



# COVID-19: vaccines, variants & the way forward

**Tom Talbot, MD MPH**

Chief Hospital Epidemiologist

August 6, 2021

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**Brent McDonald, MBA**

Senior Vice President,  
Employer Solutions



**Tom Talbot, MD MPH**

Chief Hospital Epidemiologist  
at VUMC



**Donna Skupien, BSN, RN, MBA**

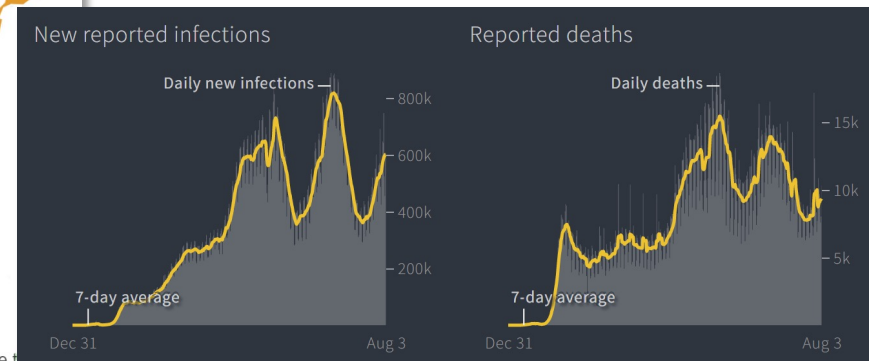
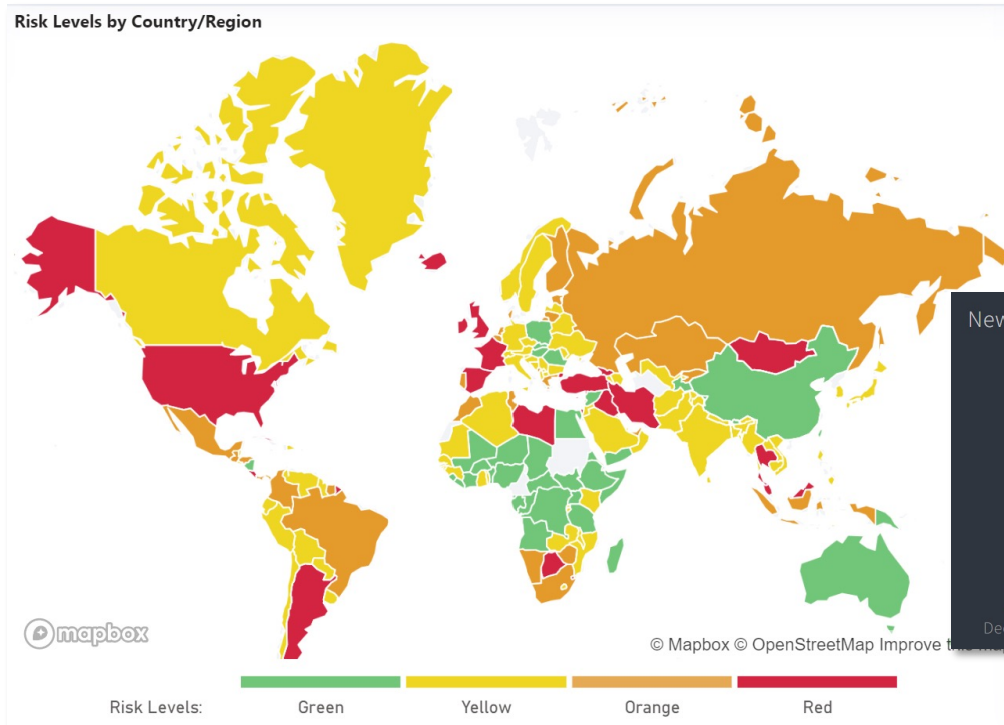
Senior Director,  
Employer Solutions

# COVID-19 Updates

# Where We Are Today: Global COVID-19 infections are still rising in 90 countries



**200.2M+ cases**  
**4.4M+ deaths**

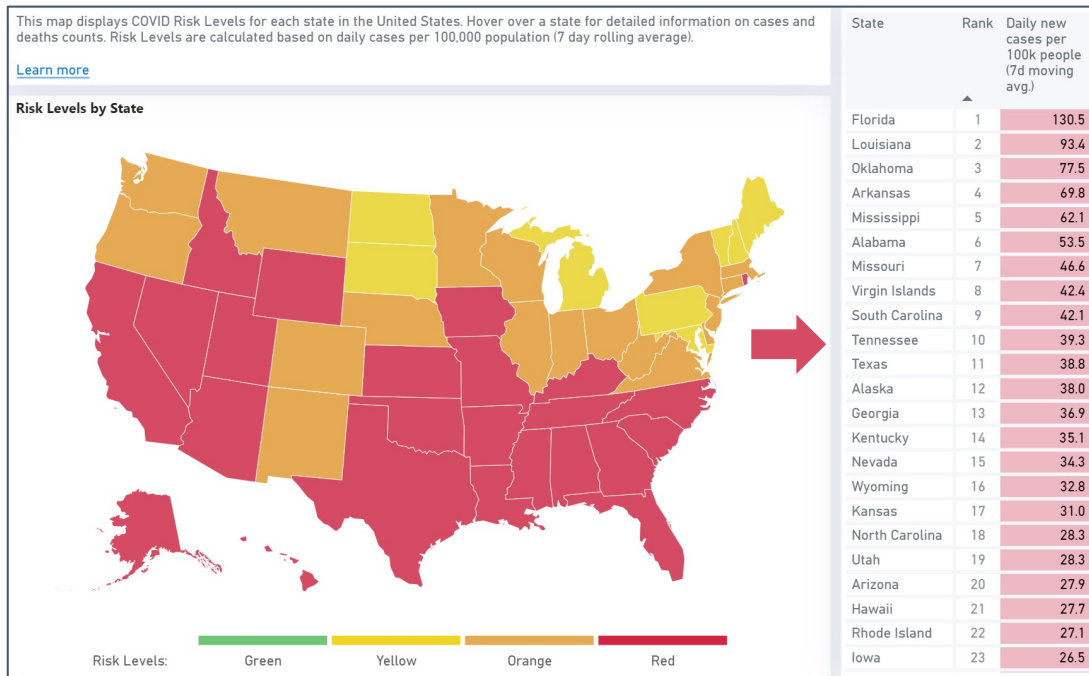


[Source link: Reuters](#)

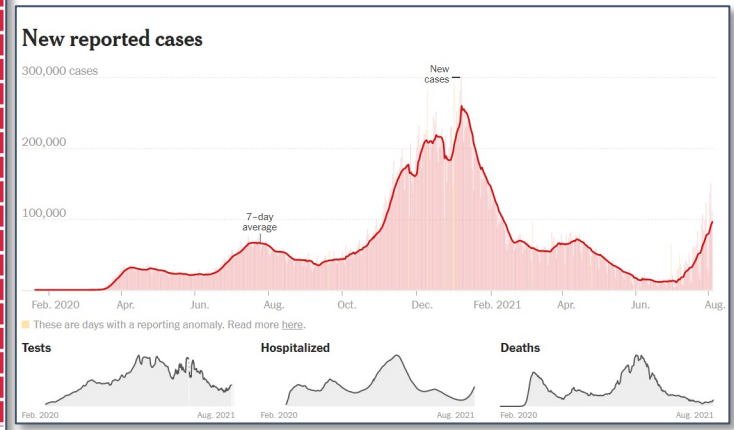
[Source link: Brown School of Public Health](#)

*(These data accessed on 08/05/2021)*

# Where We Are Today: USA



**The US leads the world** in the daily average number of new infections reported, accounting for **one in every 6 infections** reported worldwide each day



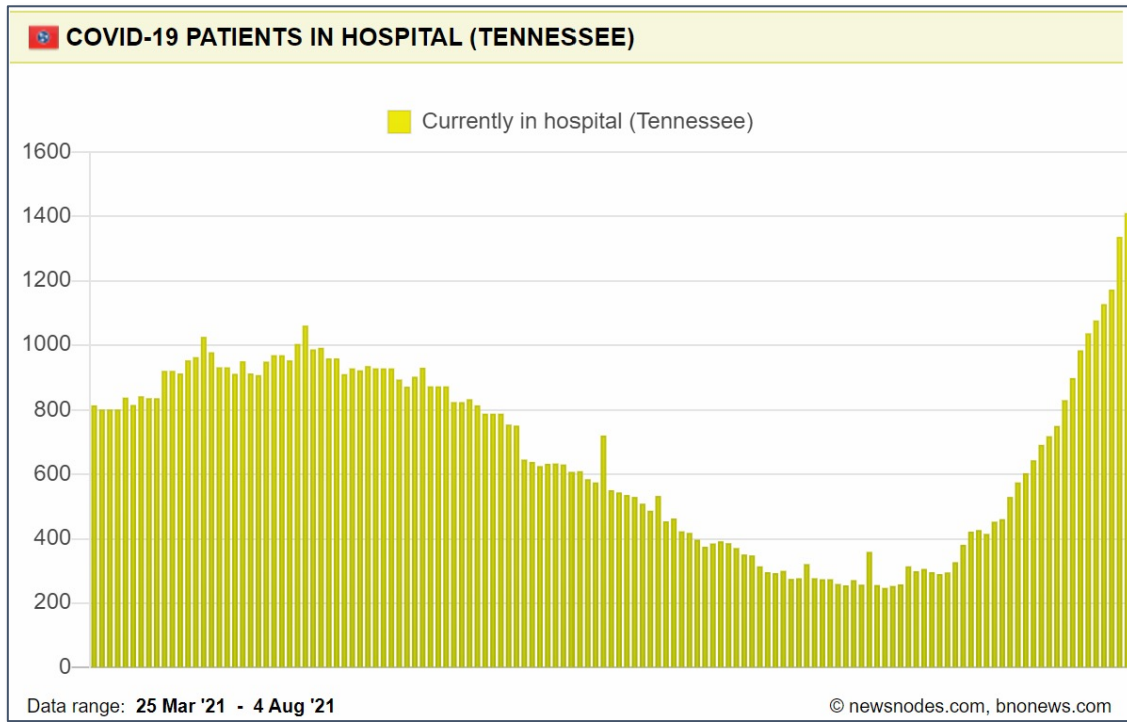
Source link: [Brown School of Public Health](#)

Source link: [NYT](#)

**35.4M+ cases**  
**614.8K+ deaths**

*(These data accessed on 08/05/2021)*






# Where We Are Today: TN TN Ranked #10 in US



[Source link: Newsnodes](#)

(These data accessed on 08/05/2021)

**LATEST COVID-19 DATA**

	<b>TOTAL CASES</b>	<b>906,893</b>	( +2593)
		<i>in total</i>	<i>daily average*</i>
	<b>TOTAL DEATHS</b>	<b>12,783</b>	( +9)
		<i>in total</i>	<i>daily average*</i>
	<b>TOTAL TESTS</b>	<b>8,487,612</b>	( +13332)
		<i>in total</i>	<i>daily average*</i>
	<b>CURRENTLY IN HOSPITAL</b>	<b>1,410</b>	( +74)
		<i>in total</i>	
	<b>CURRENTLY IN ICU</b>	<b>424</b>	( +11)
		<i>in total</i>	

Latest update: 5 August, 0:04 CET

# Where We Are Today: VUMC

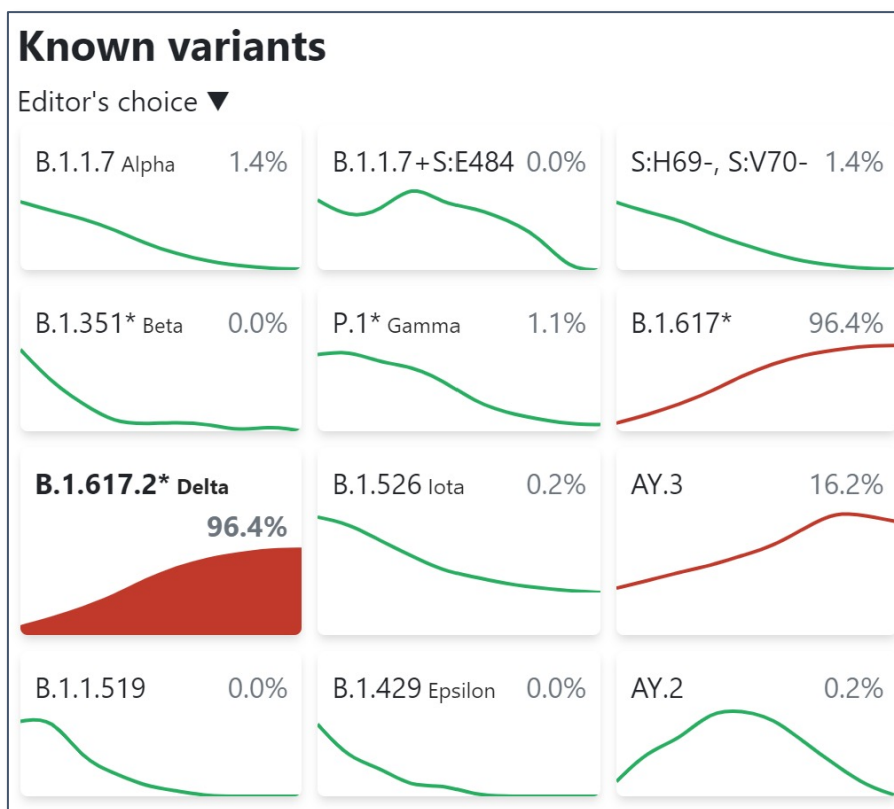
VANDERBILT  UNIVERSITY  
MEDICAL CENTER

- **Last 4 weeks:**
  - **10-fold increase** in hospitalized COVID+ patients (VUMC)
  - **6-fold increase** at VWCH
  - **3-fold increase** at MCJCHV
  - **>90% are not fully vaccinated**; those with symptomatic COVID are almost all severely immunocompromised (e.g., organ transplants)
- **Last 4 days:** Cases nearly doubled
- Last date of current case count across system: **Jan 27, 2021**

# Variants



# SARS-CoV-2 Variants Circulating in the US



Source link: [covSPECTRUM](https://covSPECTRUM.com)

(These data accessed on 08/05/2021)

# What We Know About the Delta Variant

- 1. Delta is more contagious than the other virus strains**
  - $R_0 = 2.5$  for original strain;  $R_0 = 3.5-4.0$  for Delta
  - Shorter incubation period from infection-to-symptoms (4 vs 5 days)
  - Infected people shed much higher levels of virus (>1,000-fold more)
- 2. Unvaccinated people are at greatest risk, including younger people**
- 3. Delta could lead to 'hyperlocal outbreaks' where vaccine uptake is low**
  - This could be catastrophic in some communities
- 4. Breakthrough cases for vaccinated people are UNCOMMON, but do happen more than with other variants**
- 5. Even infected, vaccinated people can transmit virus**

**NEW  
INFO**

<https://www.globaltimes.cn/page/202107/1227847.shtml>  
<https://www.vaio.org/news/5-things-to-know-delta-variant-covid>  
<https://health.ucdavis.edu/coronavirus/covid-19-information/delta-variant.html>  
<https://www.medrxiv.org/content/10.1101/2021.07.19.21260808v1.full.pdf>

# What We Know About the Delta Variant

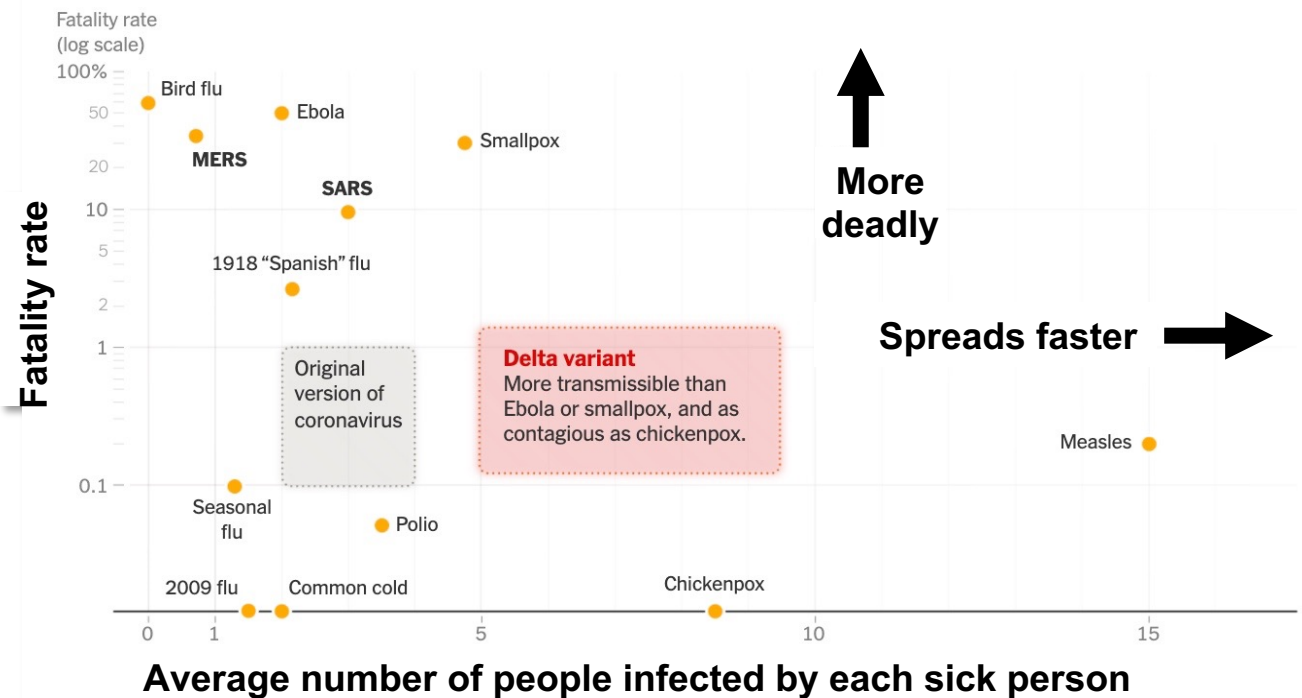
## Delta is more contagious than

- Smallpox
- Ebola
- Seasonal flu
- Polio
- Common cold

It is more like Chickenpox!

### The Delta Variant

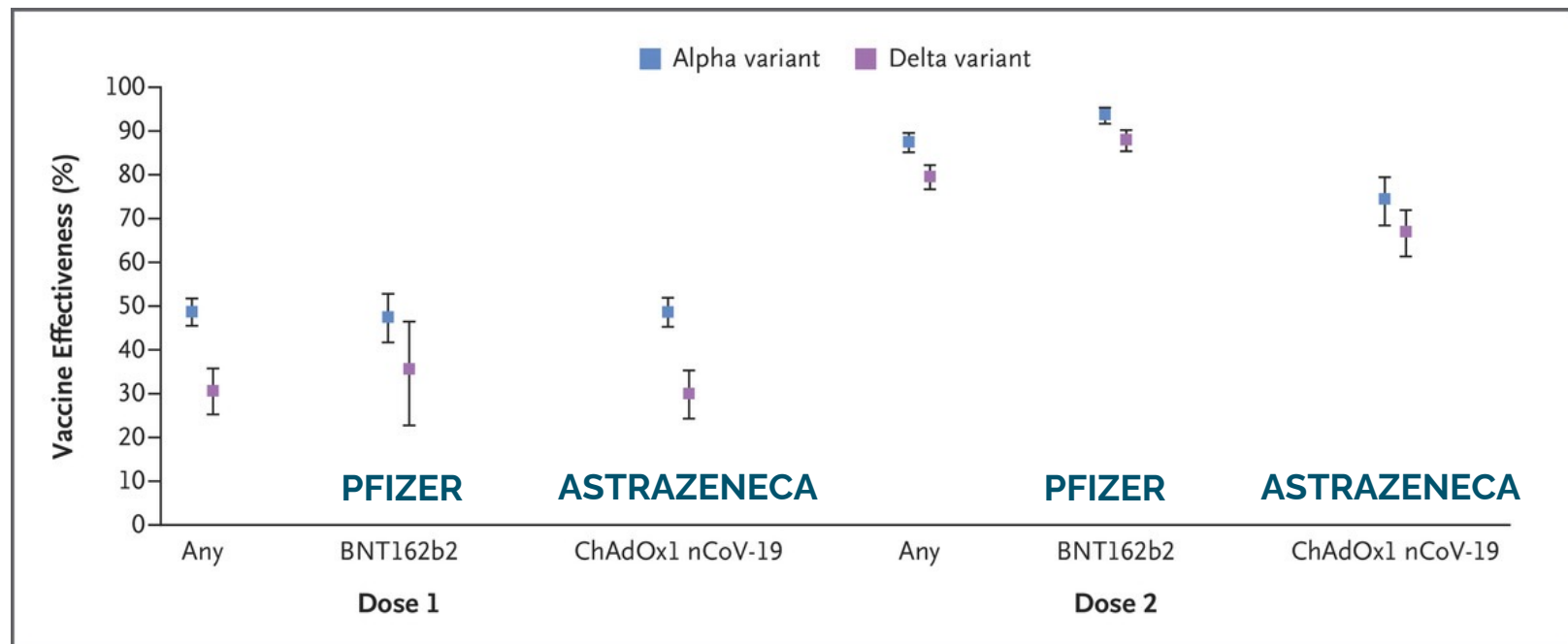
An internal document from the Centers for Disease Control and Prevention notes that the Delta variant is much more contagious than other known versions of the virus.



# What We Know About the Delta Variant

Vaccines provide protection against infection, symptoms, severe disease & death

Vaccine Effectiveness against the Alpha & Delta Variants, According to Dose & Vaccine Type



J Lopez Bernal et al. N Engl J Med 2021. DOI: 10.1056/NEJMoa2108891

# Vaccinations

# Why Get Vaccinated?

## **Protect yourself:**

- ✓ Vaccines **reduce the risk of infection** (asymptomatic & symptomatic)
- ✓ Vaccines **prevent hospitalization & death** from COVID-19

## **Protect others:**

- ✓ Vaccines **reduce transmission**
- ✓ Vaccinated people **clear infection** more quickly & **shed less virus** than unvaccinated people\*

\*Delta variant may be an exception

# US Vaccination Coverage

## Total Vaccine Doses


Delivered 403,047,945

Administered 348,966,419

**Learn more about the distribution of vaccines.**

**165.6M**  
People fully vaccinated

People Vaccinated	At Least One Dose	Fully Vaccinated
Total	193,199,353	165,637,566
% of Total Population	58.2%	49.9%
Population ≥ 12 Years of Age	192,975,169	165,507,544
% of Population ≥ 12 Years of Age	68.1%	58.4%
Population ≥ 18 Years of Age	181,899,817	157,078,422
% of Population ≥ 18 Years of Age	70.4%	60.8%
Population ≥ 65 Years of Age	49,324,565	43,902,753
% of Population ≥ 65 Years of Age	90.2%	80.3%

 About these data

CDC | Data as of: August 5, 2021 6:00am ET. Posted: Thursday, August 5, 2021 1:35 PM ET

[Source link: CDC](#)

*(These data accessed on 08/05/2021)*

# The Impact of Vaccinations in the US

## Nearly all COVID deaths in US are now among unvaccinated

By CARLA K. JOHNSON and MIKE STOBBE an hour ago


“Nearly all COVID-19 deaths in the U.S. now are in people who weren't vaccinated, a staggering demonstration of how effective the shots have been and an indication that deaths per day — now down to under 300 — could be practically zero if everyone eligible got the vaccine.”

An Associated Press analysis of available government data from May shows that “breakthrough” infections in fully vaccinated people accounted for fewer than 1,200 of more than 853,000 COVID-19 hospitalizations. That's about 0.1%.

And only about 150 of the more than 18,000 COVID-19 deaths in May were in fully vaccinated people. That translates to about 0.8%, or five deaths per day on average.”

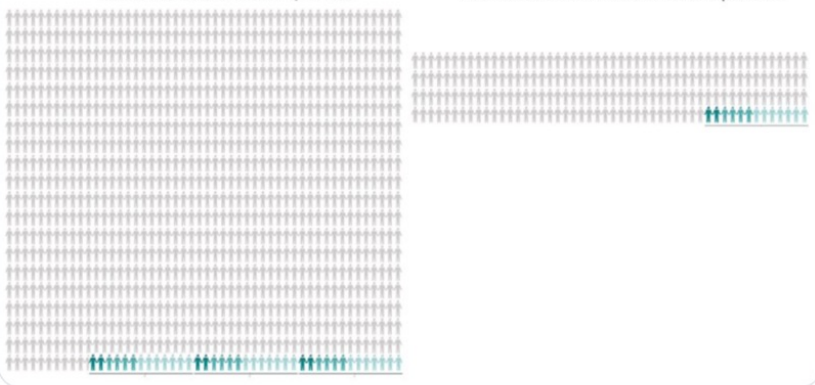


# How to Interpret Stories of Fully Vaccinated People Becoming Infected

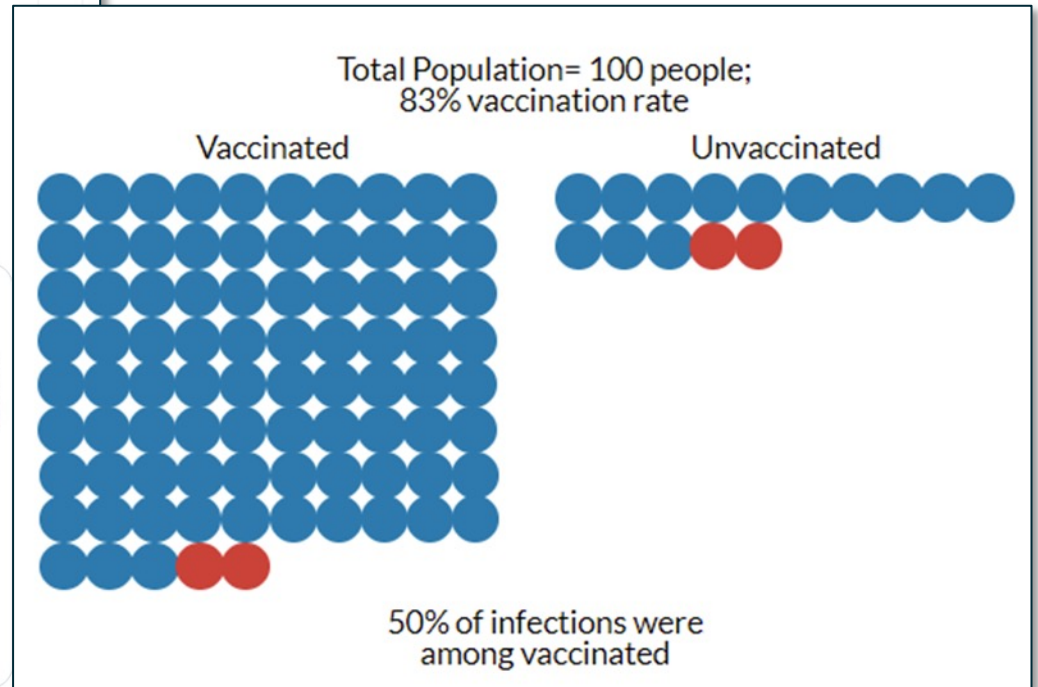
 **Eric Topol** ✓  
@EricTopol

How can "most" infections occur in vaccinated individuals and still represent very high vaccine effectiveness?  
Not hard when most people are vaccinated.  
It's all about fractions and denominators

Vaccinated, 85% of Adult Population      Non-Vaccinated, 15% of Adult Population

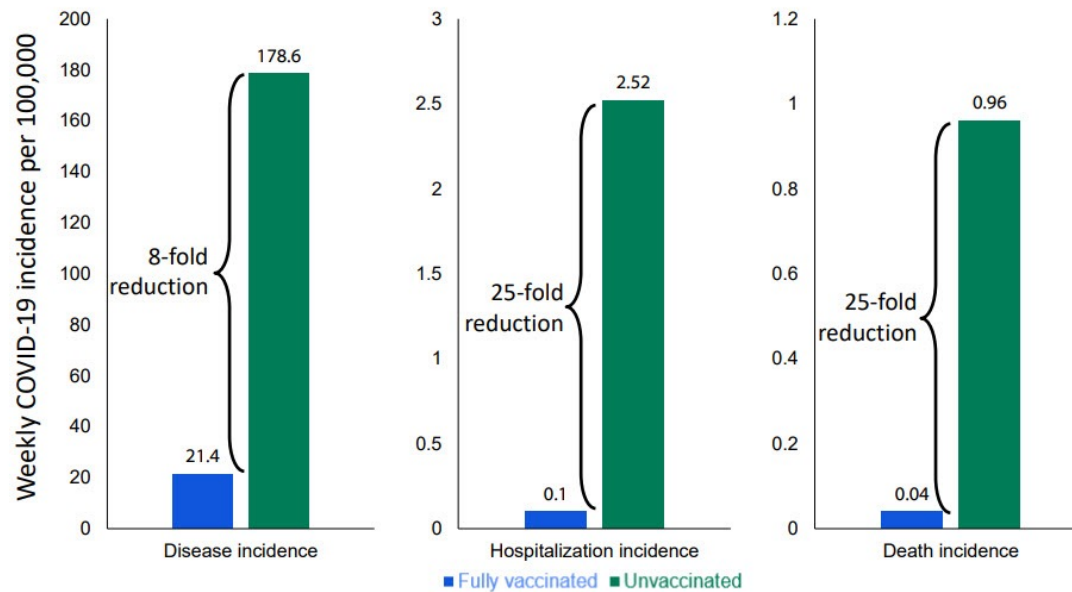


8:47 PM · Jul 5, 2021 · Twitter Web App



# The Impact of Vaccinations

## Greater risk of disease, hospitalization and death among unvaccinated vs. vaccinated people: National estimates

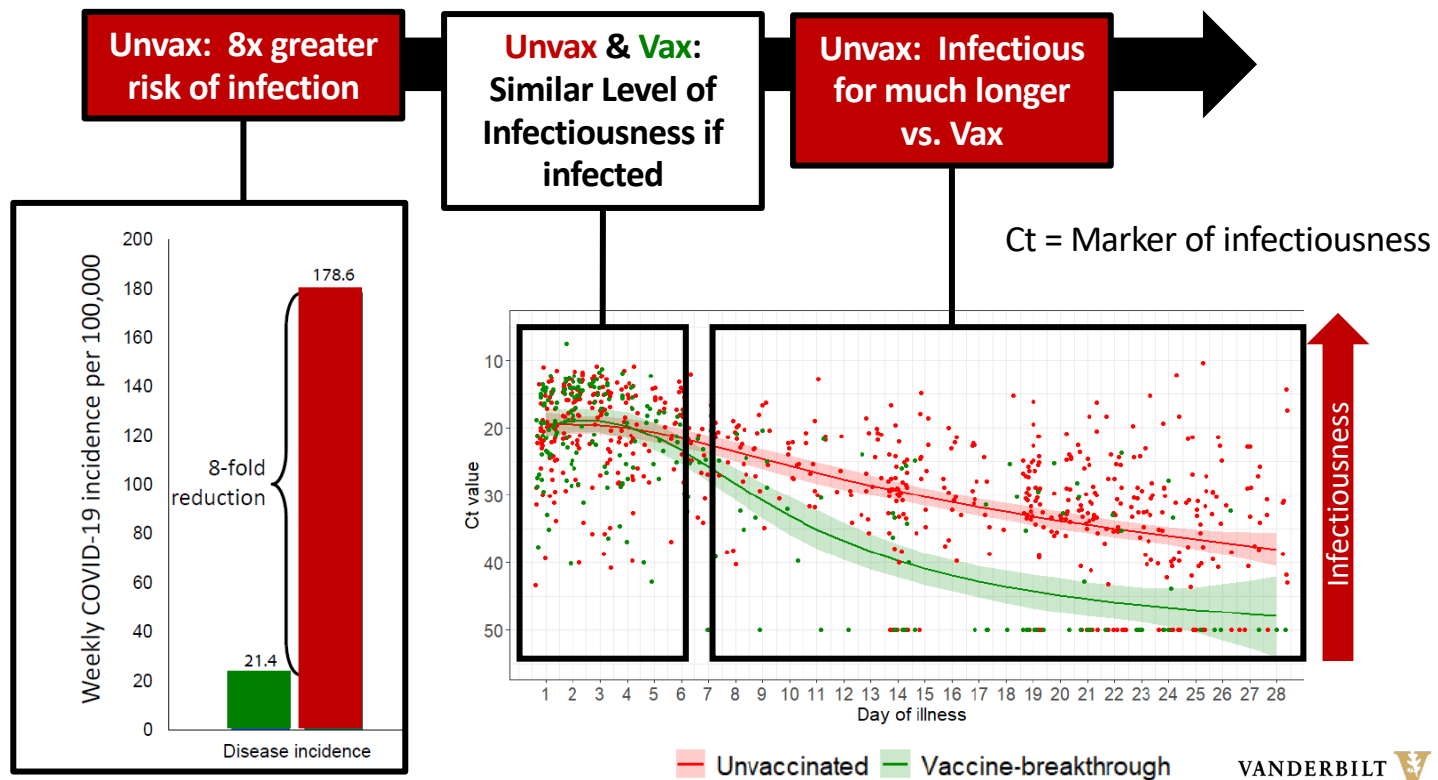


**At current incidence,  
35,000 symptomatic  
infections per week  
among 162 million  
vaccinated Americans  
(0.02%)**

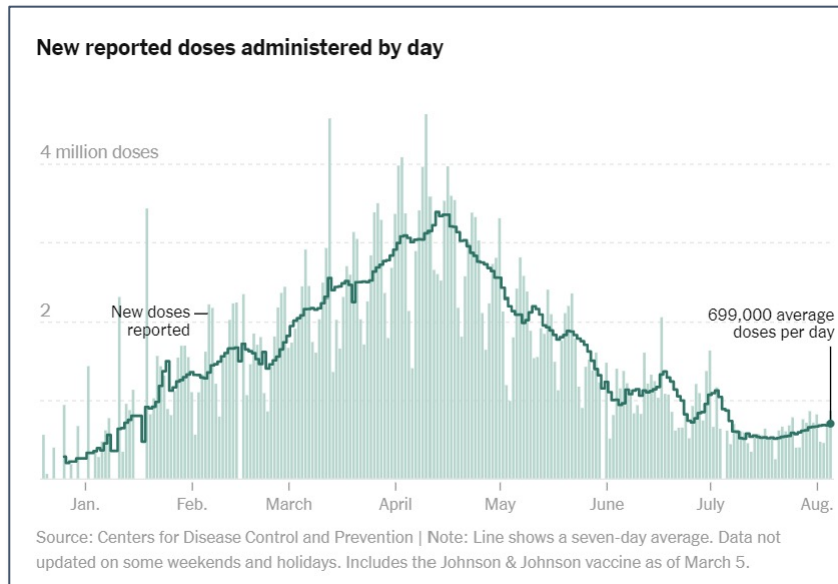
Data from COVID Tracker as of July 24, 2021. Average incidence 100 cases per 100,000 persons per week. Vaccine effectiveness against symptomatic illness = 88% (Lopez Bernal et al. [NEJM 2021](#)), where risk is  $[1 - VE]$  or 12%. Vaccine effectiveness hospitalization (or death) = 96% (Stowe et al. [PHE preprint](#)), where risk is  $[1 - VE]$  or 4%. Rate in unvaccinated = Community rate/ $[(1 - \text{fully vaccinated coverage}) + (1 - VE) * \text{fully vaccinated coverage}]$ . Rate in fully vaccinated =  $(1 - VE) * \text{Rate in unvaccinated}$ . Fully vaccinated coverage proportions were from COVID Data Tracker as of July 24, 2021 (50% for US).

Source: CDC

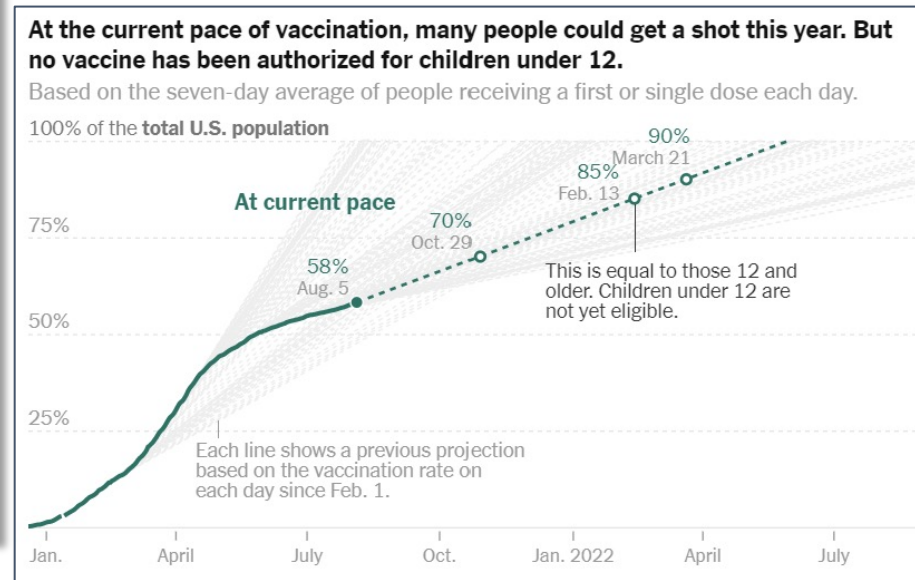
# COVID-19 Infections/Infectivity: Vaccinated vs. Unvaccinated



# Slow Progress



[Source link: NYT](#)



*(These data accessed on 08/05/2021)*



# Vaccine safety

## Common Side Effects

On the arm where you got the shot:



- Pain
- Redness
- Swelling

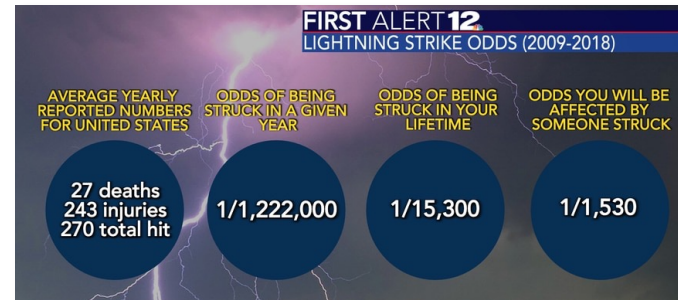
Throughout the rest of your body:



- Tiredness
- Headache
- Muscle pain
- Chills
- Fever
- Nausea

[CDC source link](#)

# Vaccine safety



- COVID-19 vaccines are **safe & effective**
- Vaccines **do not cause infertility** & appear quite safe in pregnancy & breastfeeding
- Risk of immediate **anaphylaxis** from mRNA vaccine: ~2-5 events per million doses
- Risk of **myocarditis/pericarditis** from mRNA vaccine: 24 events per million doses in males 18-29 years of age
- Risk of severe **blood clot & low platelets** from J&J vaccine: ~9 events per million doses in women 18-49 years of age
- Risk of **Guillain-Barre Syndrome** from J&J vaccine: ~8 events per million doses in adults
- **Long-term side effects are highly unlikely**

## Vaccines & Women's Health

COVID vaccines are considered safe in pregnancy & lactation.

There are no data indicating adverse impacts on fertility.





# Safety in Pregnancy

(New Israeli Study)

Vaccination with Pfizer mRNA vaccine appears to be effective & safe in pregnant woman, a demographic currently without published Phase 3 data

Outcomes	Vaccinated	Matched unvaccinated
No.	7530	7530
SARS-CoV-2 hospitalization, No. (%)	13 (0.2)	23 (0.3)
Abortion, <sup>c</sup> No. (%)	128 (1.7)	118 (1.6)
Intrauterine growth restriction, No. (%)	36 (0.5)	38 (0.5)
Preeclampsia, No. (%)	20 (0.3)	21 (0.3)
Stillbirth, No. (%)	1 (<0.1)	2 (<0.1)
Maternal death, No. (%)	0	0
Obstetric pulmonary embolism, No. (%)	0	0
Birth week, median (IQR)	39 (38-40)	39 (38-40)
Preterm birth (<37 wk), No. (%)	77/1387 (6.6)	85/1427 (6.0)
Infant weight, median (IQR), kg	3.2 (2.9-3.6)	3.2 (2.9-3.5)

[Association between BNT162b2 vaccination and incidence of SARS-CoV-2 infection in pregnant women](#), Goldshtein *et al.* *JAMA* (July 12, 2021).

# What We Know About Boosters

## Pfizer says it's time for a Covid booster; FDA and CDC say not so fast



By Maggie Fox, CNN

Updated 6:45 AM ET, Fri July 9, 2021



WORLD

## Israel approves third dose of COVID-19 vaccine for elderly



Published 5 hours ago on July 28, 2021  
By BNO News



CDC @CDCgov · 18m

Americans who have been fully vaccinated against #COVID19 do not need a booster shot at this time. FDA, CDC, and NIH are engaged in a science-based, rigorous process to consider whether or when a booster might be necessary. Read full CDC/FDA statement.



Joint CDC and FDA Statement on Vaccine Boosters  
The United States is fortunate to have highly effective vaccines that are widely available for thos...  
[hhs.gov](https://www.hhs.gov)

# When will Vaccinations be Available to Children?

**NOW**

Ages 12 – 17 years

*Pfizer*

**? DEC 2021**

Ages 6 mo - 11 years

At the F.D.A.'s urging, Pfizer-BioNTech and Moderna are expanding their trials for children 5 to 11.

At the urging of federal regulators, two coronavirus [vaccine](#) makers are expanding the size of their clinical trials for children ages 5 to 11 — a precautionary measure designed to detect [rare side effects including heart inflammation problems](#) that turned up in vaccinated people younger than 30.



# Where are We Heading?



# CDC Summary of Recent Changes

## Summary of Recent Changes

Updates as of July 27, 2021

- Updated information for fully vaccinated people given new evidence on the B.1.617.2 (Delta) variant currently circulating in the United States.
- Added a recommendation for fully vaccinated people to wear a mask in public indoor settings in areas of [substantial or high transmission](#).
- Added information that fully vaccinated people might choose to wear a mask regardless of the level of transmission, particularly if they are immunocompromised or at [increased risk for severe disease](#) from COVID-19, or if they have someone in their household who is immunocompromised, at increased risk of severe disease or not fully vaccinated.
- Added a recommendation for fully vaccinated people who have a known exposure to someone with suspected or confirmed COVID-19 to be tested 3-5 days after exposure, and to wear a mask in public indoor settings for 14 days or until they receive a negative test result.
- CDC recommends universal indoor masking for all teachers, staff, students, and visitors to schools, regardless of vaccination status.

[Source link: CDC Recent Changes](#)

# A Return to Indoor Masking for Disney

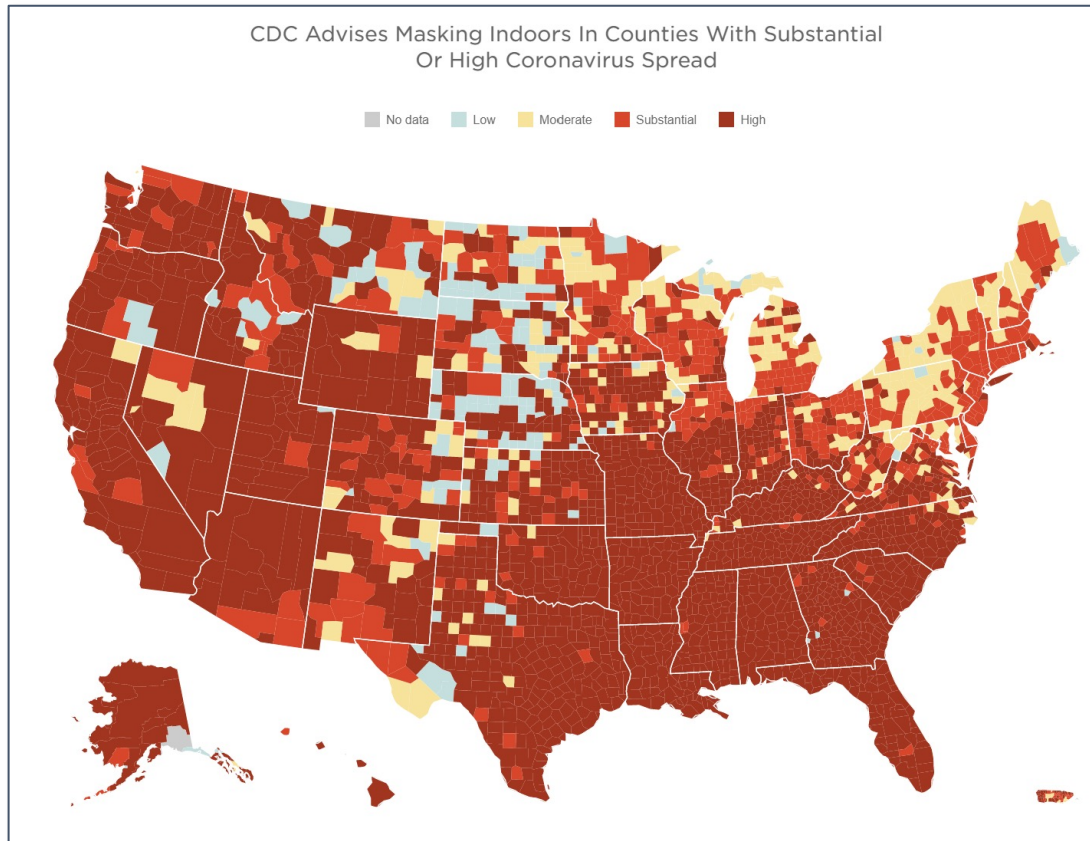


[Source link](#)

# Recent policy changes at VUMC

- **COVID-19 vaccinations are now required**
- **Broadening of masking requirements:**
  - Masks, when worn, must be over both the mouth and nose.
  - Masking is now required for all persons, regardless of vaccination status in all indoor areas of VUMC that are public, including non-clinical locations and corridors.
  - Masking is still not required in outdoor spaces, regardless of vaccination status.
  - When a person is unable to wear a facemask due to a medical necessity, medical condition or disability, a face shield should be worn.
- **Meetings should be held VIRTUALLY when possible.** If an in-person meeting is warranted, participants should follow VUMC Masking Guidance.

# A Return to Indoor Masking Recommendations



[Source link:NPR](#)

*(These data accessed on 08/05/2021)*



# What We Need to Do



Continue non-pharmacological interventions to slow the spread of the virus!

- Distance
- Masks
- Ventilation
- Hygiene



**Get people immunized!**

# The Future

- Global **control** of COVID-19
- **Surveillance**: global, sequencing, data sharing
- **Testing**: cheap, available, frequent, self-administered
- **Treatment**: possibly closer to oral antivirals
- **Vaccines**: targeting variants; children; boosters
- **“Long COVID”**: better understanding/treatments/preventions
- Improve **public health** systems
- Improve **population health** to reduce inequities & disparities

# Questions & Answers

# Thank you.

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