



THE WHITE HOUSE  
WASHINGTON

# COVID-19 Press Briefing

January 21, 2022



# Daily Change in COVID-19 Cases, US

January 22, 2020 – January 19, 2022

TOTAL Cases Reported Since 1/22/20

68,671,563

NEW Cases Reported to CDC on 1/19/22

768,190

Change in 7-Day Case Average

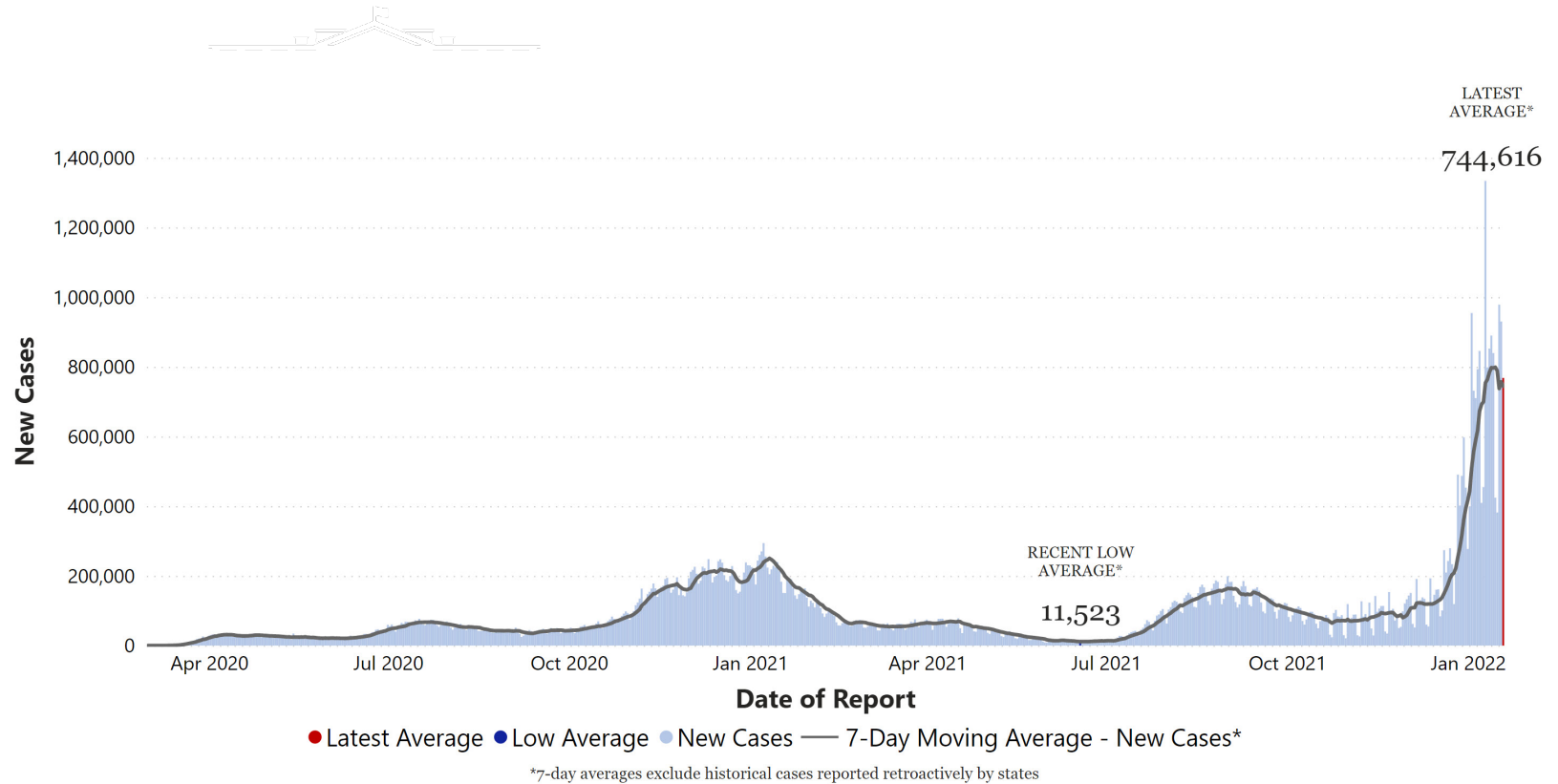
-5.0%

Current 7-Day Case Average (1/13/22 - 1/19/22)

744,616

Prior 7-Day Case Average (1/6/22 - 1/12/22)

783,922



# New Admissions of Patients with Confirmed COVID-19, US

August 1, 2020 – January 18, 2022

Patients Currently Hospitalized with COVID on 1/18/22

**144,441**

New Admissions on 1/18/22

**21,111**

Peak in New Admissions (1/12/22)

**23,042**

Change in 7-Day Average of New Admissions

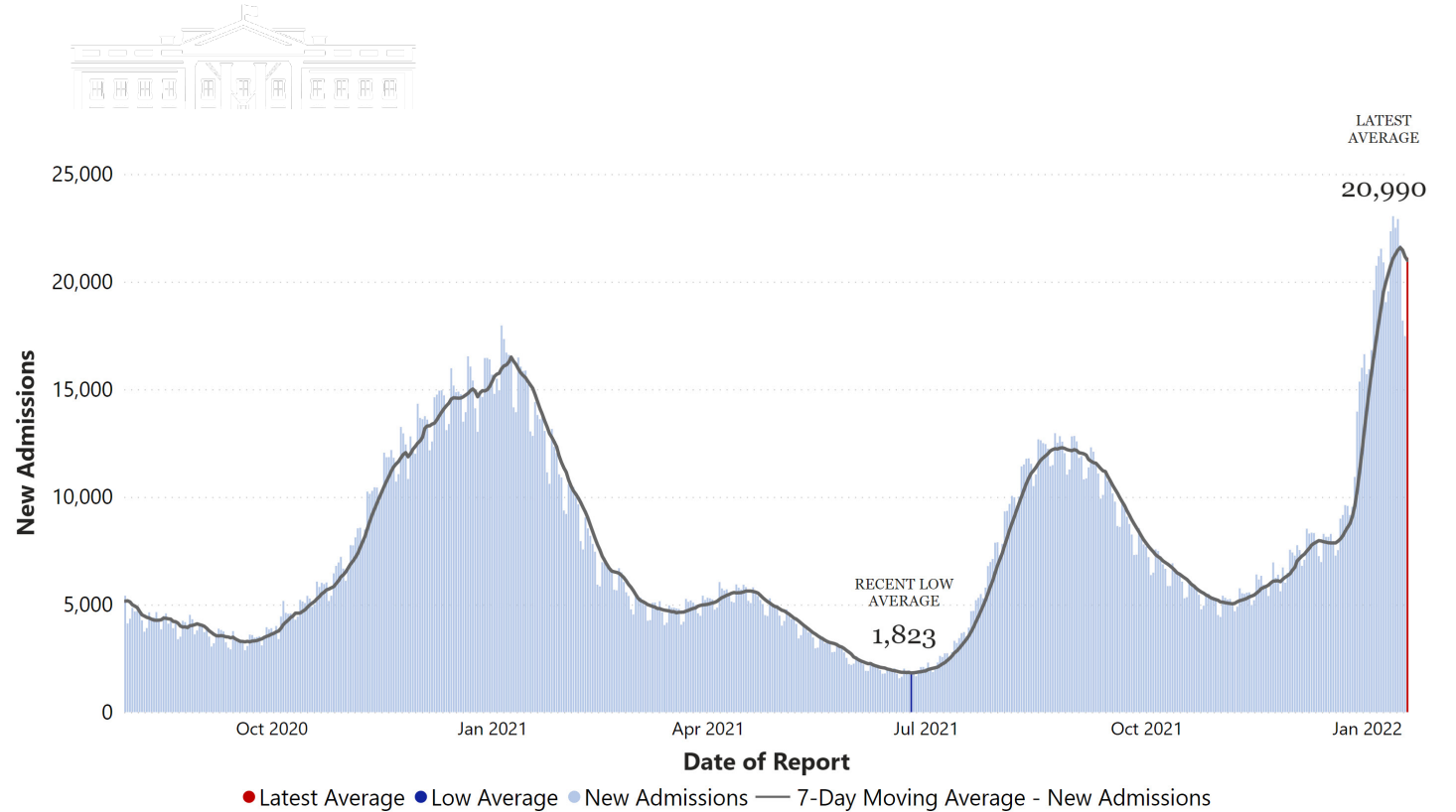
**+1.1%**

Current 7-Day Average of New Admissions (1/12/22 - 1/18/22)

**20,990**

Prior 7-Day Average of New Admissions (1/5/22 - 1/11/22)

**20,757**



# Daily Change in COVID-19 Deaths, US

January 22, 2020 – January 19, 2022

TOTAL Deaths Reported Since 1/22/2020

856,288

NEW Deaths Reported to CDC on 1/19/22

2,542

Change in 7-Day Death Average

-0.3%

Current 7-Day Death Average (1/13/22 - 1/19/22)

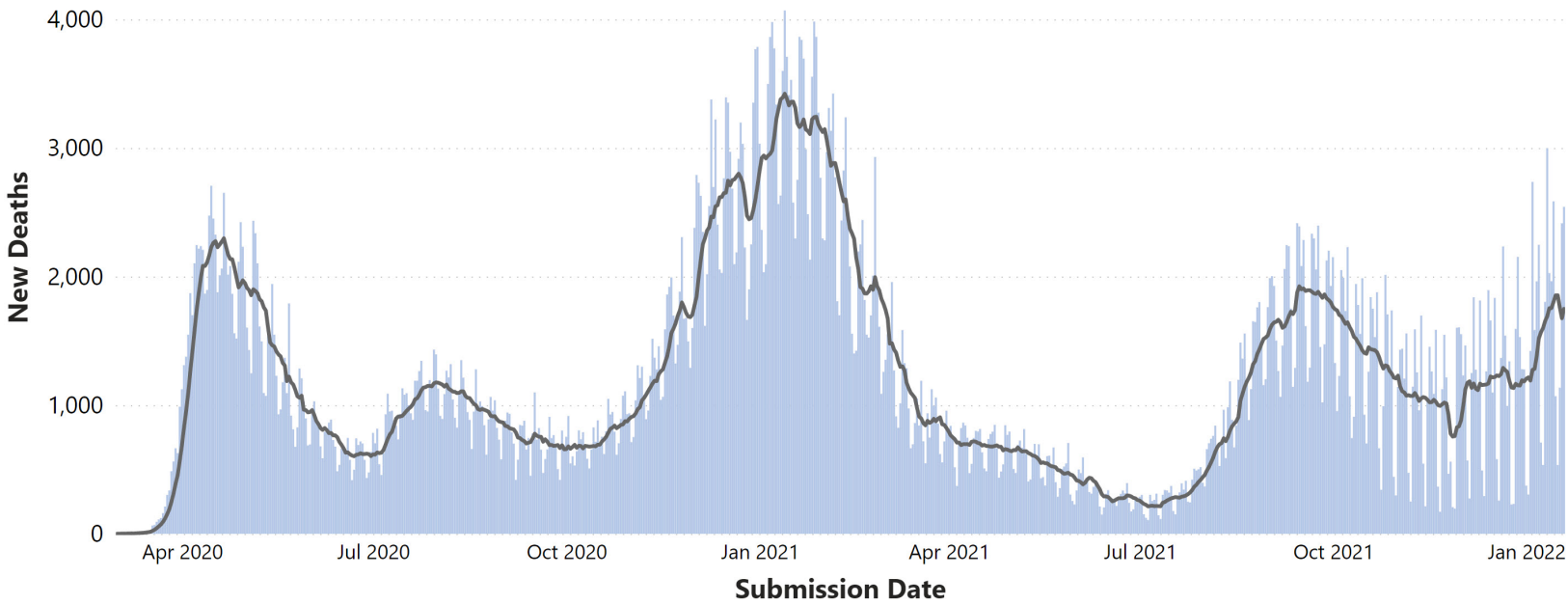
1,749

Prior 7-Day Death Average (1/6/22 - 1/12/22)

1,754

Forecasted Total Deaths by 01/22/22

860,000 to 866,000



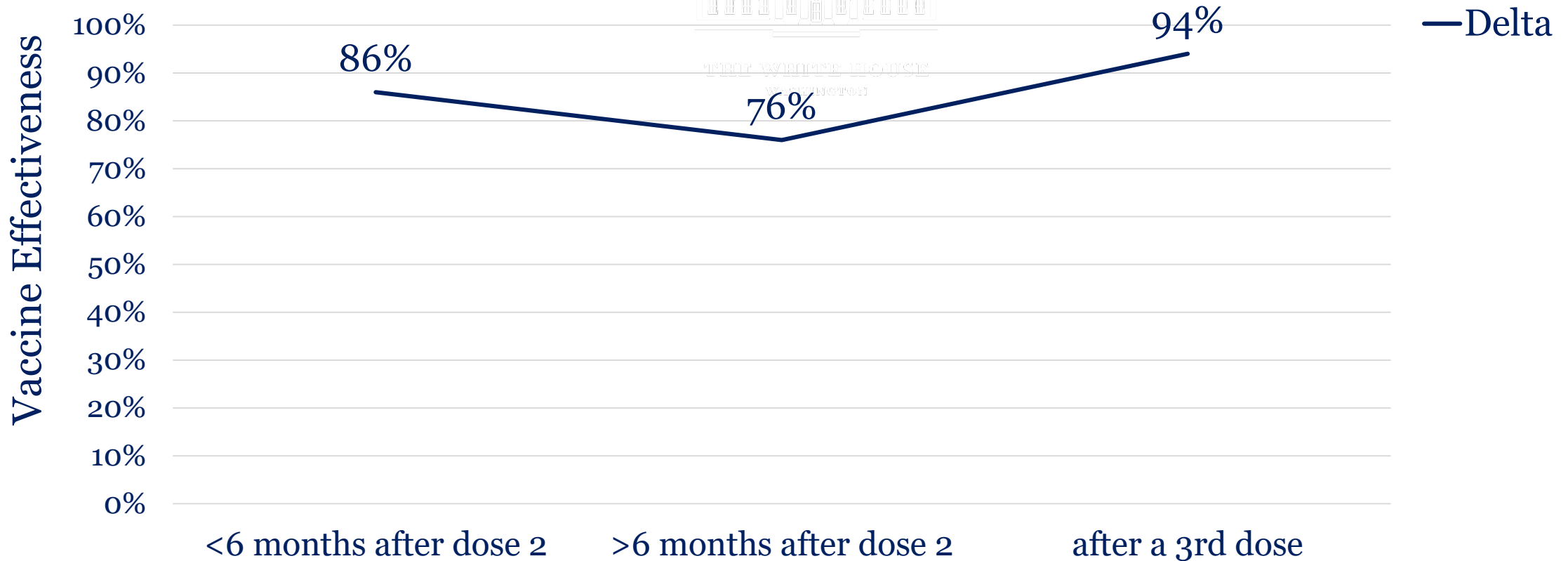
● New Deaths — 7-Day Moving Average - New Deaths\*

\*7-day averages exclude historical deaths reported retroactively by states



# Vaccine effectiveness of 2 vs 3 doses of mRNA vaccines for Delta and Omicron

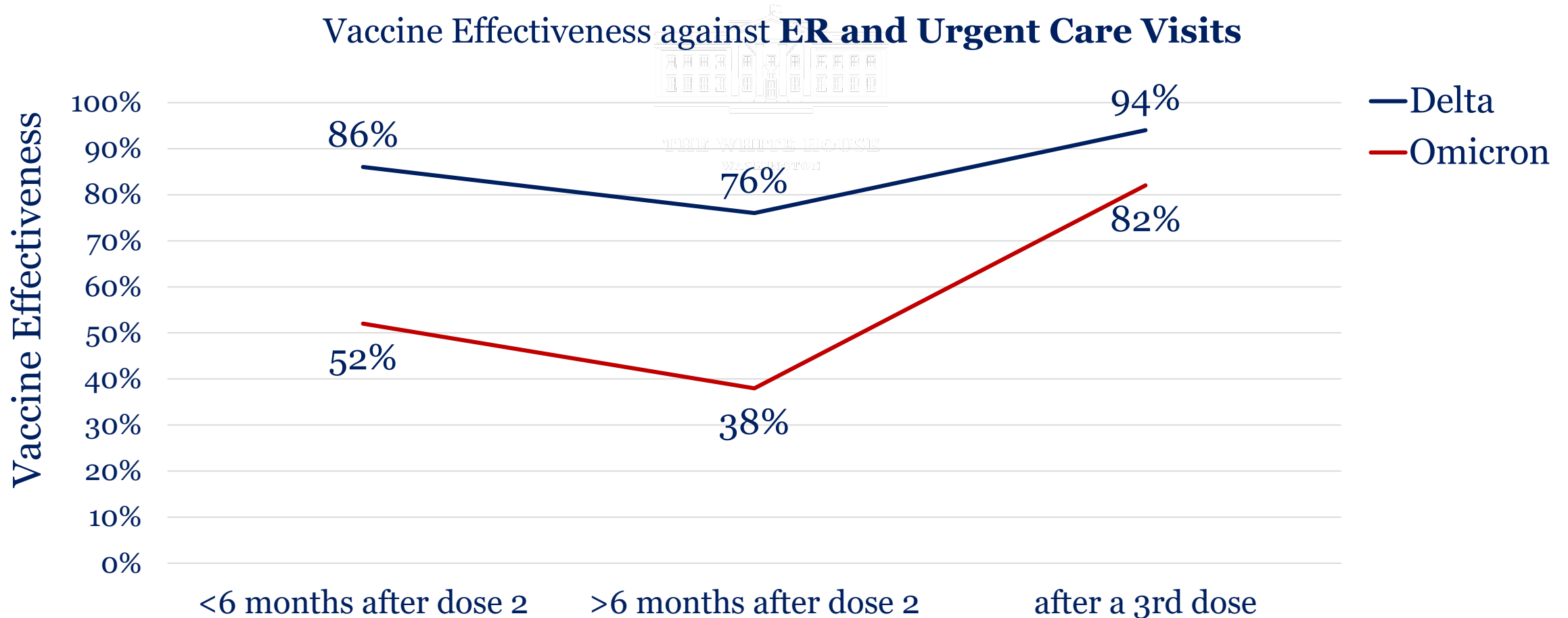
Vaccine Effectiveness against **ER and Urgent Care Visits**



Source MMWR: <http://dx.doi.org/10.15585/mmwr.mm7104e3>.

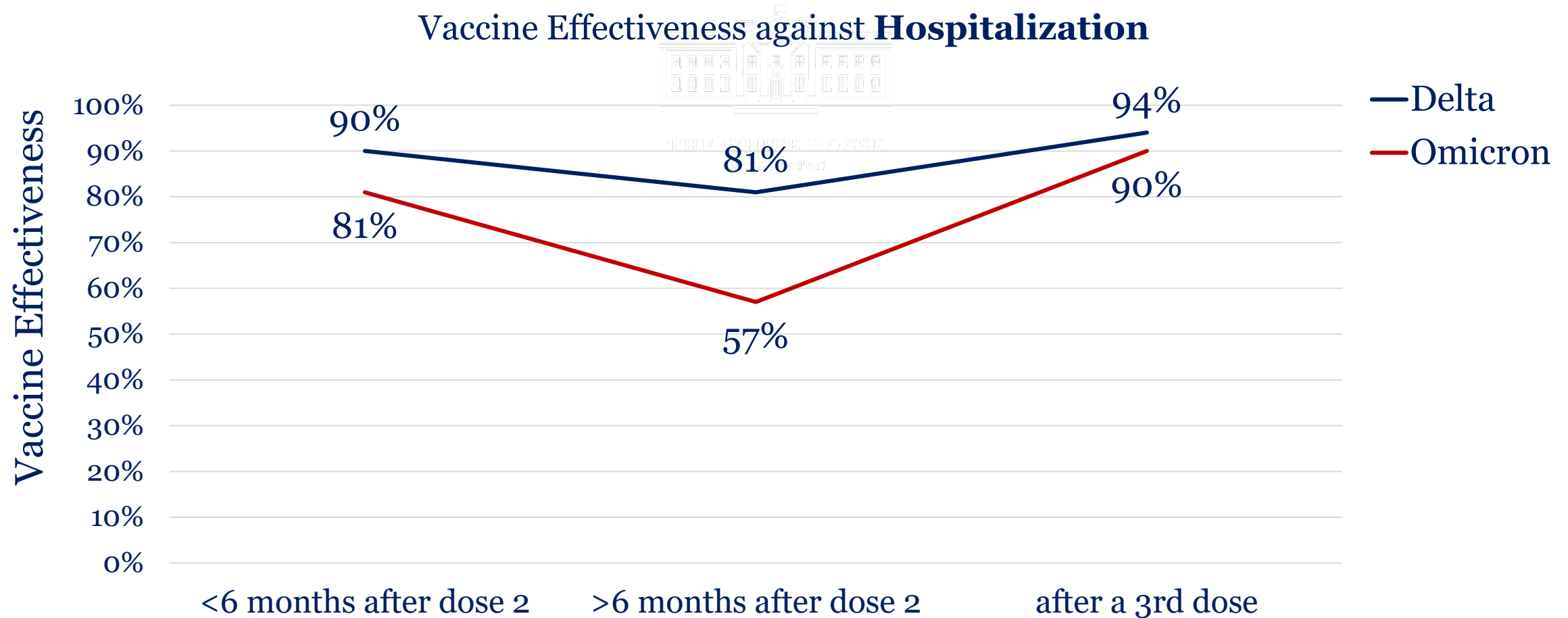


# Vaccine effectiveness of 2 vs 3 doses of mRNA vaccines for Delta and Omicron



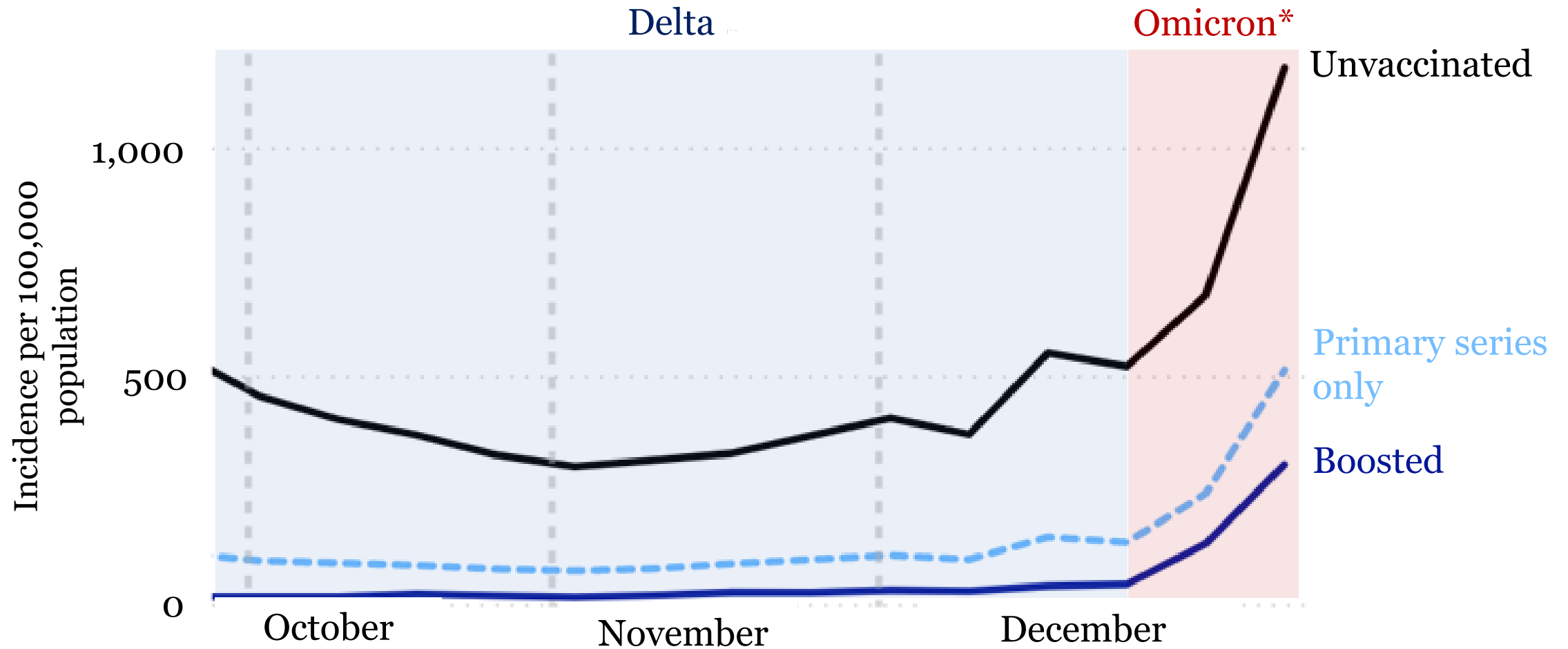
Source MMWR: <http://dx.doi.org/10.15585/mmwr.mm7104e3>.

# Vaccine effectiveness of 2 vs 3 doses of mRNA vaccines for Delta and Omicron



Source MMWR: <http://dx.doi.org/10.1585/mmwr.mm7104e3>.

# Rates of COVID-19 Cases by Vaccination Status and Booster Doses



\*On December 1, 2021, the first case of COVID-19 attributed to the Omicron variant was reported in the United States.



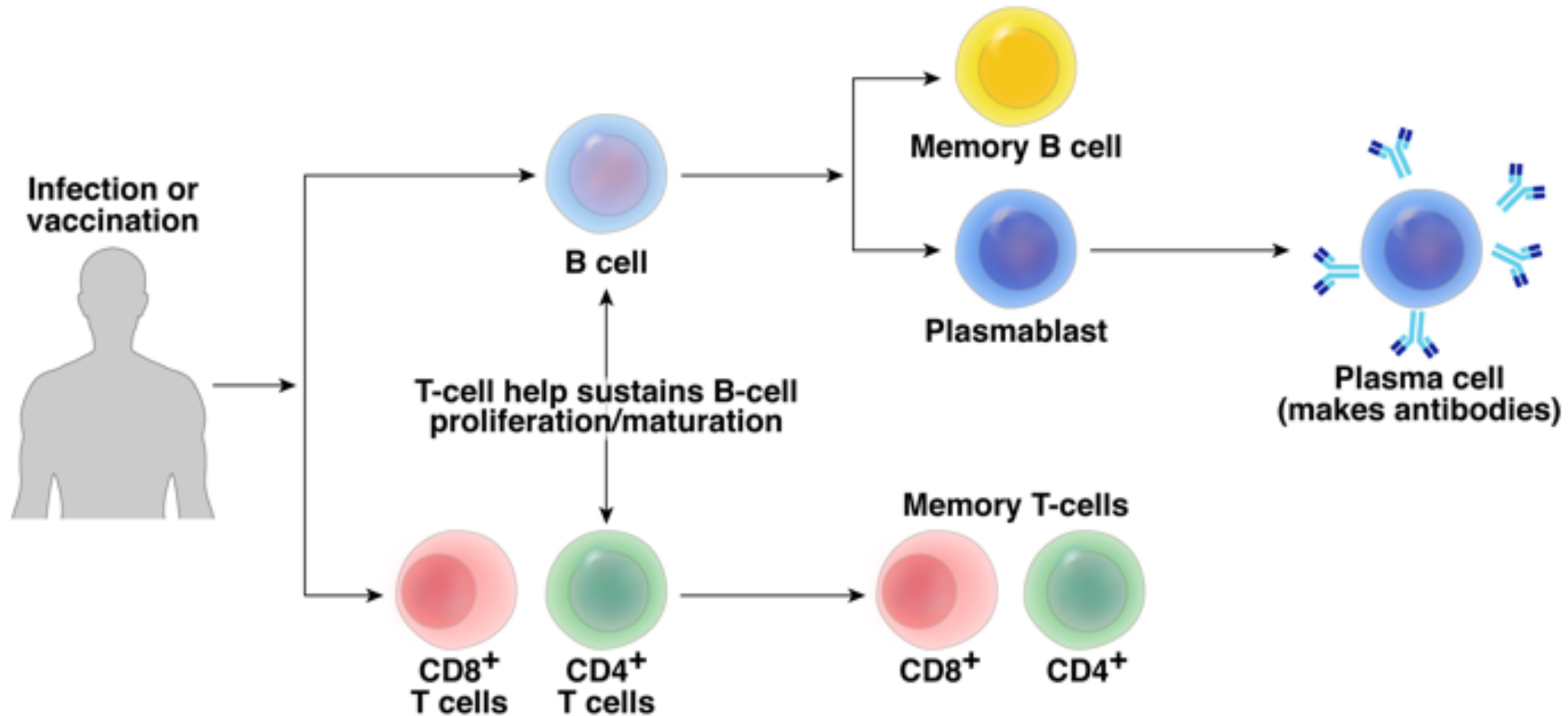
Source: CDC COVID Data Tracker - Rates of COVID-19 Cases and Deaths by Vaccination Status



**When new variants arise, why does immune protection against infection diminish much more than does protection against severe disease?**



# Adaptive Immune Responses to SARS-CoV-2 Infection and Vaccination



# **Simplified Explanation of the Very Complex Immune Responses to Viral Infections**

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- **Antibodies**, made by B-cells with “help” from T-cells, primarily prevent infection
  - More specific than T cells and are shorter lived
  - Backed up by memory B cells that are more durable
- **T cells** generally prevent progression of viral infection by directing other immune cells or killing virus-infected cells directly
  - More cross-reactive than antibodies (greater breadth) and are longer lasting



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# Antigens and Epitopes

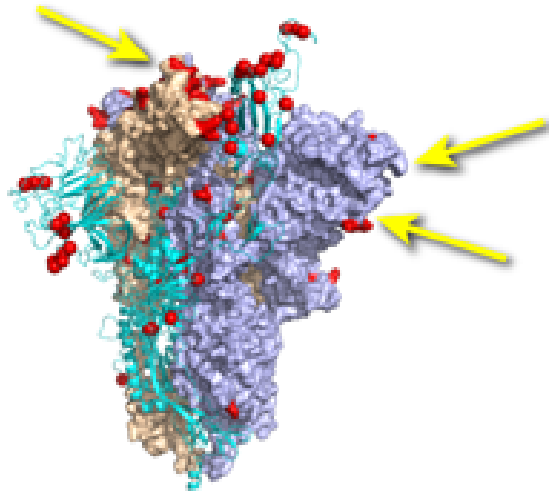
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- **Antigens** are molecules capable of stimulating an immune response
- **Antigens** have many components -- **epitopes** -- that can be recognized by the immune system
  - **B-cell epitopes:** recognized by antibodies
  - **T-cell epitopes:** recognized by T-cells
- With vaccines, antigen determinants are referred to as **immunogens**



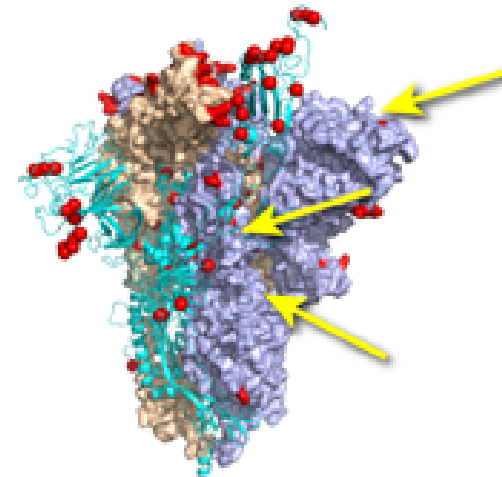
# SARS-CoV-2: B-Cell and T-Cell Epitopes

## B-cell epitopes



- Antibodies bind to B-cell epitopes on the surface of the spike protein. Viral mutations cause changes in surface amino acids that can interfere with antibody binding.

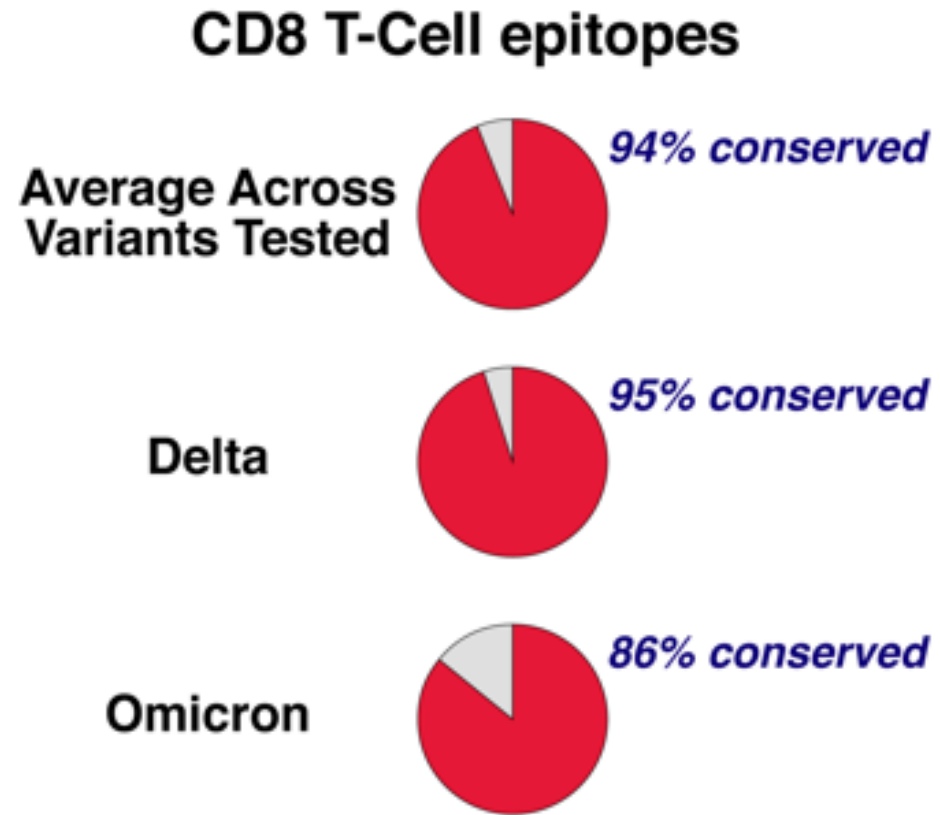
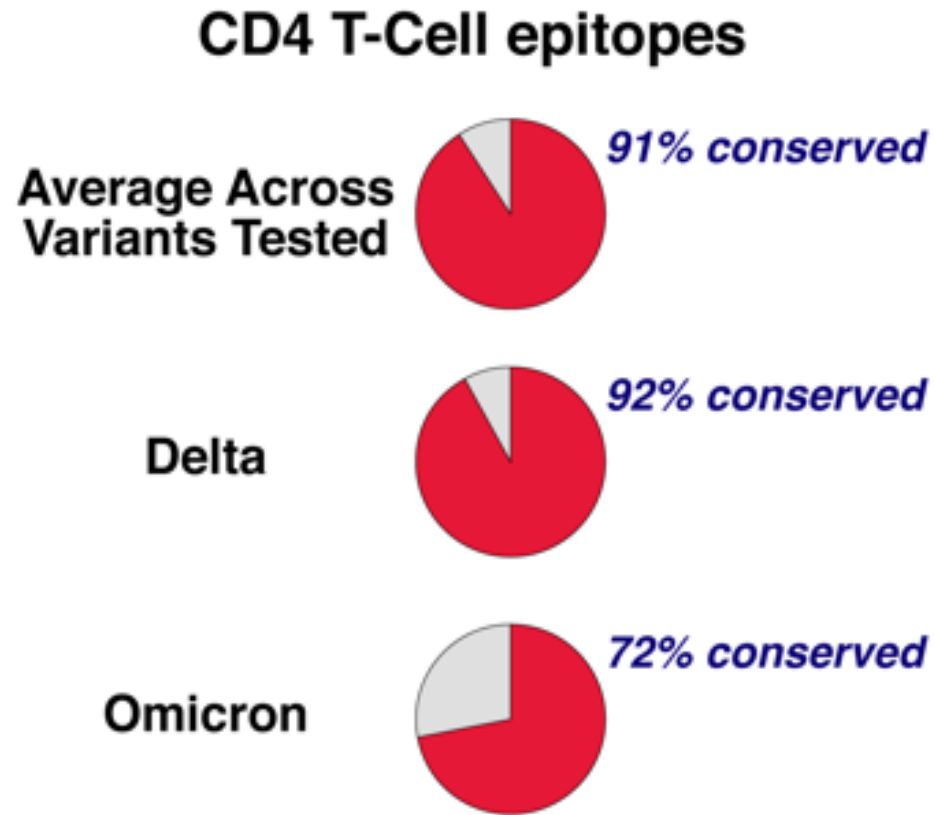
## T-cell epitopes



- T-cells “see” epitopes that are on the surface or buried within viral proteins. Changes that affect antibody binding often do not impact T cell recognition.



# Majority of SARS-CoV-2 Spike Epitopes are Conserved Across Variants



Source: Tarke A, Sette A, et al., *bioRxiv* 12/28/21

December 28, 2021



Cold  
Spring  
Harbor  
Laboratory

bioRxiv

THE PREPRINT SERVER FOR BIOLOGY

# **SARS-CoV-2 Vaccination Induces Immunological Memory Able To Cross-Recognize Variants From Alpha to Omicron**






A Tarke, A Sette et al.

- T cell responses to spike epitopes across SARS-CoV-2 variants, including Omicron, are largely preserved 6 months after vaccination





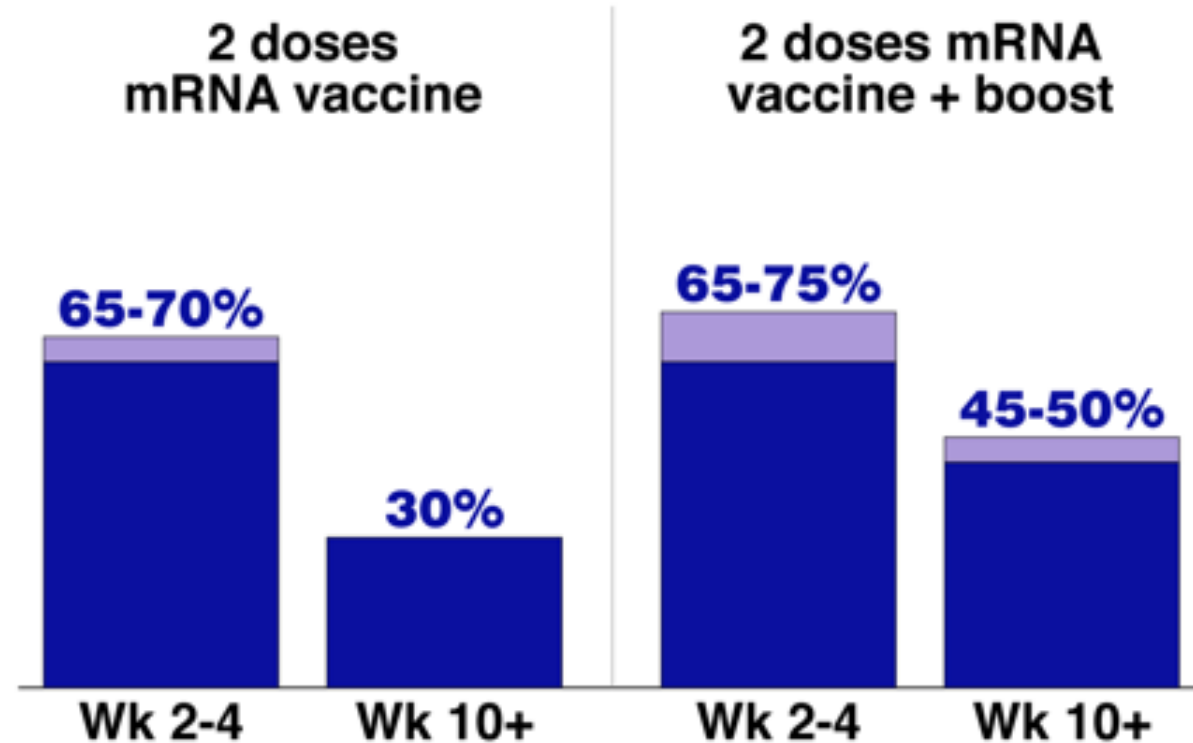
# Lab Studies Demonstrate That T-Cells Induced From Vaccination or Prior Infection Hold Up Well Against Omicron

 <p>Posted December 8, 2021 <b>bioRxiv</b> THE PREPRINT SERVER FOR BIOLOGY</p>	 <p>THE PREPRINT SERVER FOR HEALTH SCIENCES Posted December 27, 2021</p>	 <p>THE PREPRINT SERVER FOR HEALTH SCIENCES Posted December 28, 2021</p>
<p><b>Minimal Cross-Over Between Mutations Associated With Omicron Variant of SARS-CoV-2 and CD8+ T Cell Epitopes Identified in COVID-19 Convalescent Individuals</b> AD Redd, AAR Tobian et al.</p>	<p><b>Divergent SARS CoV-2 Omicron-Specific T- and B-cell Responses in COVID-19 Vaccine Recipients</b> CH GeurtsvanKessel, RD deVries et al.</p>	<p><b>SARS-CoV-2 Spike T Cell Responses Induced Upon Vaccination or Infection Remain Robust Against Omicron</b> R Keeton, C Riou et al.</p>
 <p>Posted December 30, 2021 <b>bioRxiv</b> THE PREPRINT SERVER FOR BIOLOGY</p>	 <p>THE PREPRINT SERVER FOR HEALTH SCIENCES Posted January 2, 2022</p>	<p>January 14, 2022 <b>naturemedicine</b></p>
<p><b>Preserved T Cell Reactivity to the SARS-CoV-2 Omicron Variant Indicates Continued Protection in Vaccinated Individuals</b> L De Marco, L Battistini et al.</p>	<p><b>Vaccines Elicit Highly Cross-Reactive Cellular Immunity to the SARS-CoV-2 Omicron Variant</b> J Liu, DH Barouch et al.</p>	<p><b>Ancestral SARS-CoV-2-Specific T Cells Cross-Recognize Omicron</b> Y Gao, M Buggert et al.</p>

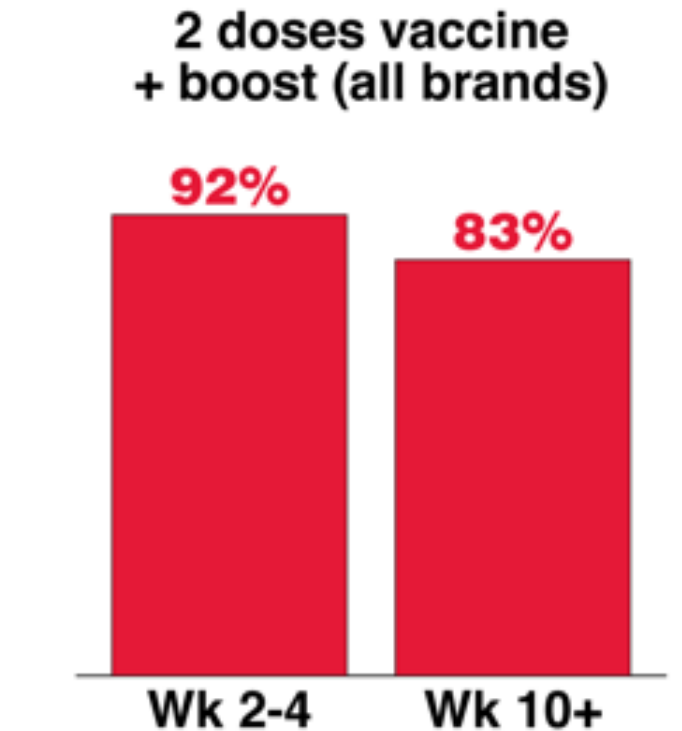


# COVID-19 Vaccine Effectiveness Against Omicron Variant, UK

## Symptomatic infection



## Hospitalization



Source: UK Health Security Agency, 1/20/2022



## **Bottom Line**

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- **Protection against SARS-CoV-2 infection is mediated mostly by antibodies**
  - Short-lived
  - Variants with extensive mutations more easily escape protection from infection
- **Protection against severe disease is mediated predominantly by memory B cells and CD4/CD8 T cells.**
  - Longer-lived and broadly active across variants
- **Our current vaccines continue to induce immune responses that provide strong protection against severe COVID-19 disease, hospitalization and death**



# **Protect Yourself From COVID-19**

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■ **Up-to-date vaccination is essential**

**Visit** – [vaccines.gov](https://www.vaccines.gov)

**Text** – your ZIP code to 438829

**Call** – 1-800-232-0233





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