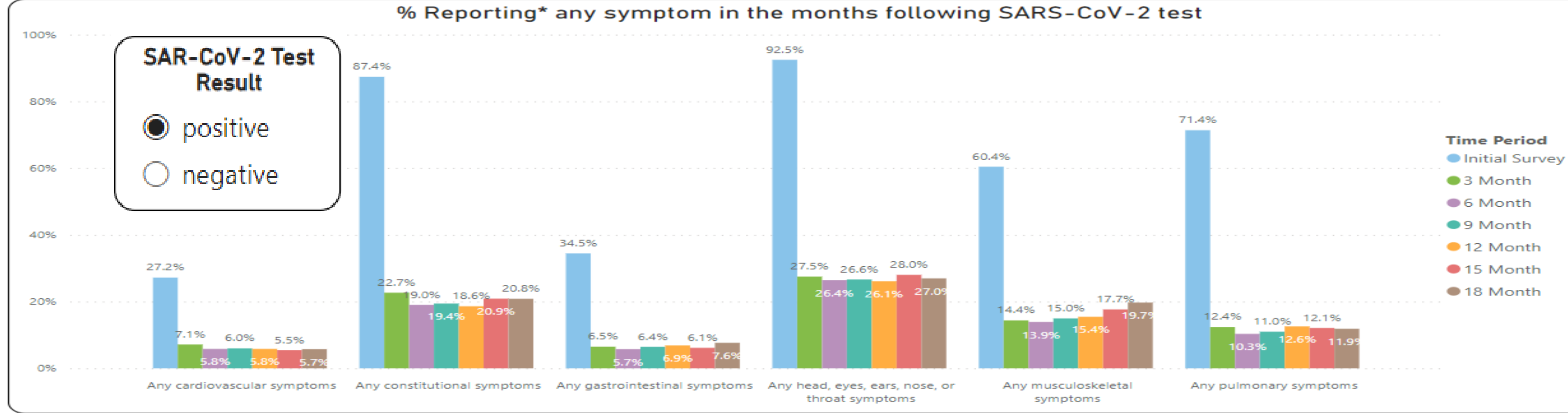
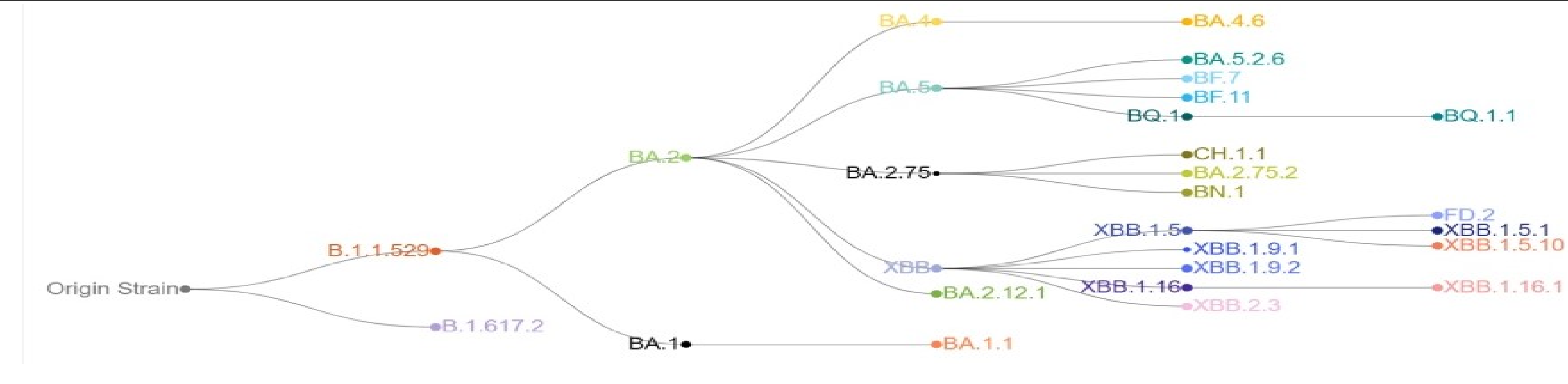
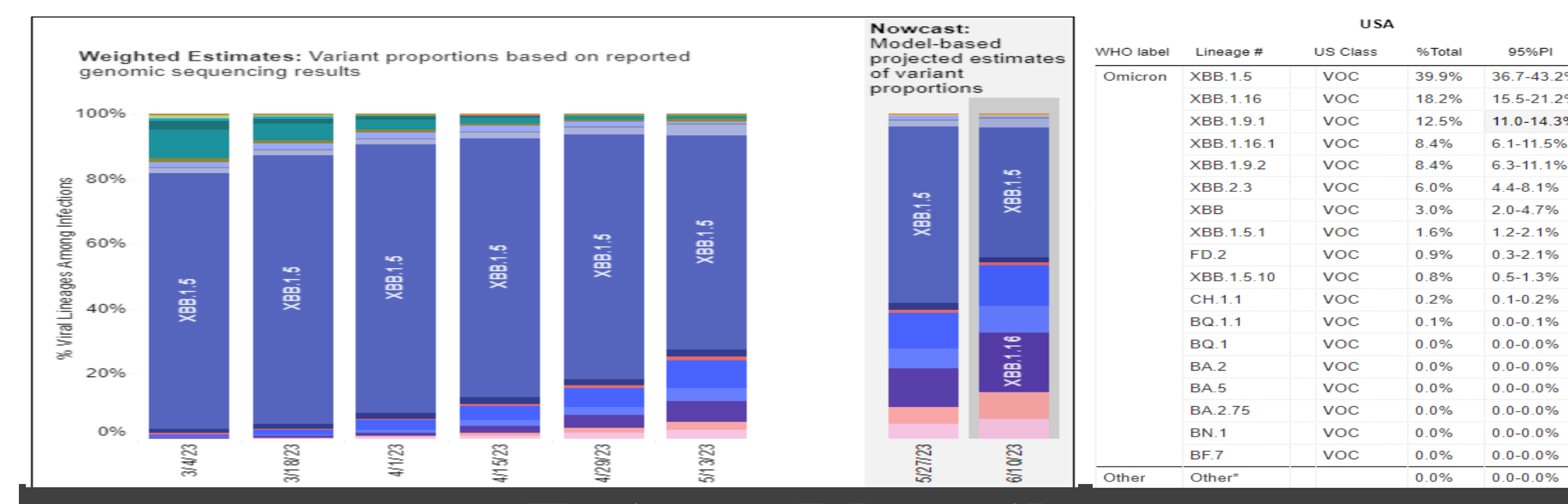


Figure 4:



Results

Descriptive Finding: 18.32% of individuals (n=1,130,593) were deaths in hospital admission, and 9.16% of individuals (n=56,478,510; pediatrics ages 5-12 = 88.15%; adults ages 18-all= 93.65%) received booster doses. Male, elder (age 75 years +), American Indian/Alaska Native/Black, and Hispanic had shown higher mortality among age groups than other races.



Future Direction

To examine the pathogenic mechanisms of SARS-CoV-2 primarily invading the central nervous system in neuroinflammation and personalized predisposition with younger individuals who presented post negative- healthy vs. positive severe illness

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