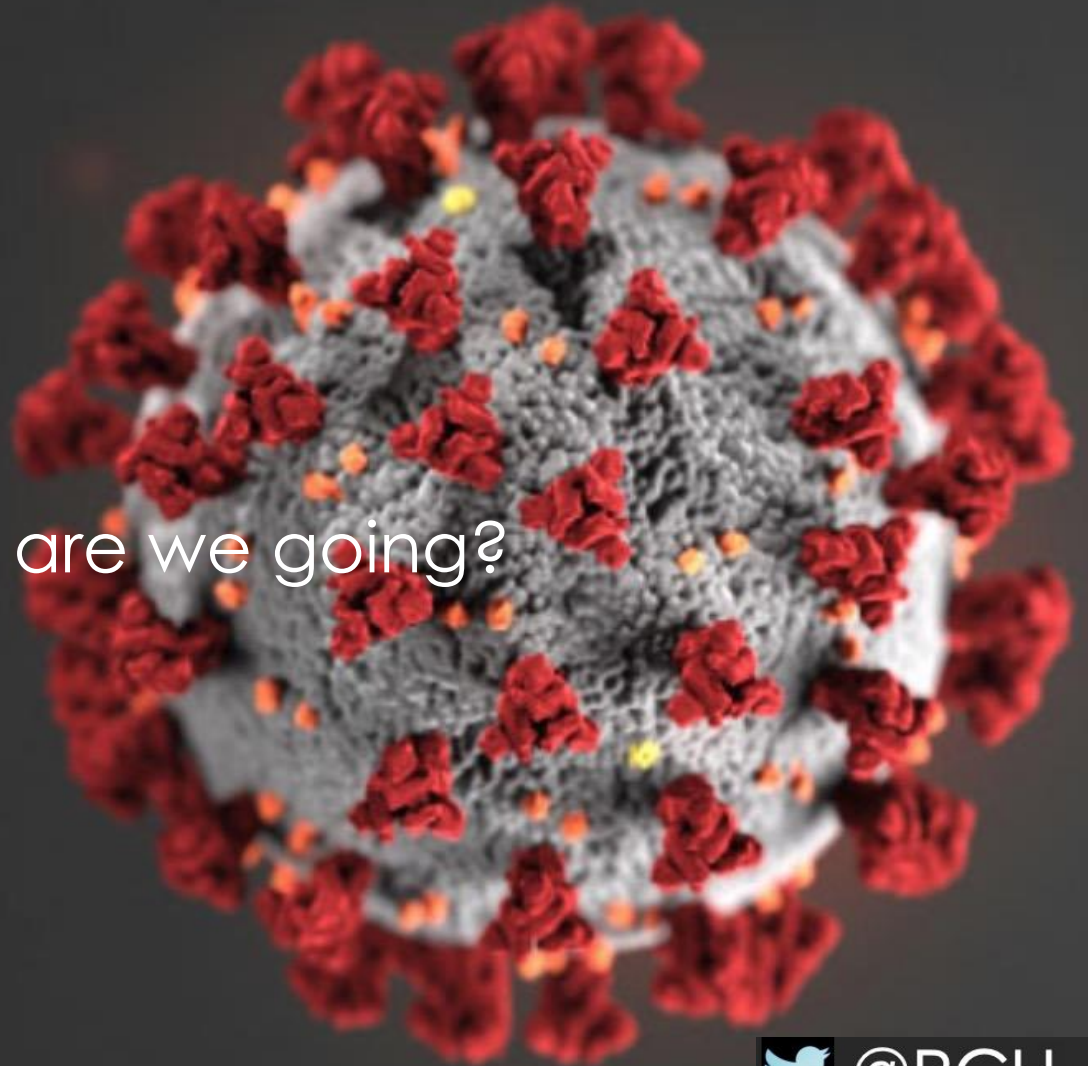


# COVID-19

Where are we and where are we going?

Peter Chin-Hong MD  
UCSF

October 3, 2022



# Disclosures

None

# Outline

- Epidemiology
- Treatment
- Prevention
- Where are we going?



Sonoma Artist Health Equity COVID Campaign ©2021

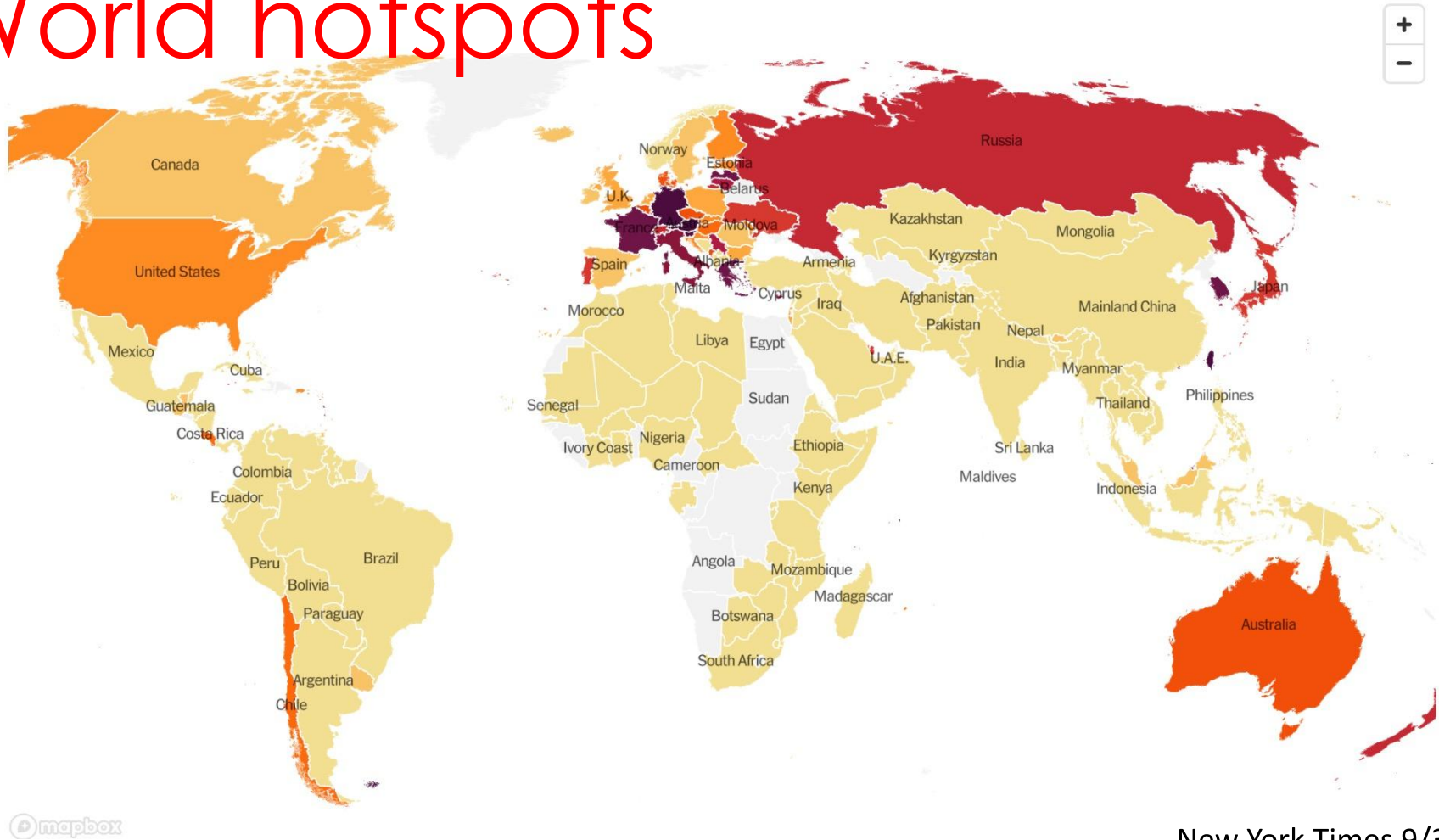
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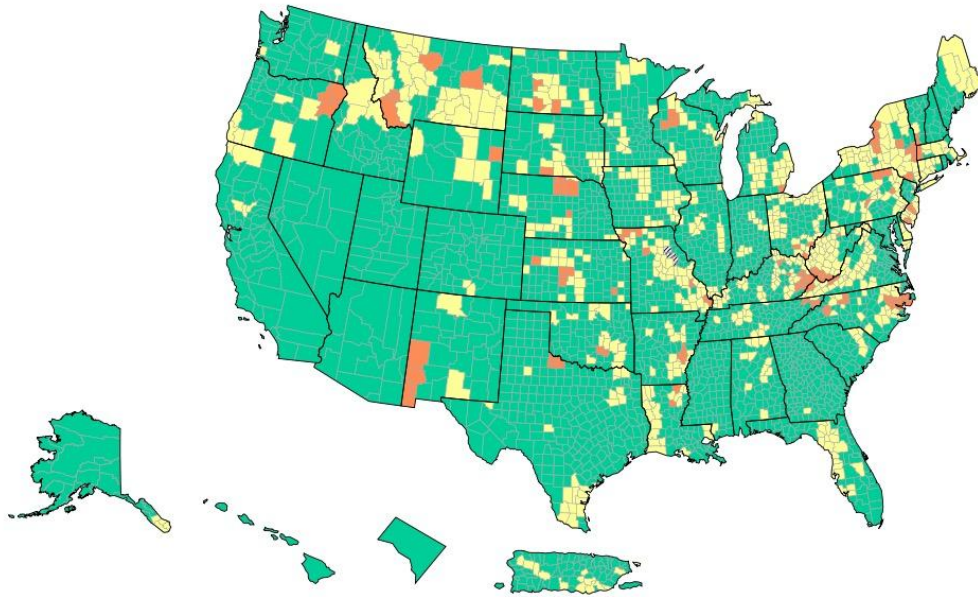


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# World hotspots



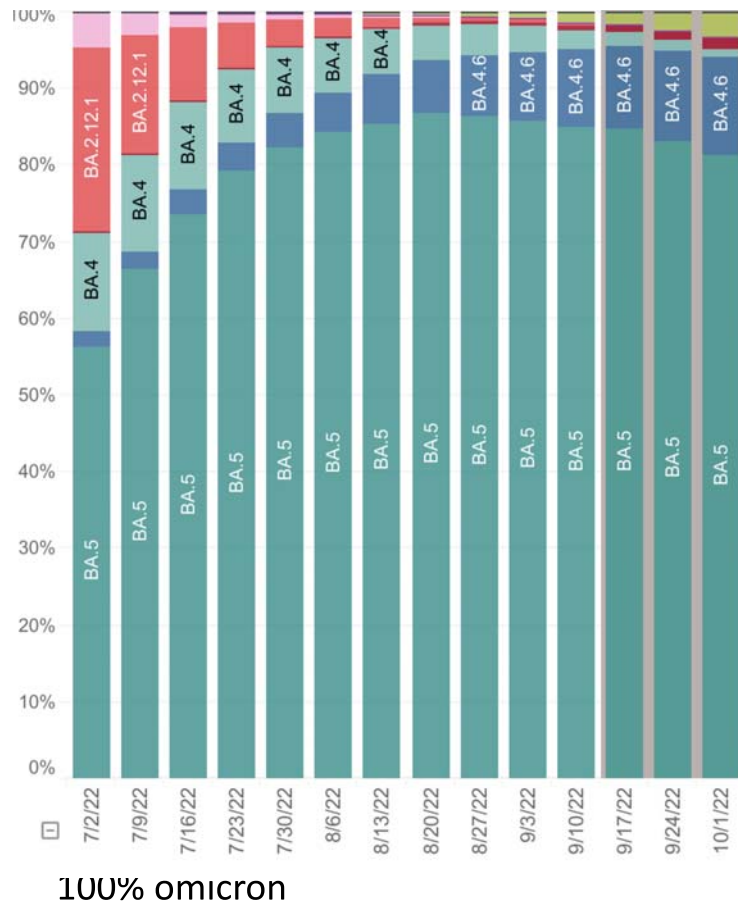
# USA hotspots



COVID-19 Community Levels in US by County

	Total	Percent	% Change
High	107	3.32%	- 3.7%
Medium	737	22.89%	- 8.35%
Low	2376	73.79%	12.05%

# SARS-CoV-2 variants among new cases, United States and California, 2021-2022



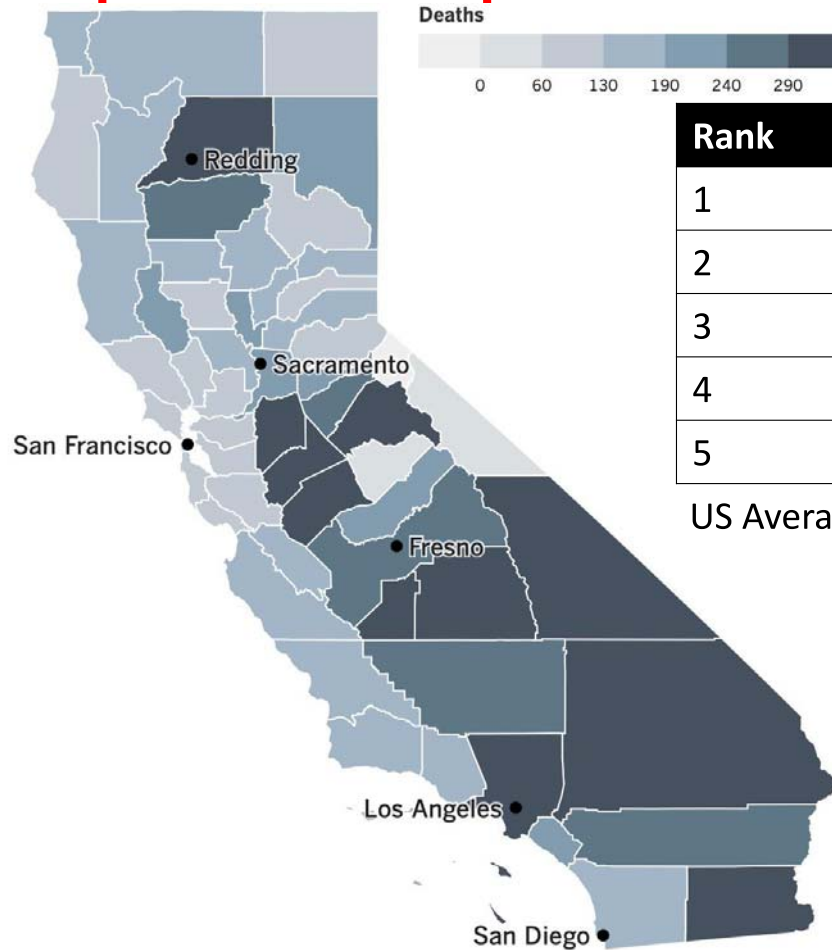
4 new variants to watch out for

	Variant	%
1	<b>BF.7</b>	3.4 (10% Belgium)
2	<b>BA 2.75.2</b>	1.4
3	BA 4.6	12.8
4	BQ 1.1	





# CA deaths per capita



Rank	County	Deaths/100000
1	Imperial	498
2	San Bernadino	317
3	Los Angeles	308
4	Tulare	300
5	Madera	297

US Average 292/100000; CA Average 223/100000

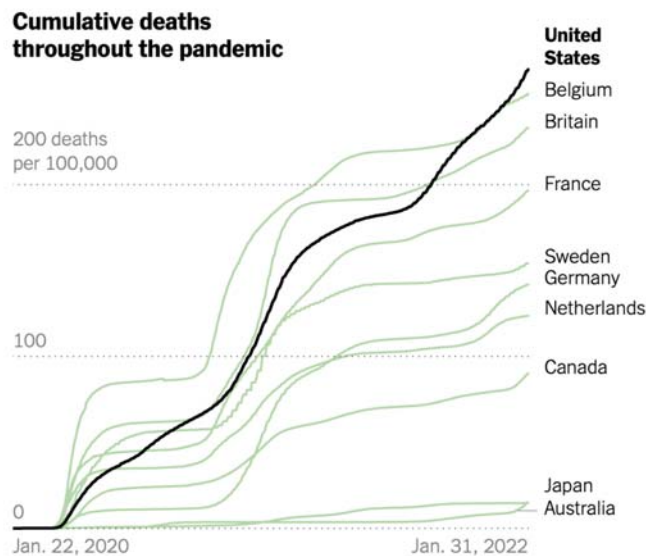
LA Times

# US deaths compared to other countries

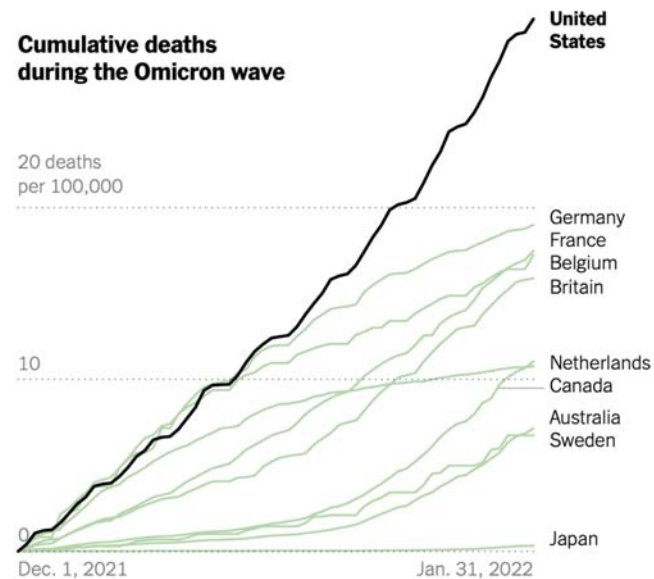
## Cumulative U.S. Covid-19 deaths per capita are highest among other large, high-income countries

Several countries had higher per capita Covid-19 deaths earlier in the pandemic, but the U.S. death toll now exceeds that of peer nations.

Cumulative deaths throughout the pandemic



Cumulative deaths during the Omicron wave



New York Times 2/1/22

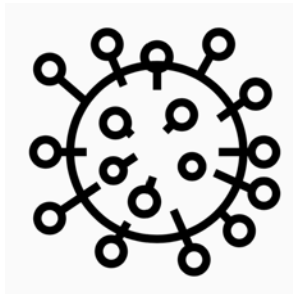
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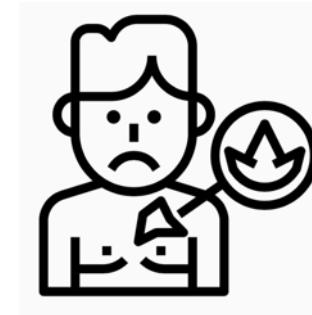
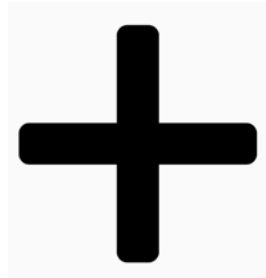
# Treatment



**Virus**

Monoclonal Ab  
Convalescent plasma  
Remdesivir

Molupiravir  
Paxlovid



**Inflammation**

Dexamethasone  
Baracitnib  
Tocilizumab

**Emerging therapies**

# Outpatient Management

## Paxlovid & other oral agents

### 4 facts about Paxlovid

First in class pill designed specifically for COVID-19

Phase 3 RCT. Global study. N=1219. 3 pills twice daily. Enrolled if 1 risk factor for severe disease. Unvaxed.

#Gamechanger

Source:  
Pfizer

Another infographic by  
@PCH\_SF

0

Zero deaths in treatment group; 7 deaths in placebo group (if treat within 3 days)



3

Treat with 3 pills twice daily within 3-5 days of symptoms for 5 days. The earlier the better



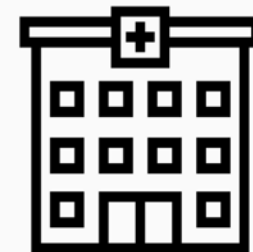
6

6.6% patients in placebo & placebo group and 2% in treatment group with serious adverse effects. 2% treatment & 4% placebo group discontinued meds



90

89% efficacy in preventing hospitalization. Need to treat 16 patients to prevent 1 hospitalization; 7% in treatment & 7% in placebo group hospitalized



# Outpatient Management COVID rebound blues



CNN 6/30/22

## *Biden Tests Positive for Coronavirus Again in 'Rebound' Case*

The president tested positive on Saturday morning and will once again isolate, although his symptoms have not come back, the White House physician said.

Give this article



New York Times 7/30/22

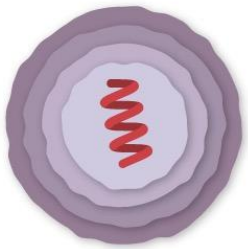
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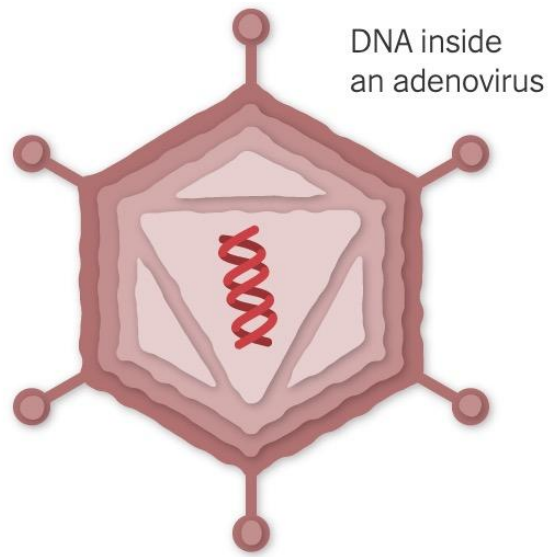


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# Vaccines



**mRNA**  
(Pfizer, Moderna)



**Adenovirus vector**  
(AstraZeneca, J&J)



**Protein subunit\***  
(Novavax, Sanofi/GSK)



# Novavax

- 90% protective against symptomatic infection and 100% protective against serious disease (pre-Omicron)
- Better side effect profile than mRNA vaccines
- Delivers bits of the spike protein itself (+ adjuvant) instead of genetic message (mRNA)
- May appeal to those hesitant about mRNA vaccines
- Already approved in many countries: Europe, Canada, Australia, S Korea



WSJ 3/6/22

# Sanofi-GSK

- 58% protective against symptomatic infection and 100% protective against serious disease (includes Omicron)
- Delivers bits of the spike protein itself (+ adjuvant) instead of genetic message (mRNA)
- May appeal to those hesitant about mRNA vaccines
- Application for full FDA-approval

CNN health Life, But Better Fitness Food Sleep Mindfulness Relationships LIVE TV CNN+

## New vaccine demonstrates strong protection against severe Covid-19 in clinical trials

By Brenda Goodman, CNN  
Updated 8:51 PM EST, Wed February 23, 2022



CNN 2/23/22

MORE FROM CNN

- Woman whose town was overrun describes strange behavior by Russian soldiers
- Private fighters involved in Zelensky assassination plot, top Ukrainian official says



# Boosters for who? It depends on values

- By timing
- By population
  - >65? >50?
  - Immunocompromised
  - Pregnant
  - Medical comorbidities
  - Everyone?

BUSINESS

## Here's Who Really Needs the New Covid Booster

Analysis by Faye Flam | Bloomberg  
September 28, 2022 at 3:54 p.m. EDT



Washington Post 9/28/22

# Long-acting monoclonal antibodies

- Tixagevimab-cilgavimab
- 2 IM shots
- 1 hr observation
- N=5000 unvaccinated adults >60 or comorbidity
- Risk of infection ↓ 77% (0.2% vs 1.0%) by 6 months
- Increased dose needed for Omicron

## New Omicron offshoot BA.4.6 evades protection of Evusheld's antibodies, study finds

By Brenda Goodman, CNN

Updated 11:23 PM EDT, Wed September 7, 2022



CNN 9/7/22

<https://www.fda.gov/media/154701/download>

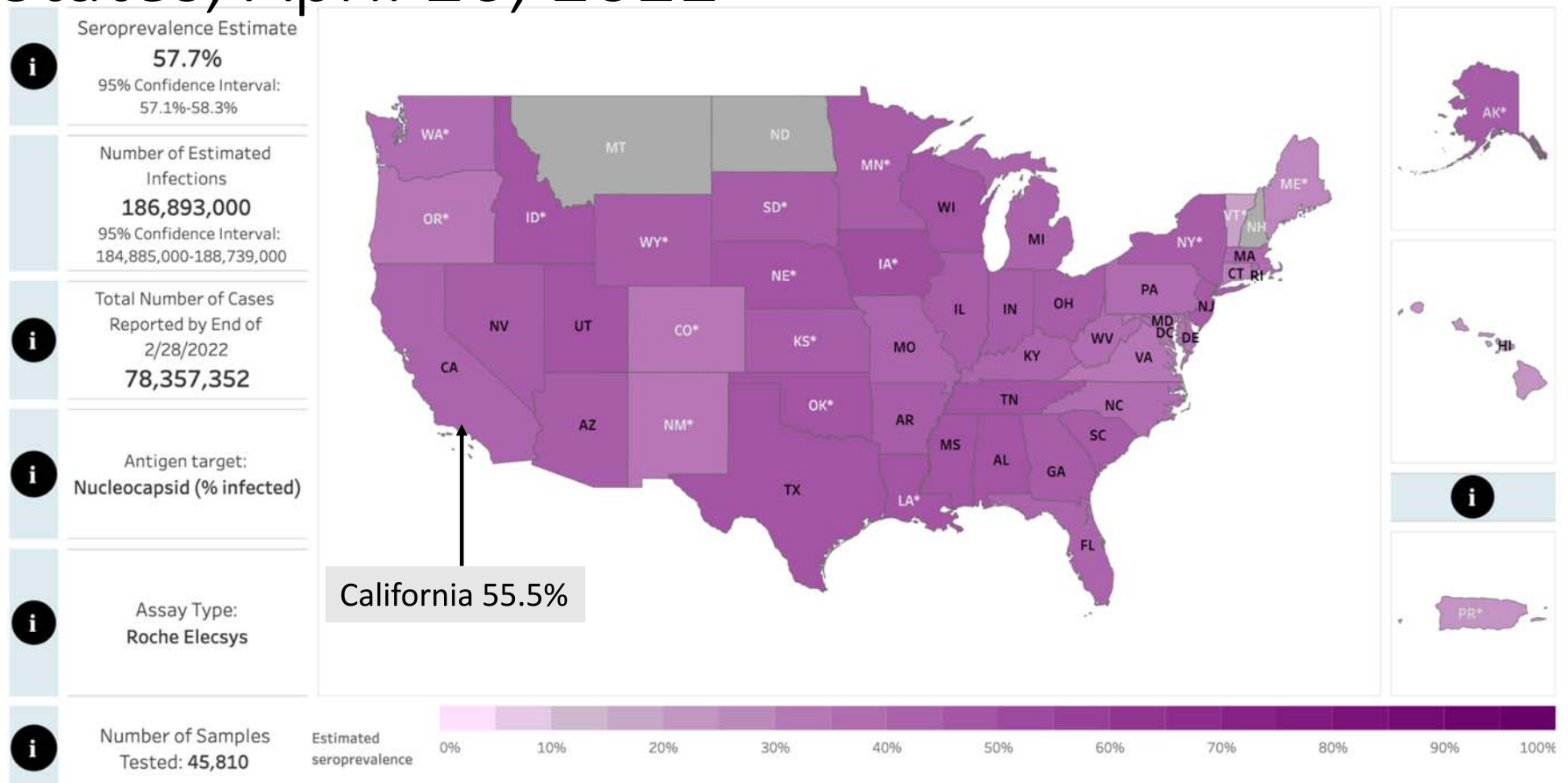
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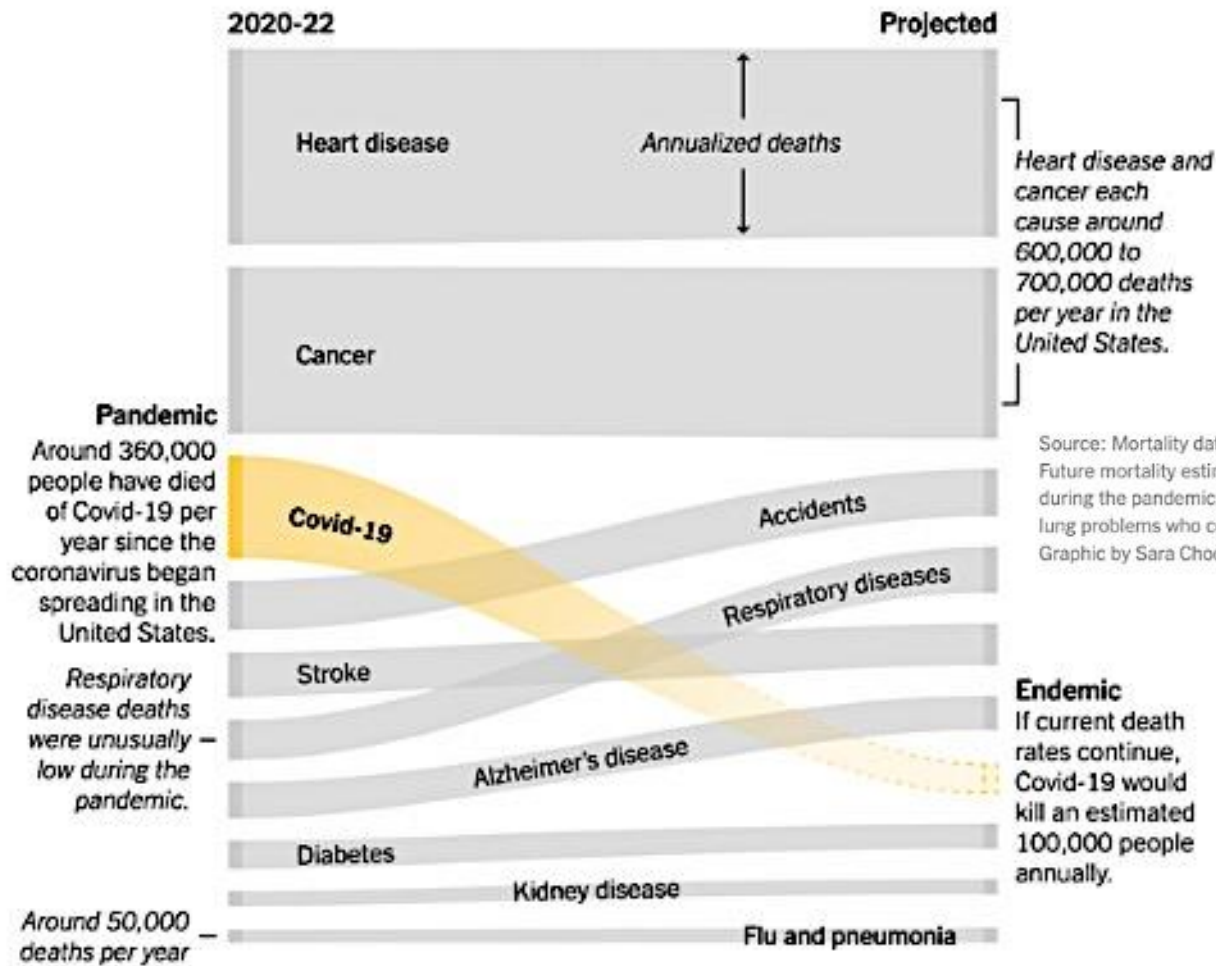
Sonoma Artist Health Equity COVID Campaign ©2020

# SARS-CoV-2 seroprevalence by state, United States, April 26, 2022



# How Covid-19 might fit into the leading causes of death

Some of the most common causes of death in the United States, sized by number of deaths per year, shown during the pandemic and projected into the future.

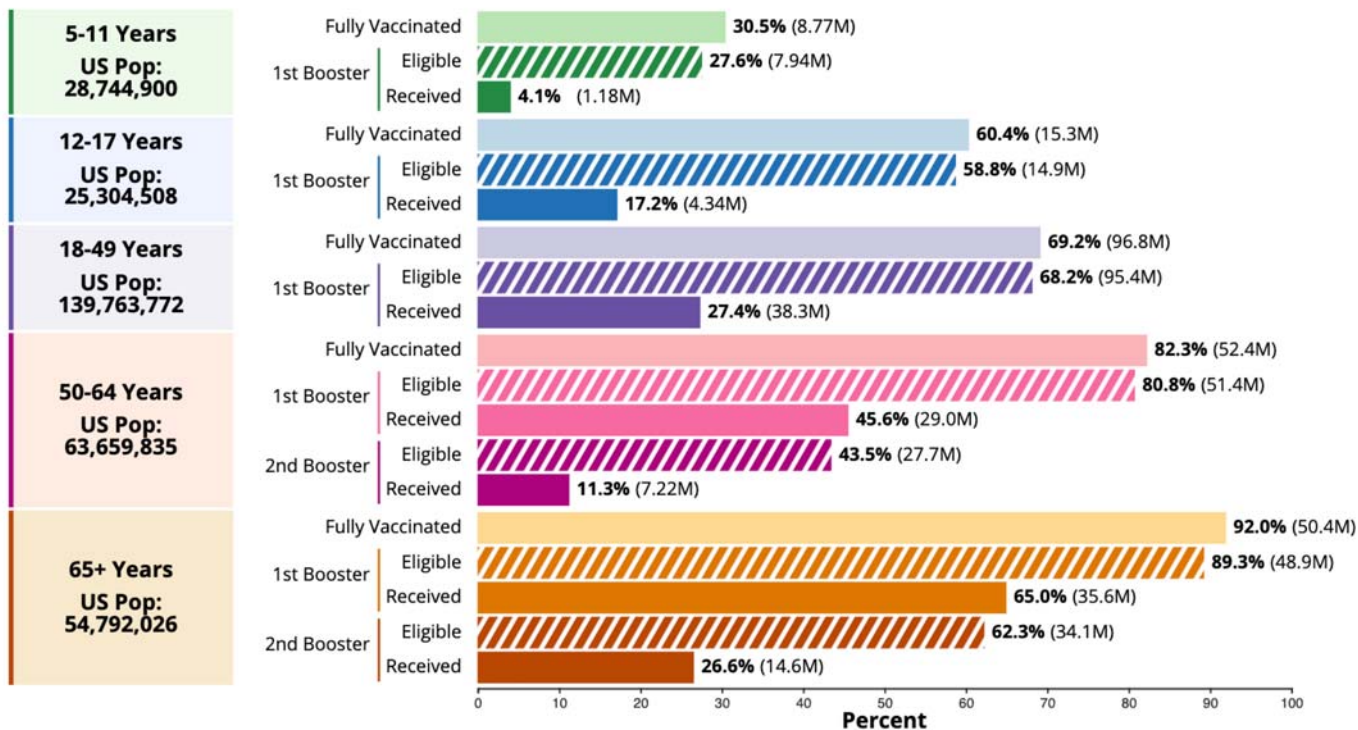


Source: Mortality data for 2018 through June 2022 from CDC WONDER, provisional from 2021 onward. Future mortality estimated based on 2018 and 2019 data. • Note: Respiratory disease deaths were low during the pandemic due in part to lower circulation of respiratory viruses, and because some people with lung problems who could have died from respiratory disease died from Covid-19 infections instead. • Graphic by Sara Chodosh

The New York Times

# Proportion of population completing primary series and proportion that has received booster doses, United States, August 25, 2022

Primary Series Completion, Booster Dose Eligibility, and Booster Dose Receipt by Age, United States





Popular

Latest

*The Atlantic*

Sign In

---

AUGUST 16, 2022

HEALTH

# The Pandemic's Soft Closing

The CDC's latest COVID guidelines are the closest the nation's leaders have come to saying the coronavirus crisis is done.

By Katherine J. Wu

# Endemic?

- The good
  - 50% of COVID infections in US so far in 2022 = more population immunity
  - Decoupling between cases and deaths
- The bad
  - Deaths way too high still 10x influenza season
  - Unpredictable virus
  - Long COVID

OPINION  
DAVID WALLACE-WELLS

## Endemic Covid-19 Looks Pretty Brutal

July 20, 2022



NYT 7/20/22

# Prevent future surge?

- Disease surveillance
  - Wastewater analysis
  - Variant analysis
- Vaccines & boosters
- Early therapy
  - Paxlovid
- Masks
- Testing
- Equity
- Policy
- Cost \$\$\$

## Latest Covid surge a 'heavy straw on camel's back' for every hospital in UK

Health leaders urge vaccination and return to mask-wearing as hospitalisations rise by 37 per cent in a week



Eight hospitals declared a critical incident, cancelled operations or asked people not to come to A&E unless seriously ill last week. Photograph: Andy Rain/EPA

Guardian 10/1/22

Me tryna find my 14th booster  
pass for the Omicron Variant so I  
can buy a sandwich  
(2025, colorized)



Thank you

