CDC/IDSA COVID-19 Clinician Call

May 8, 2021

Welcome & Introduction

Dana Wollins, DrPH, MGC
Vice President, Clinical Affairs & Guidelines
IDSA

- 65th in a series of weekly calls, initiated by CDC as a forum for information sharing among frontline clinicians caring for patients with COVID-19
- The views and opinions expressed here are those of the presenters and do not necessarily reflect the official policy or position of the CDC or IDSA. Involvement of CDC and IDSA should not be viewed as endorsement of any entity or individual involved.
- This webinar is being recorded and can be found online at www.idsociety.org/cliniciancalls.

TODAY:

The Global COVID-19 Situation: Focus on India

The Global COVID-19 Situation
Sarah D. Bennett, MD, MPH
Commander, U.S. Public Health Service
Head of the International Task Force for COVID-19
Centers for Disease Control and Prevention

COVID-19 in Rural India
Pavitra Mohan, MD, MPH
Secretary, Basic HealthCare Services
Udaipur, India

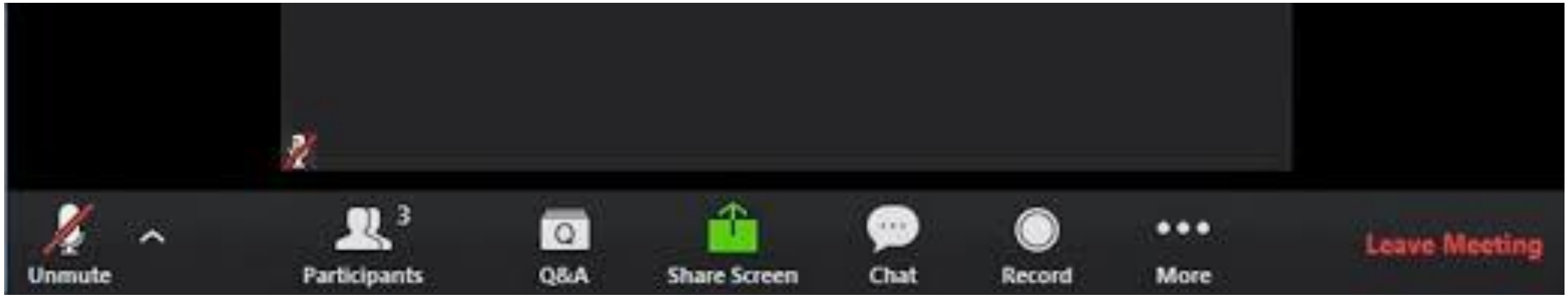
COVID-19 Pandemic in India: The "Triple Threat"
Adarsh Bhimraj, MD, FIDSA
Section Head, Neurologic Infectious Diseases; Staff, Department of Infectious Diseases
Cleveland Clinic

SARS-CoV-2 Variants and India
Rajesh Gandhi, MD, FIDSA
Director, HIV Clinical Services and Education, Massachusetts General Hospital
Co-Director, Harvard Center for AIDS Research and Professor of Medicine, Harvard Medical School
Chair, HIV Medicine Association

What Can be Done to Increase Vaccine Uptake and Reduce Spread?
Peter V. Chin-Hong, MD
Professor of Medicine and Associate Dean for Regional Campus
Director, Transplant and Immunocompromised Host Infectious Disease Program
University of California, San Francisco

Question?
Use the “Q&A” Button

Comment?
Use the “Chat” Button



The Global COVID-19 Situation

Sarah D. Bennett, MD, MPH

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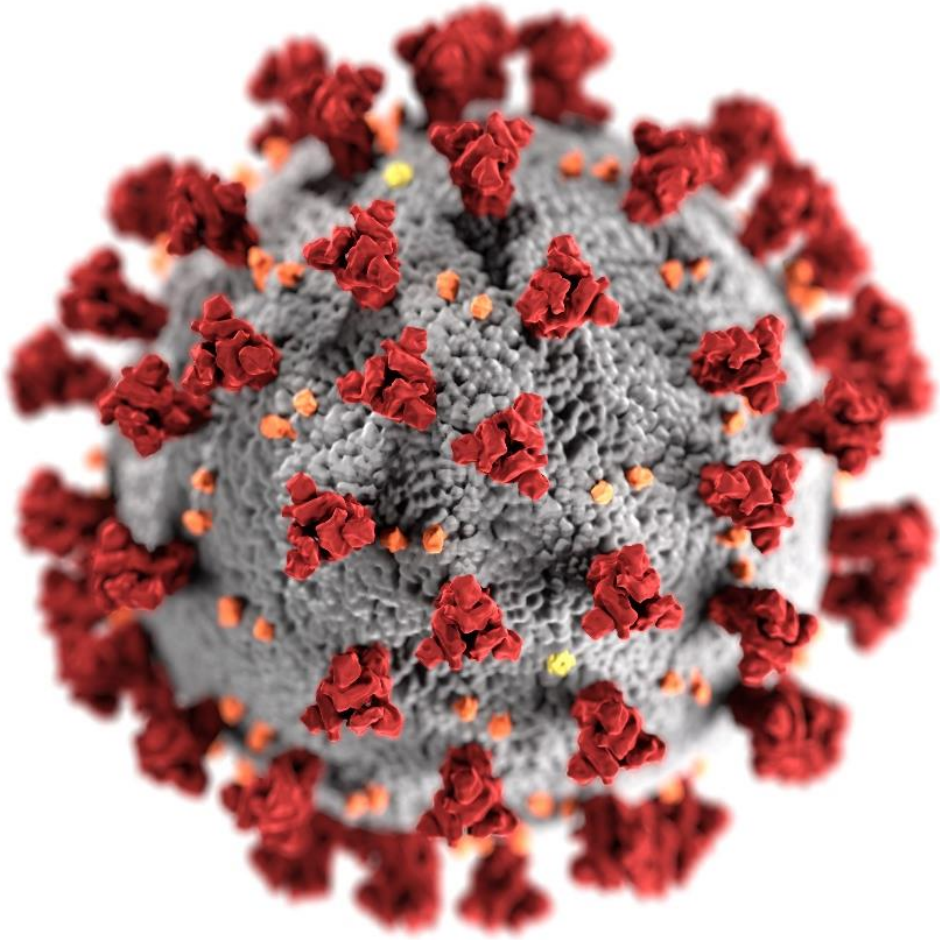
Overview of CDC Global COVID-19 Response

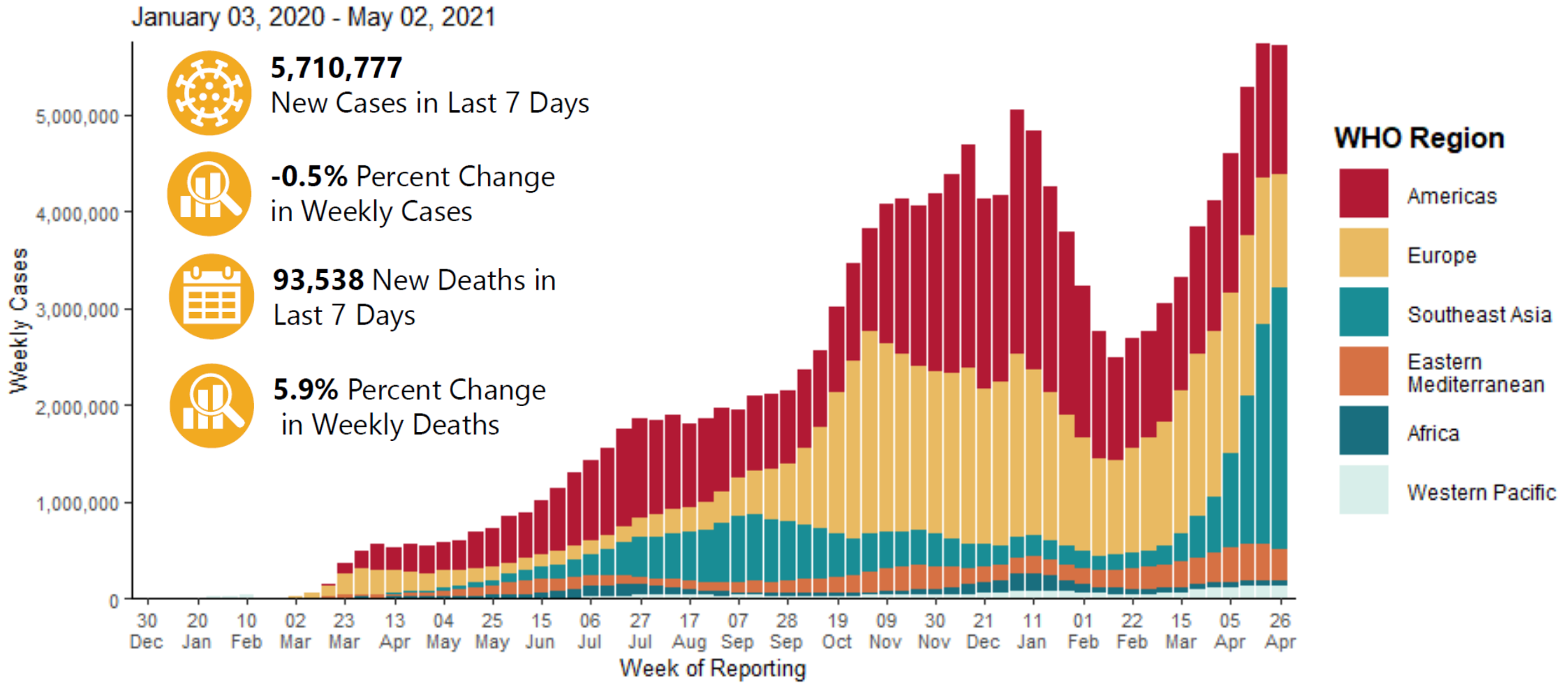
May 8, 2021



cdc.gov/coronavirus

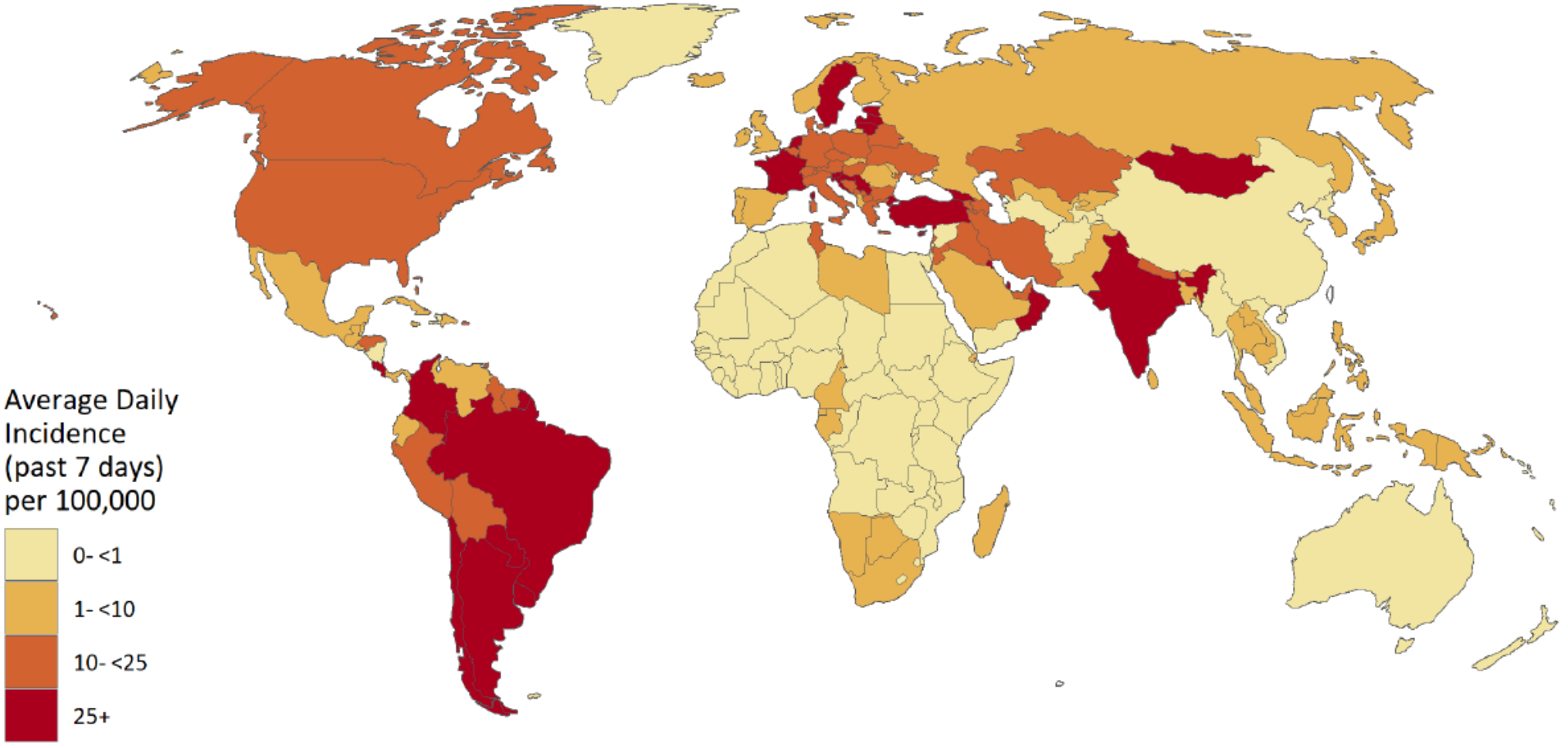
www.cdc.gov/coronavirus/2019-ncov/global-covid-19

Confirmed COVID-19 Cases by Week of Report and WHO Region (as of 02 May 2021)



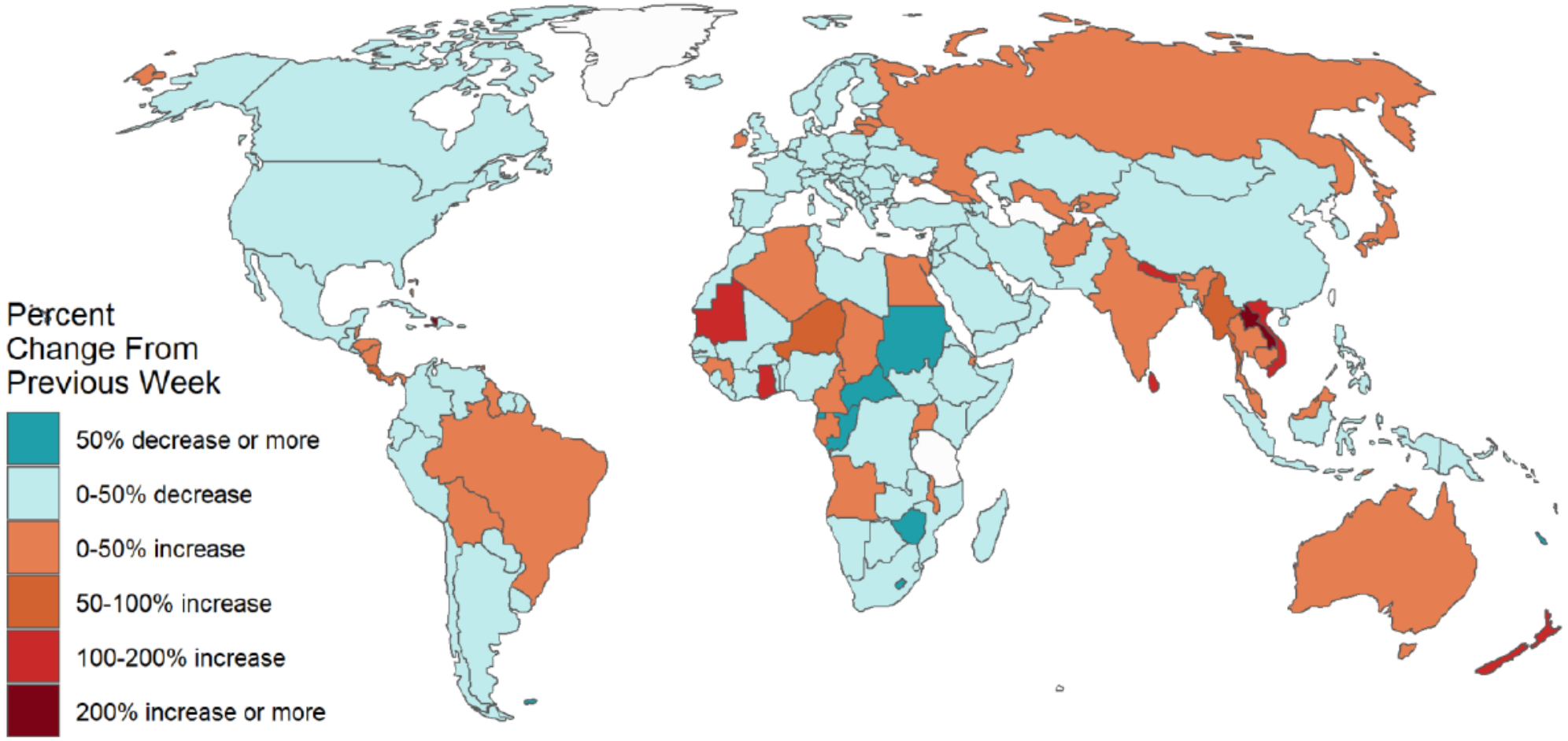
Source: https://covid19.who.int/

Average daily incidence over the past 7 days per 100,000 population (as of 02 May 2021)



Data Source: WHO Coronavirus Disease (COVID-19) Dashboard

Trend - % change in cases from 7-day period compared to previous 7-day period (as of 02 May 2021)

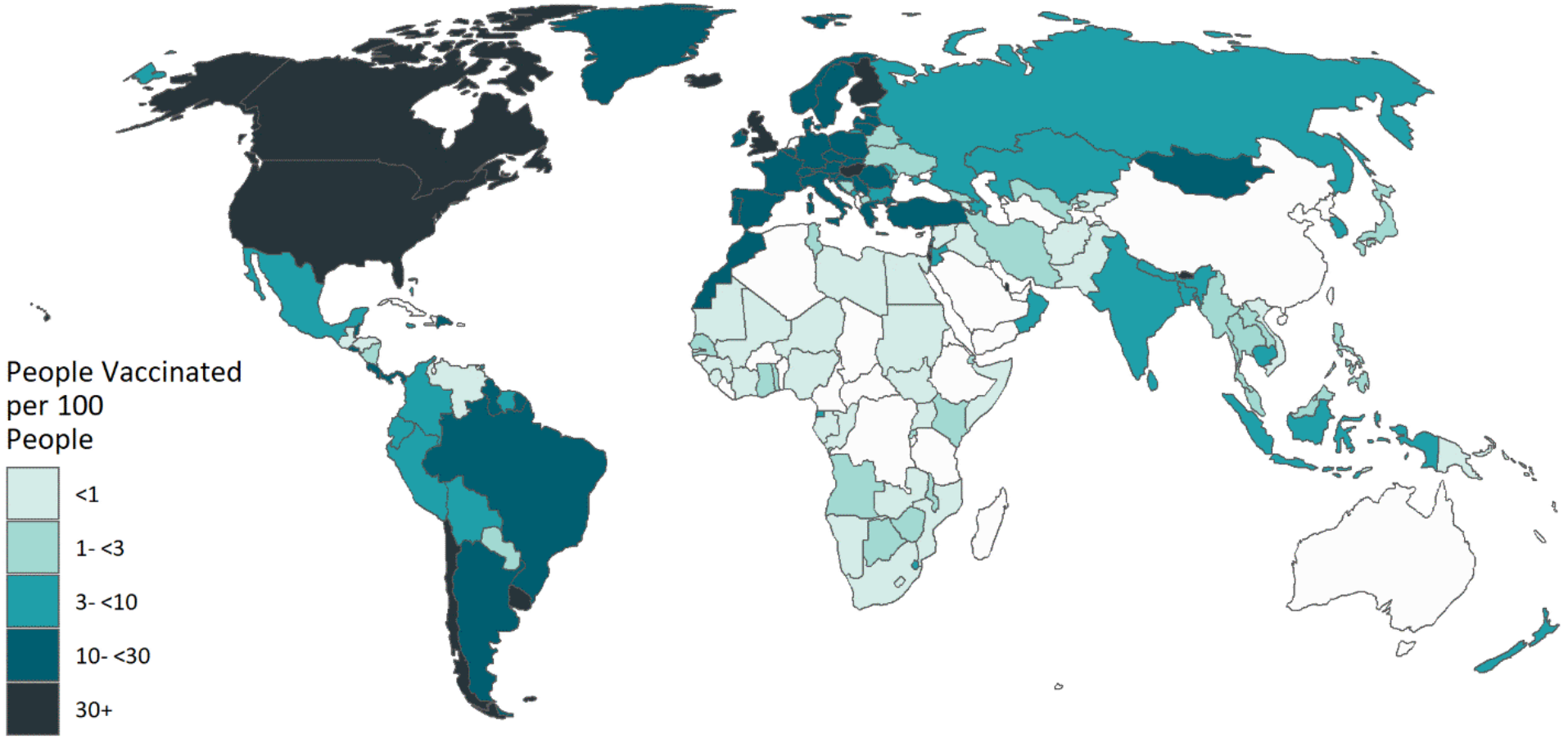


Data Source: WHO Coronavirus Disease (COVID-19) Dashboard

Source: https://ourworldindata.org/covid-vaccinations

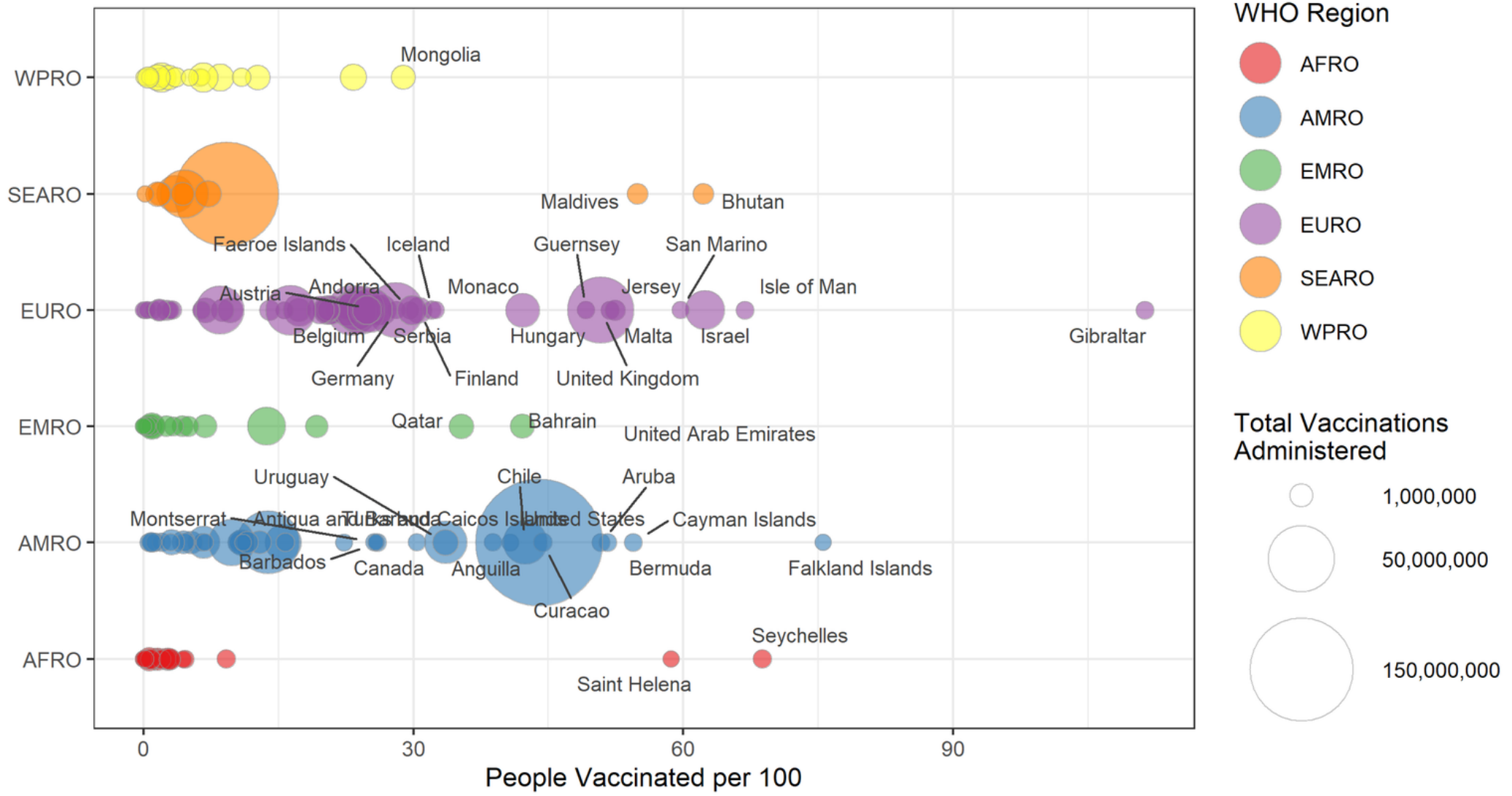
People Vaccinated per 100 People (as of 02 May 2021)

This is counted as a single dose and may not equal the number of people vaccinated, as some vaccines require multiple doses.



People Vaccinated per 100 People by WHO Region

(as of 02 May 2021)

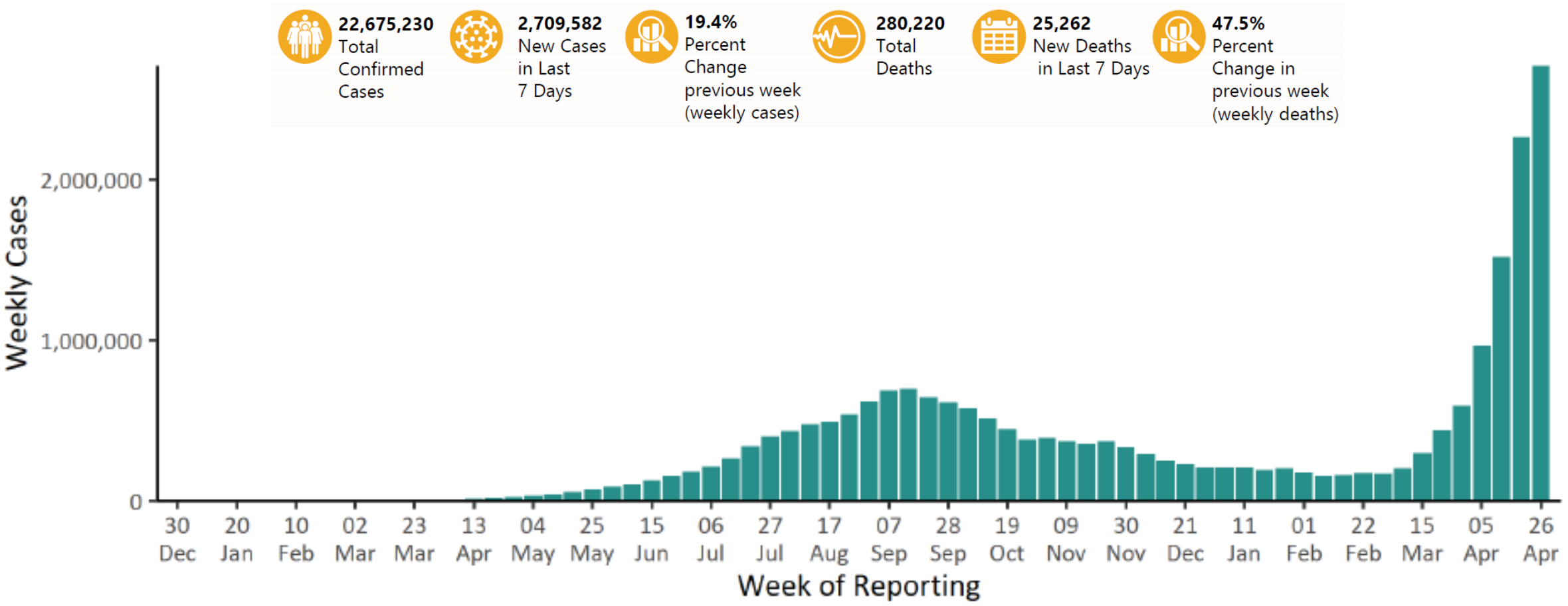


Source: https://ourworldindata.org/covid-vaccinations

Current situation (as of 04 May 2021)

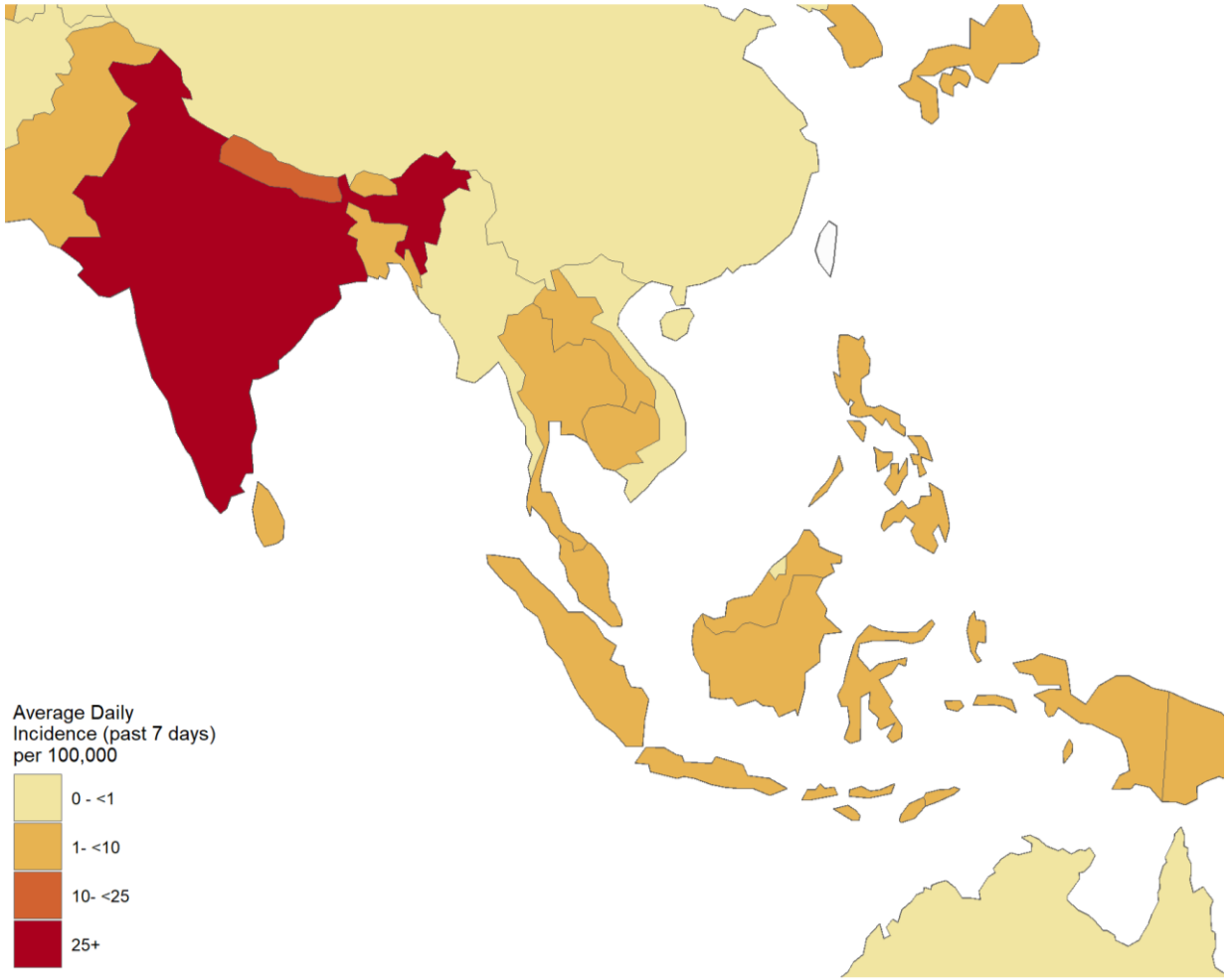
- Cases are
  - Increasing in Southeast Asia Region
  - Plateauing in Americas, Europe, Africa, and Western Pacific regions
  - Decreasing in Eastern Mediterranean Region
- Countries reporting the most cases: India, Brazil, the United States, Turkey, and France
- Countries reporting the greatest increase (positive % change): Haiti, Ghana, Nepal, Sri Lanka, Viet Nam
- Southeast Asia Region reported marked increases in cases and deaths
  - India accounts for
    - >90% of both cases and deaths in the region
    - 46% of global cases and 25% of global deaths
  - New deaths rose in two WHO regions; Southeast Asia (+19%) and Western Pacific (+1%)
- Vaccination is underway in 188 countries or territories (+2 countries)
  - Coverage remains highest in Americas and Europe, and lowest in Africa and parts of Asia
  - Small countries, the United Kingdom, and the United States appear to be reaching greater proportions of their population with at least one dose

Confirmed COVID-19 Cases by Week of Report, Southeast Asia Region (as of 02 May 2021)



Source: https://covid19.who.int/

Burden and Trends, Southeast Asia Region

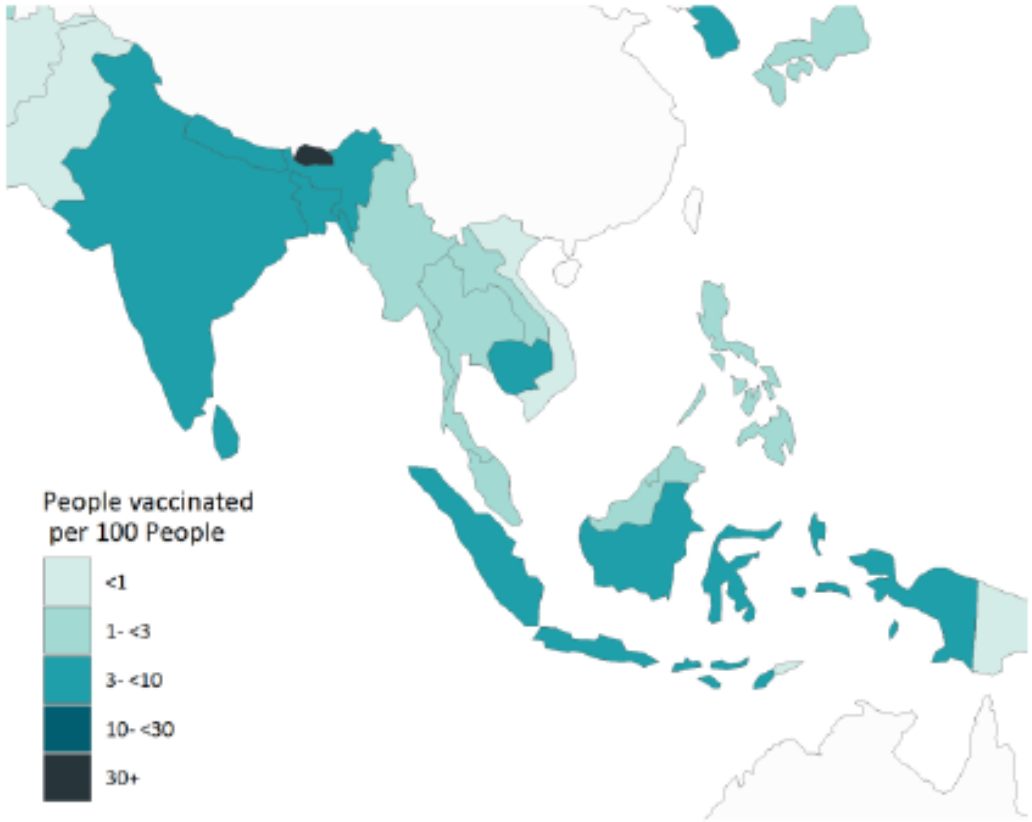


10 Countries with Most New Cases per Week

Country	New Cases This Week	Average Daily Incidence per 100,000	Percent Change In Cases From Last Week
India	2,597,285	27.7	19.6
Indonesia	36,088	1.9	−2.5
Nepal	31,806	14.9	136.8
Bangladesh	18,184	1.6	−33.0
Thailand	13,524	2.8	3.2
Sri Lanka	9,276	5.8	123.7
Maldives	2,616	95.7	77.2
Timor-Leste	588	5.9	2.8
Myanmar	127	0.0	67.1
Bhutan	88	1.5	33.3

Data as of May 02, 2021

People Vaccinated per 100 People, Southeast Asia Region (as of 02 May 2021)



Top 10 countries with highest vaccination per 100 people

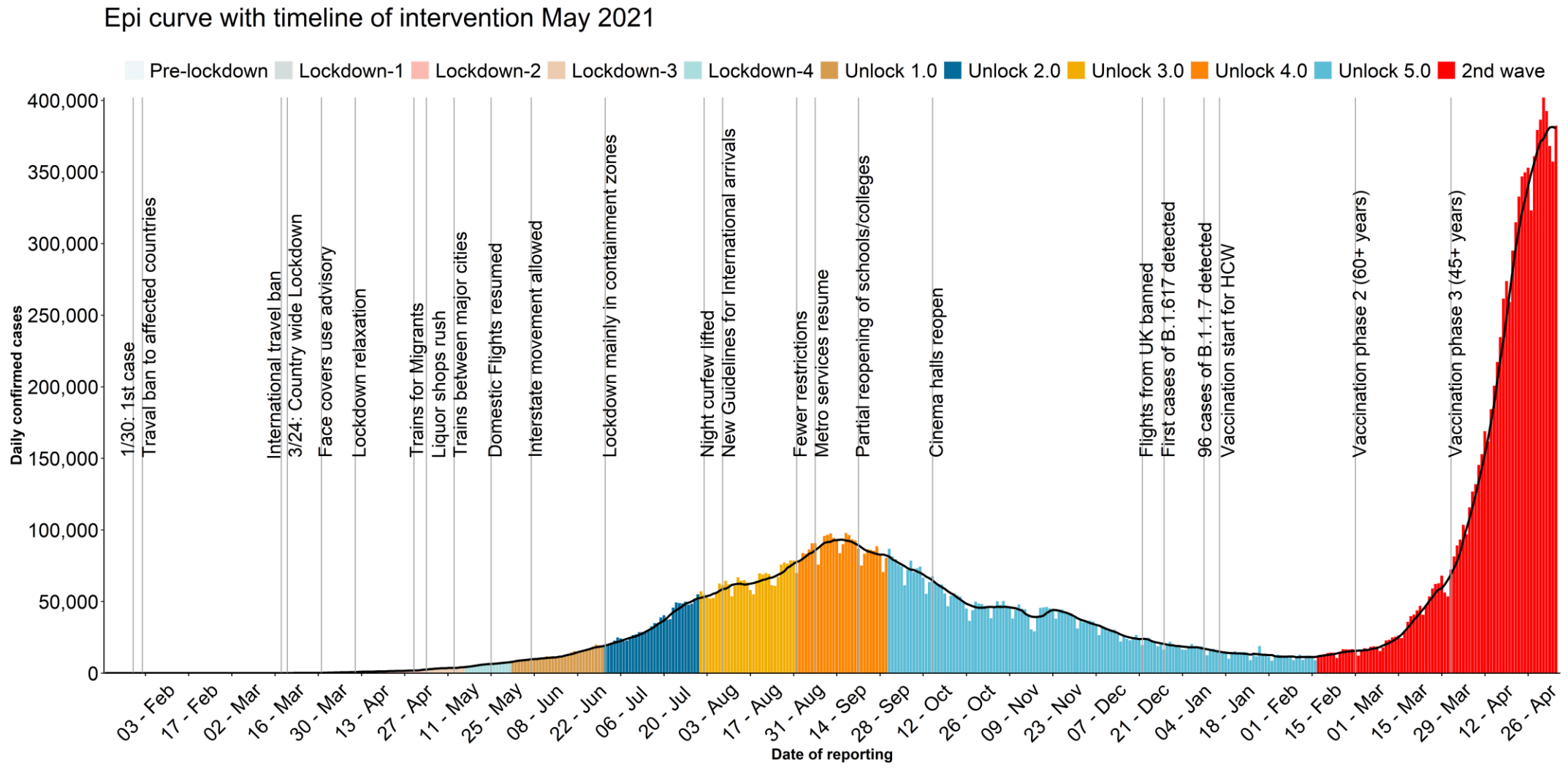
Country	People Vaccinated per 100 People	Daily Vaccines Administered per 100 People[7]
Bhutan	62.3	0.02
Maldives	54.9	1.09
India	9.2	0.17
Nepal	7.2	0.05
Indonesia	4.6	0.09
Sri Lanka	4.3	0.02
Bangladesh	3.5	0.09
Myanmar	1.8	0.02
Thailand	1.6	0.09
Timor	0.2	NA

[7] Average of last seven days to adjust for fluctuating daily administration of vaccine.

This is counted as a single dose and may not equal the number of people vaccinated, as some vaccines require multiple doses.

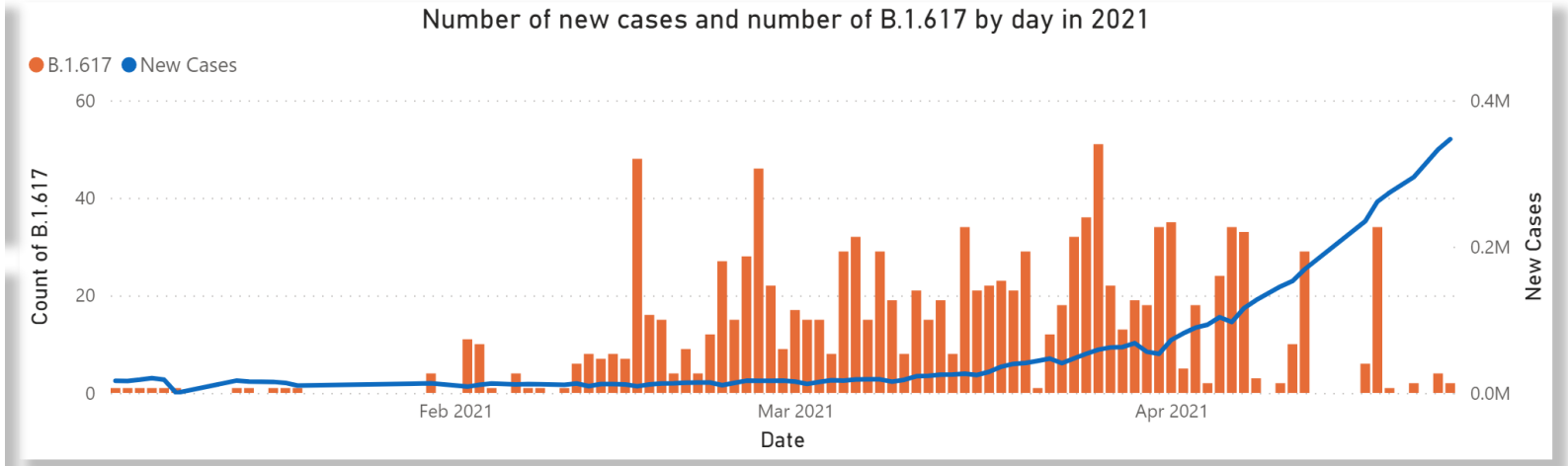
Source: https://ourworldindata.org/covid-vaccinations

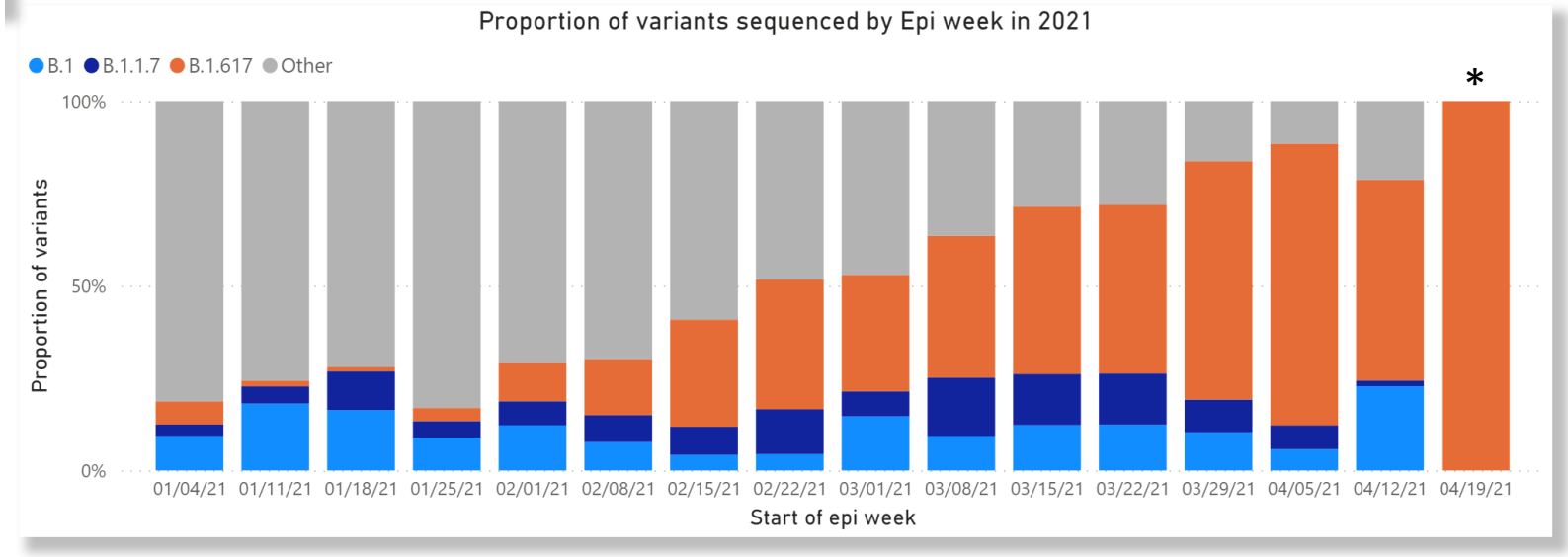
India – number of cases and 7-day moving average, key mitigation strategies



Variants of Concern/Interest in India

- >11 thousand sequences available (GISAID)
- 1,298 are B.1.617
- Other variants of concern (B.1.1.7 and B.1.351 and P1) have also been detected
- Surge in cases is likely multifactorial





*incomplete reporting week

CDC Global COVID-19 Support

CDC COVID-19 Global Strategy

Limit transmission of COVID-19; minimize the impact of COVID-19 in vulnerable populations; reduce specific health threats that pose current and future risk to the United States; increase the scientific knowledge about SARS-CoV-2 and provide global public health leadership; and support the development of long-term health security.

CDC's global COVID-19 response aims to:

STRENGTHEN global capacity at country and regional levels to prevent, detect, and respond to COVID-19 cases.

INCREASE national and global readiness to implement and evaluate vaccination programs and use therapeutics when available.

PREVENT & MITIGATE COVID-19 transmission across borders, in communities, in healthcare facilities, and among healthcare workers.

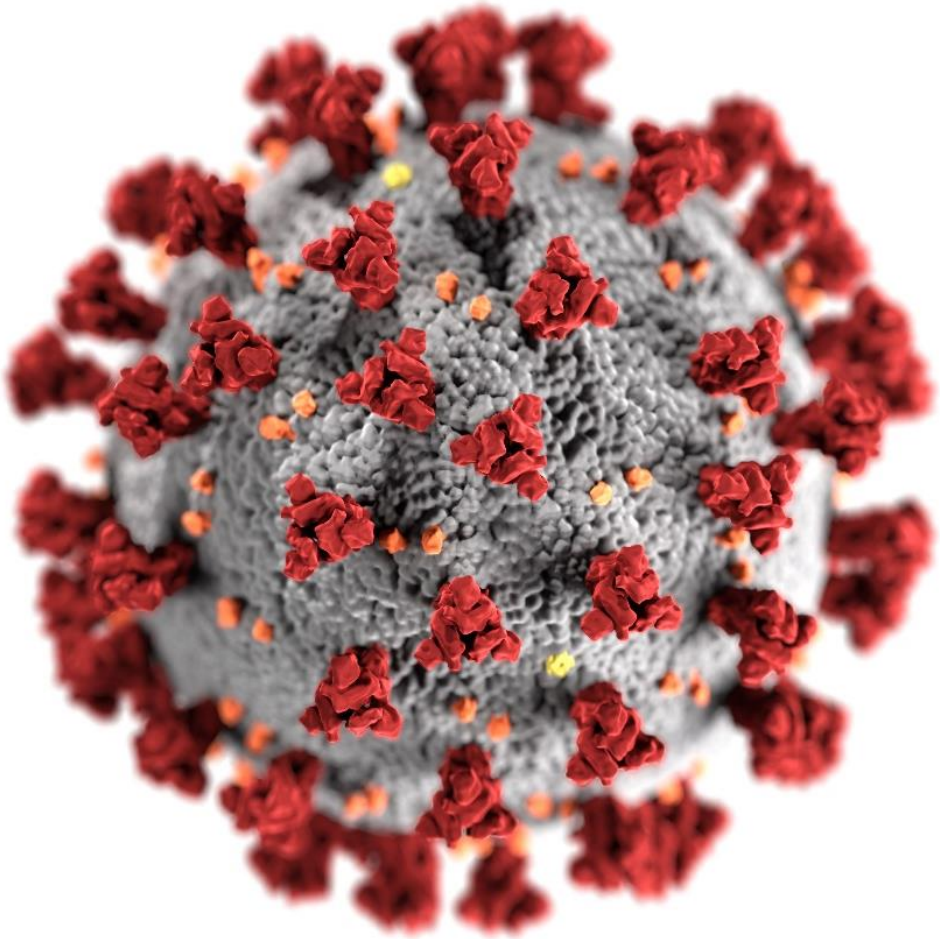
CONTRIBUTE to the scientific understanding of COVID-19 and address critical unknowns regarding clinical severity, modes of transmission, and long-term sequelae and immunity.

Strategic Priority Areas

CDC's funding for international COVID-19 preparedness and response is supporting activities in five priority technical areas:

- **Emergency response**
- **Laboratory, surveillance, and epidemiology**
- **Border health and community mitigation**
- **Infection prevention, control, and preparedness in healthcare facilities**
- **Pandemic & vaccine preparedness planning**

Thank you

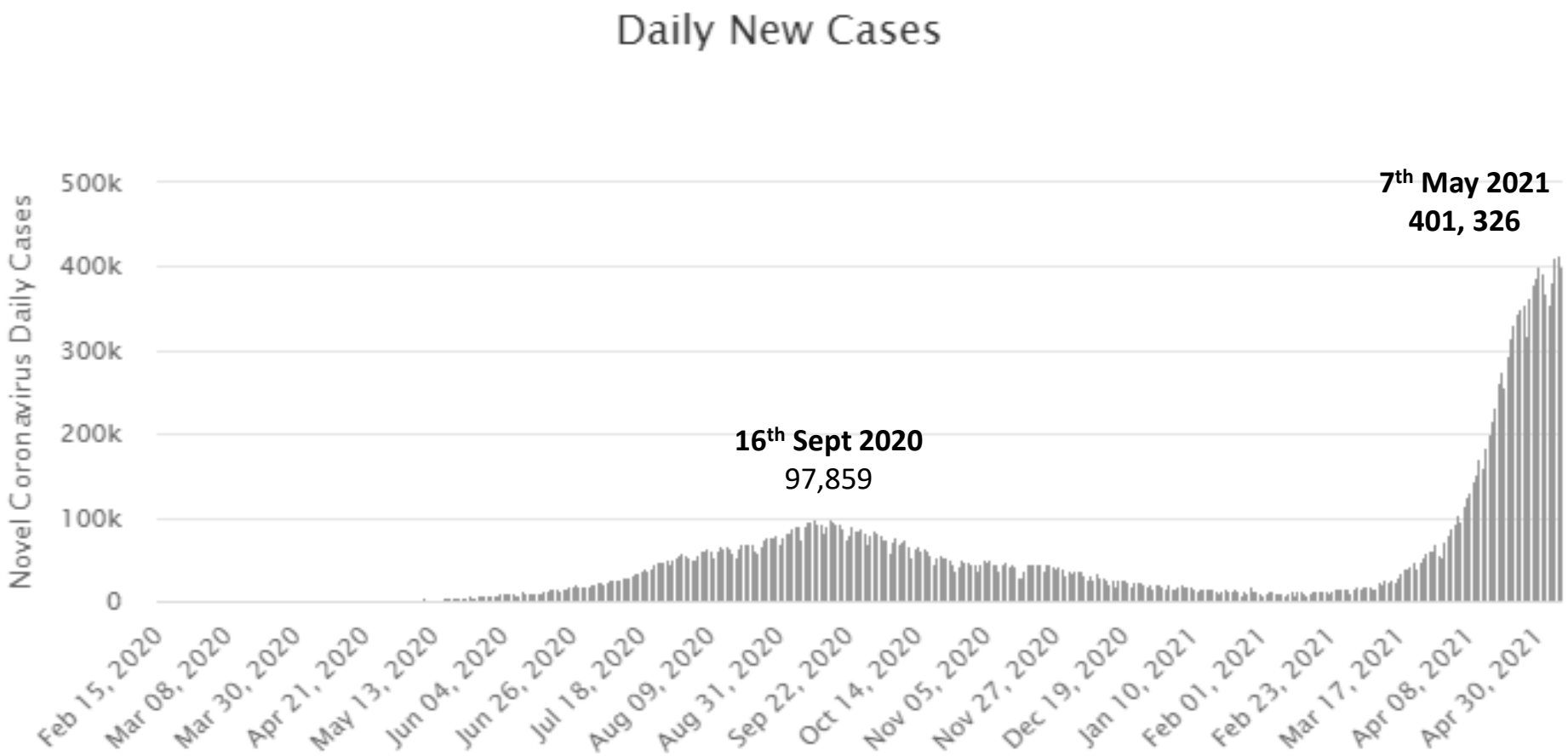


For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

COVID-19 in Rural India

Pavitra Mohan, MD, MPH
Secretary, Basic Health Care Services
Udaipur, India

COVID-19 daily new cases in India



Rural : urban distribution of the pandemic

Rural India reports alarming rise in infections

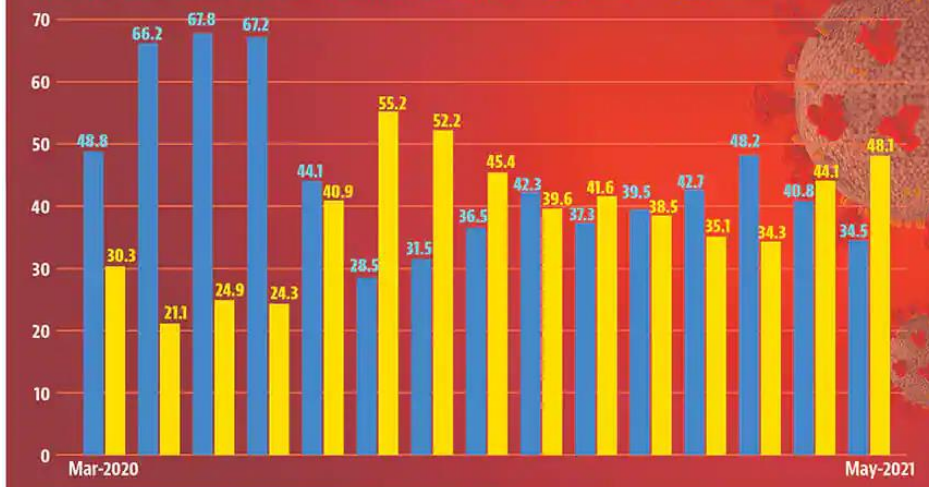
India's second wave has gained traction in the country's rural hinterland, where health care infrastructure is weaker than in urban areas, at a much faster rate than it did during the first wave of the outbreak, shows data. By Abhishek Jha

Rapid shift of virus to India's hinterland

Rural areas in India started contributing more cases than urban areas five months after the first locally transmitted case of the Covid-19 infection was detected in March, 2020. In the ongoing second wave that started in February, this has taken just two months. Here's how the infection is impacting the urban and rural areas currently.

Urban areas have had a greater share than rural areas in new cases of Covid-19 infection in 9 months out of 15 from March, 2020 to May, 2021. The infection began with urban areas reporting 1.6 times the cases in rural areas in March, 2020. This number increased to 3.1, 2.7, and 2.8 in April, May, and June last year, before it started decreasing. Rural areas, had a greater share than urban areas in new cases only from August. This phase lasted until October last year before both areas reported roughly the same number of cases for three months. In February, when the second wave showed signs of beginning, urban areas again took a lead, only for rural areas to emerge as a bigger source of cases two months later in April.

Share of cases in urban and rural areas (%) URBAN RURAL

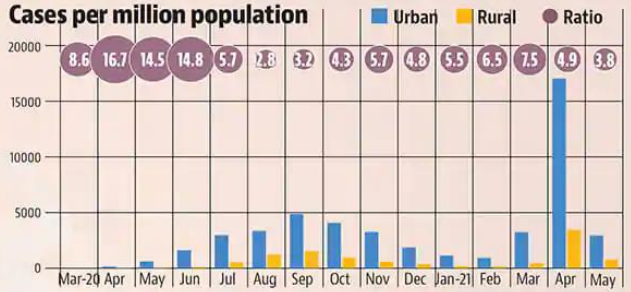


This urban-rural breakup is calculated by dividing India's districts into three groups based on the 2011 census data: urban districts (less than 40% rural population), rural districts (more than 60% rural population, and mixed districts (40%-60% rural population). District-level data on Covid-19 cases were compiled by How India Lives.

The role played by population

To be sure, it is not very surprising for rural areas to report more cases than urban areas. 73% of India's population lives in rural areas, which for this analysis, include districts with more than 60% of population living in rural areas according to the 2011 census. Urban areas, or districts where less than 40% of the population is rural, house only 14%. However, urban areas likely report more cases generally because of a higher population density – which makes it easier for the infection to spread – or possibly even due to better testing. Naturally, cases per million population have always been higher in urban areas. However, the gap between urban and rural areas has reduced. Cases per million in urban areas were 3.8 times that in rural areas in the first four days of May. This ratio has been lower than this only in August and September last year.

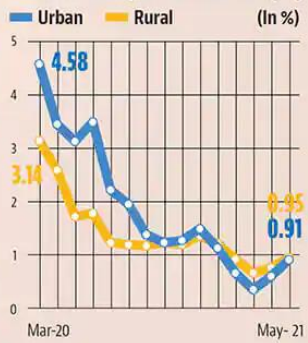
Cases per million population Urban Rural Ratio



What it means for saving lives

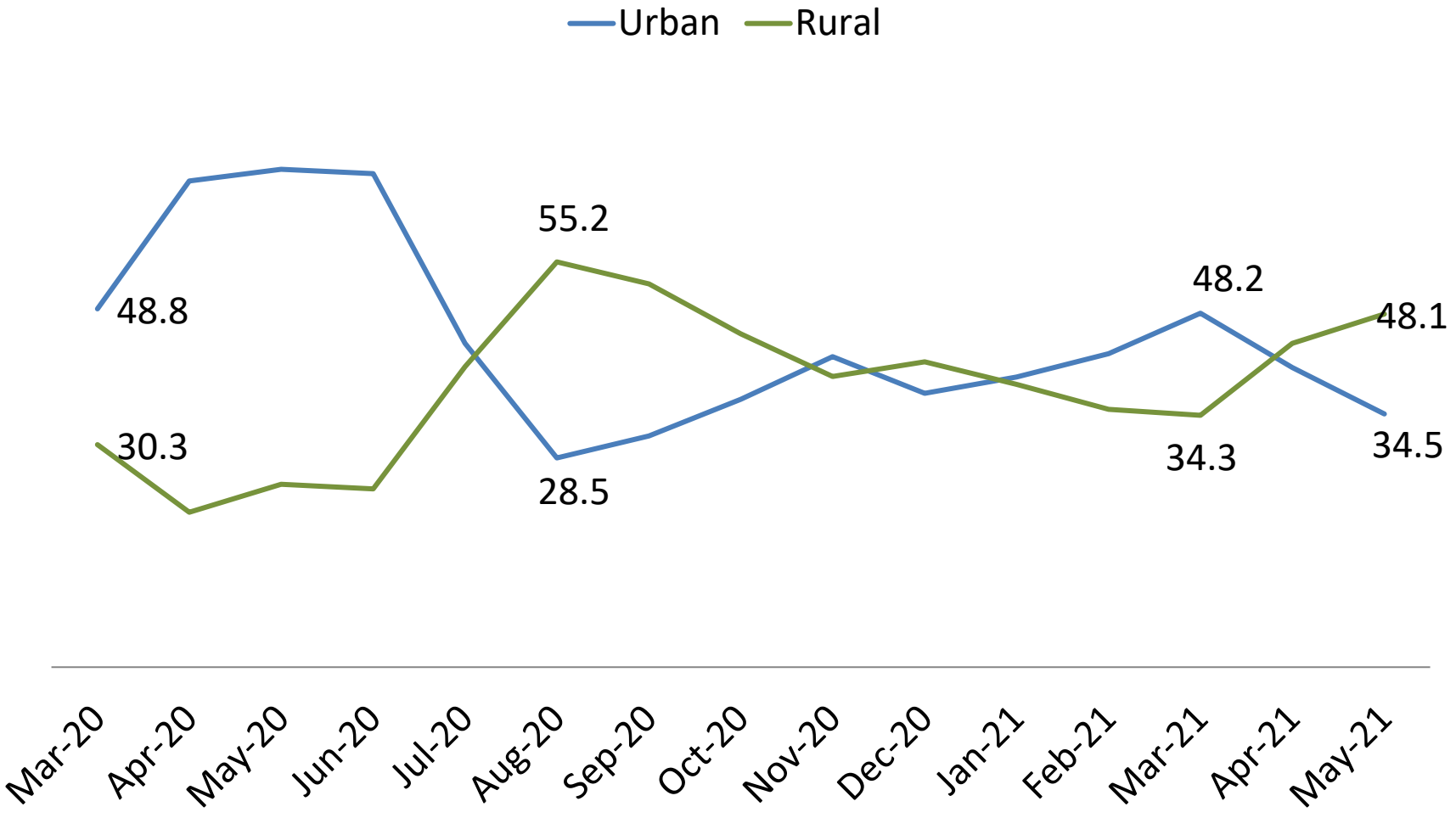
When the pandemic began, both urban and rural areas had a high case fatality rate (CFR), with urban areas having a much higher CFR owing to their higher load of cases per million population. With knowledge about possible treatments increasing, CFR is now lower than the early days of the pandemic in both urban and rural areas. The gap between the CFR in these two areas is now largely a reflection of their healthcare infrastructure and the load they are facing in terms of cases per million. For instance, rural areas had a higher CFR towards the end of the first wave this year, when cases were low everywhere. This is possibly a reflection of their poorer healthcare infra. As cases have risen in April and May, the CFR in urban areas has caught up with that in rural areas despite the former's access to better resources.

CFR in rural, urban areas (%)



Note: Data for May 2021 only up to May 4. Source: How India Lives, 2011 census

Trends of share of confirmed cases in urban and rural areas (%)



Source: https://www.hindustantimes.com/india-news/second-wave-spreading-much-faster-in-rural-india-than-first-101620416984127.html

Time Period	SARI Cases	Admitted	Positive	Deaths +ves in ( )
Jul 16 – 31	9	4	4	4 (1)
August	79	31	13	14 (2)
September	**126**	**77**	**50**	**13 (5)**
October	81	64	25	7 (2)
November	56	48	15	4 (1)
December	39	38	5	6 (2)
Jan-Mar 2021	49	49	2	4 (1)
April	**152**	**143**	**109**	**15 (10)**
May (1 - 6)	**79**	**68**	**59**	**8 (8)**

From a large rural hospital in Bissumcuttack, Odisha

Personal communication, Dr JC Oommen

Some observations from Odisha

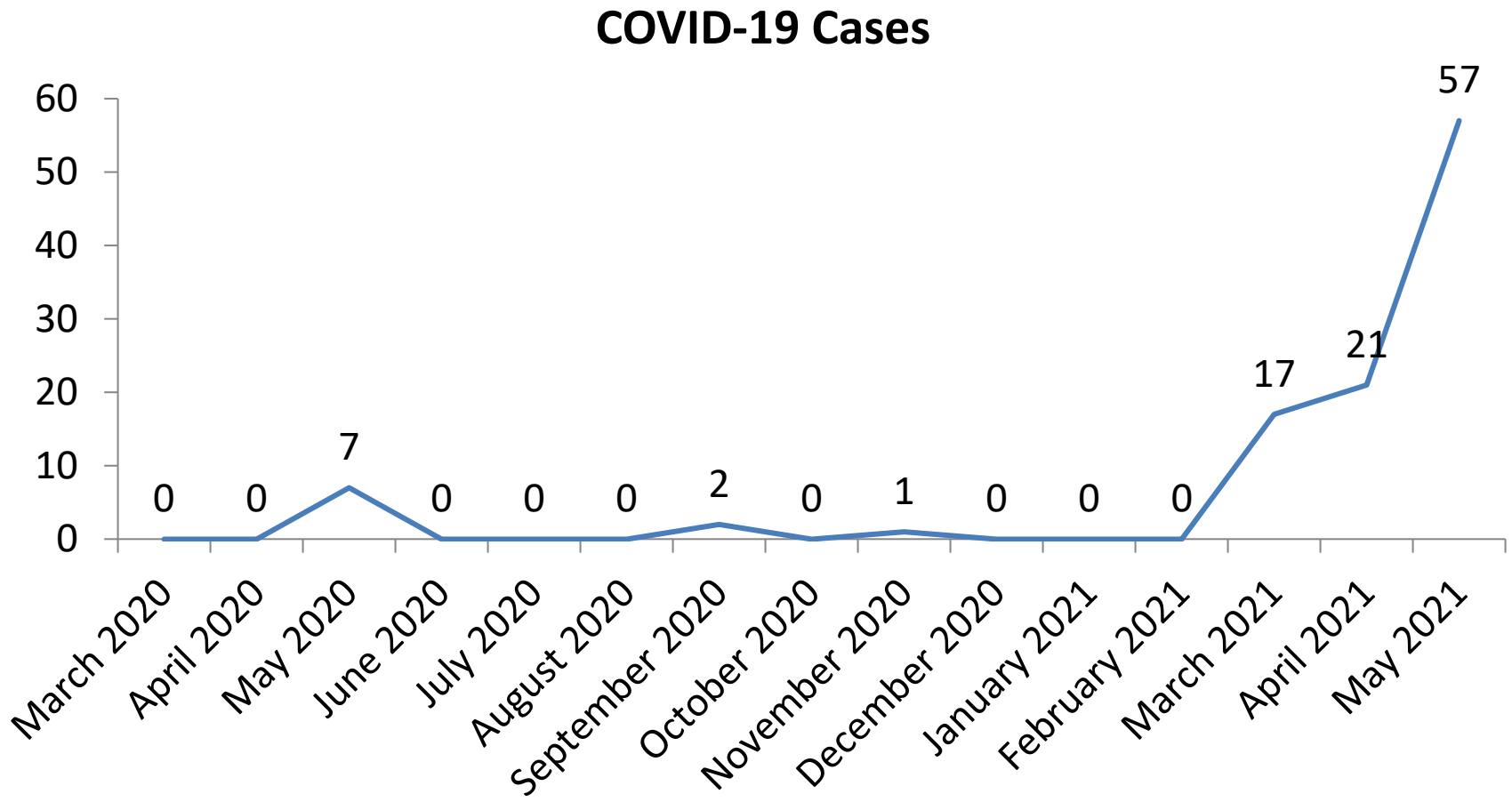
- Worst outcomes are for:
  - Elderly
  - Those with poorly controlled Diabetes
  - CKD and
  - (Big stomachs): obese!
  - Even people around 30 years old are dying
- Tribal community is least affected in both waves

From a tribal rural hospital in Chattisgarh: Apr 2021

- 390 COVID admissions-
  - 115 confirmed
  - 275 suspected
- 81 deaths
  - 24 among confirmed
  - 41 among less than 30 years
- Tribals and non-tribals
- Often on day 5^{th} or 6^{th}
- With very low oxygen levels

Personal communication, Dr Priyadarsh

Trends in a 25,000 rural population, Rajasthan



Data from PHC Nithauwa

Some observations from Rajasthan

- Started rising in End-April
- Rapid transmission – started from non-tribal villages, and now spreading to tribal hamlets
- About 10-20% of village households are affected, almost all family members in a given household
- City hospitals are getting swamped
- Apparently most deaths among non-tribals

Some common observations across

- Fear to get tested, because it is believed that once identified with COVID-19, they will be “taken away”
- COVID -19 is a disease affecting city dwellers
- It is not corona, it is “typhoid”
- Stay at home, go to faith healers or quacks.
- Vaccination is to “kill us”

Summary

- Rural India is progressively affected
  - Curves different in different states and districts
- Much higher numbers than the first wave
  - Higher infectivity
  - ? Higher mortality
  - Higher proportion of deaths among younger
- Tribals not spared unlike first wave
  - Is mortality lesser than among non-tribals?
- Testing has given way to “syndromic” approach

What is required?

- Relevant, context specific communication
  - Congregations
  - Isolation
  - TRUST
- Assisted home care
- Decentralised COVID care centers:
  - Oxygen/ standards of care

COVID-19 Pandemic in India: The “Triple Threat”

Adarsh Bhimraj, MD, FIDSA

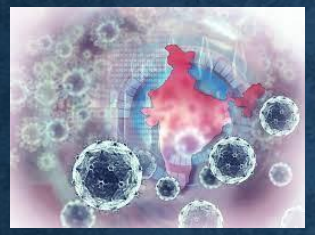
Section Head, Neurologic Infectious Diseases;
Staff, Department of Infectious Diseases
Cleveland Clinic

COVID-19 PANDEMIC IN INDIA: THE TRIPLE THREAT

Adarsh Bhimraj

THE PARADIGM OF THE PANDEMIC TRIPLE THREAT

The pandemic (true facts about disease, death and suffering)



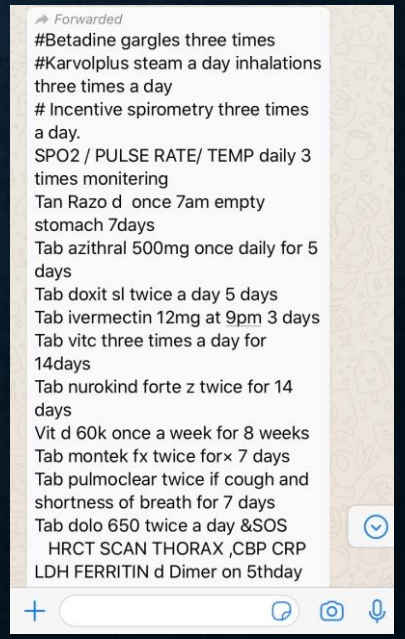

The panic-epidemic (Anger & irrational fear of future disease and suffering)

Infodemic of misinformation

INDIA: THE PANDEMIC
(TRUE FACTS ABOUT DISEASE, DEATH AND SUFFERING)

Problems & possible solutions

- We need accurate data about disease, death & suffering
- What's the numerator? : + tests (SARS cov2), disease (covid-19) metrics, death & suffering (severe & critical disease) metrics, genomic surveillance data (b1-617 variants vs ancestral SARS cov-2), complications & effects of interventions
- What's the Denominator?: All people in a community or those tested or those "at risk''?
- Assessment of inappropriate & appropriate resource utilization
- Implementation of appropriate resource utilization
- Procurement and rapid distribution of needed resources to health care facilities



INDIA: PANIC EPIDEMIC

(ANGER AND IRRATIONAL FEAR OF FUTURE DISEASE, DEATH & SUFFERING)

Problems

- panic is often vague visceral & personal ("many" of "my people or loved ones " will suffer and die of covid-19 & this is "X's" fault

  -X- government's , the "other" political group, an organization (e.g. WHO, CDC)

- Normal fear is a natural & rational response to facts, which leads to responsible evidence based action
- Panic is irrational, exaggerated and leads to non-beneficial & potentially harmful actions. It often results in blame & demands from others

Possible solutions

- Build trust & hope by communicating facts & celebrating success in improving "pandemic facts & figures"
- Inspiring personal & collective narratives about compassion & overcoming adversity
- Promote a culture of collective & collaborative responsible action than of blame
- Educate and "nudge" rather than enforce

INDIA: INFODEMIC OF MISINFORMATION

- Misinformation starts with imperfect and incomplete facts…
- Couples it with extrapolations & epidemiological biases
- then adds cognitive biases & logical fallacies

ITEM	NORMAL PRICE	BLACK MARKET PRICE
Remdesivir (one vial)	₹2,500-3,500	₹45,000
Oxygen concentrator	₹40,000-50,000	₹1,50,000
Oxygen cylinder	₹8,000	₹63,000
Ambulance fare (3km)	Less than ₹1,000	₹5,000-7,000
Pulse oximeter	₹900-2,000	₹4,000-8,000
Oxygen flow meter	₹800	₹8,000

e.g. -

-Fact: Hydroxychloroquine decrease viral loads in a case series.

-Extrapolation & epidemiological bias: So hydroxychloroqine treatment will decrease transmission & prevent death

-Cognitive bias & logical fallacy: Millions of People are dying of covid-19 & all this unnecessary death & suffering could have been prevented if only we used hydroxychlorquine extensively very early in the pandemic

Possible solutions

- Educating public, providers, policy makers & politicians about the true facts on disease burden, transmission, accurate evidence based prevention & treatment.
- Promote proven evidence based COVID-19 prevention & management strategies & interventions
- Discourage unproven or disproven interventions or solutions, which are based on fear and speculative theories than on facts.

SARS-CoV-2 Variants and India

Rajesh Gandhi, MD, FIDSA

Director, HIV Clinical Services and Education,
Massachusetts General Hospital
Co-Director, Harvard Center for AIDS Research
and Professor of Medicine,
Harvard Medical School
Chair, HIV Medicine Association

SARS CoV-2 Variants and India

Rajesh T. Gandhi, MD

Massachusetts General Hospital

Harvard University Center for AIDS Research

Disclosures (for past year): none
Member of NIH and Infectious Diseases Society of America COVID-19 Treatment Guidelines Panels

Acknowledgments: Jon Li, Jake Lemieux, Ravindra Gupta, Alex Balazs

Rapidly evolving information with more to come ….

SARS CoV-2 Variants and Classifications: US CDC

Variant of interest:

- Genetic markers associated with changes to receptor binding, reduced neutralization by antibodies against previous infection or vaccination, reduced efficacy of treatments, potential diagnostic impact, or predicted increase in transmissibility or disease severity
- Examples: B.1.526, P.2

https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/variant-surveillance/variant-info.html

SARS CoV-2 Variants and Classifications: US CDC

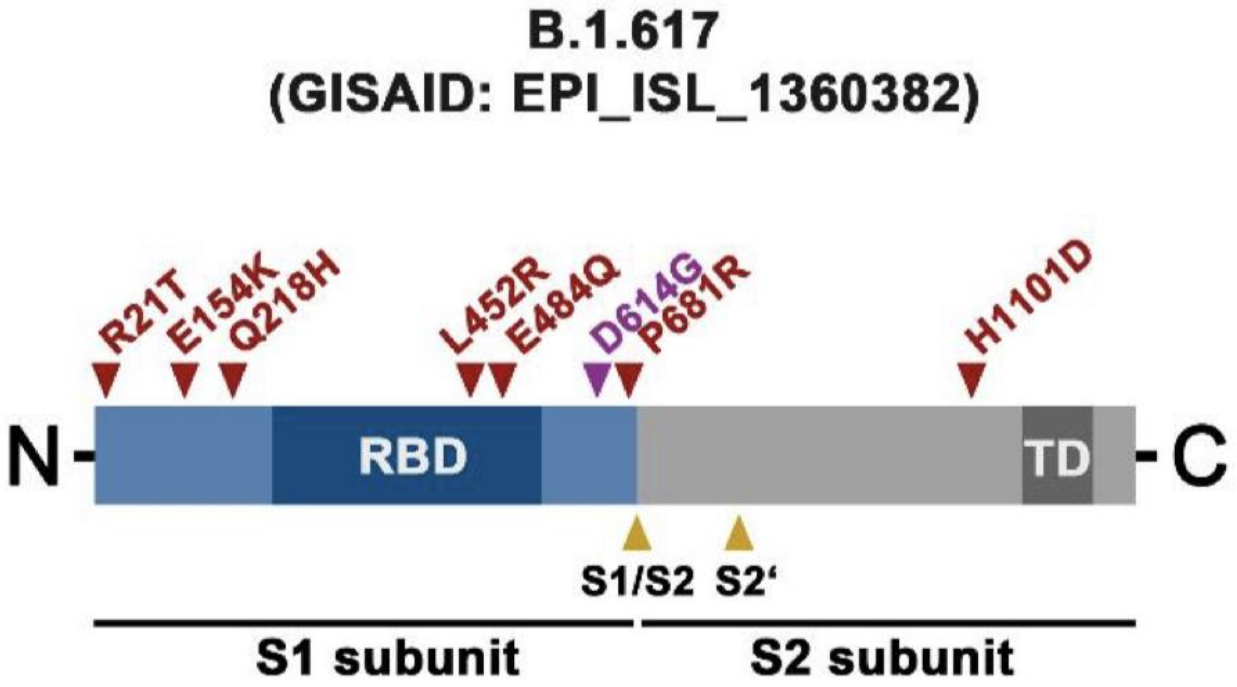
- **Variant of concern:** evidence of increased transmissibility, more severe disease, significant reduction in neutralization by antibodies generated during previous infection or vaccination, reduced effectiveness of treatments or vaccines, or diagnostic detection failures
  - Examples: B.1.1.7, B.1.351, P.1, B.1.427, B.1.429

- **Variant of high consequence:** clear evidence that prevention measures/medical countermeasures have significantly reduced effectiveness
  - Examples: none

https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/variant-surveillance/variant-info.html

B.1.617

- B.1.617, B.1.17 and other lineages circulating in India but sequencing information currently limited
- Contains several mutations that may have phenotypic impact
  - L452R and E484Q: receptor binding domain that interacts with ACE2
  - P681R: polybasic cleavage site
- Sub-lineages: B.1.617.1, B.1.617.2, B.1.617.3



Hoffmann M et al, biorxiv

B.1.617: CDC Variant of Interest

Lineage	Spike Protein Substitutions	Attributes
B.1.617.1	(T95I), G142D, E154K, L452R, E484Q, D614G, P681R, Q1071H	• Potential reduction in neutralization by some monoclonal Ab treatments • Potential reduction in neutralization by post-vaccination sera
B.617.2	T19R, (G142D), Δ156, Δ157, R158G, L452R, T478K, D614G, P681R, D950N	
B.617.3	T19R, G142D, L452R, E484Q, D614G, P681R, D950N	

https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/variant-surveillance/variant-info.html

B.1.617: Effect on Neutralization by Post-Vaccination Sera

- Preliminary non-peer reviewed pre-prints
  - Yadav PD et al: sera from 28 BBV152 (Covaxin) vaccinated individuals: neutralization of B.1.617 within 2-fold of prototype strain B1 (D614G)
  - Hoffmann M et al (pseudovirus assay): plasma from 15 BNT162b2 (Pfizer) vaccinees: 3-fold reduction compared to wild-type spike protein

Note: Preliminary, non-peer reviewed studies. Correlation between lab results and vaccine effectiveness not known.

https://www.biorxiv.org/content/10.1101/2021.04.23.441101v1.full; https://www.biorxiv.org/content/10.1101/2021.05.04.442663v1.full.pdf

B.1.617: US CDC Variant of Interest

Lineage	Spike Protein Substitutions
B.1.617.1	(T95I), G142D, E154K, L452R, E484Q, D614G, P681R, Q1071H
B.617.2	T19R, (G142D), Δ156, Δ157, R158G, L452R, T478K, D614G, P681R, D950N
B.617.3	T19R, G142D, L452R, E484Q, D614G, P681R, D950N

- B.1.617.2 does not have 484K mutation.
- Contains mutation, 478K, that can be selected for in vitro by monoclonal antibodies

https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/variant-surveillance/variant-info.html; Giacomo, J Med Virol, 2021; Muecksh F, bioRxiv, posted March 8, ,2021

Public Health England

Protecting and improving the nation's health

SARS-CoV-2 variants of concern and variants under investigation in England

Technical briefing 10

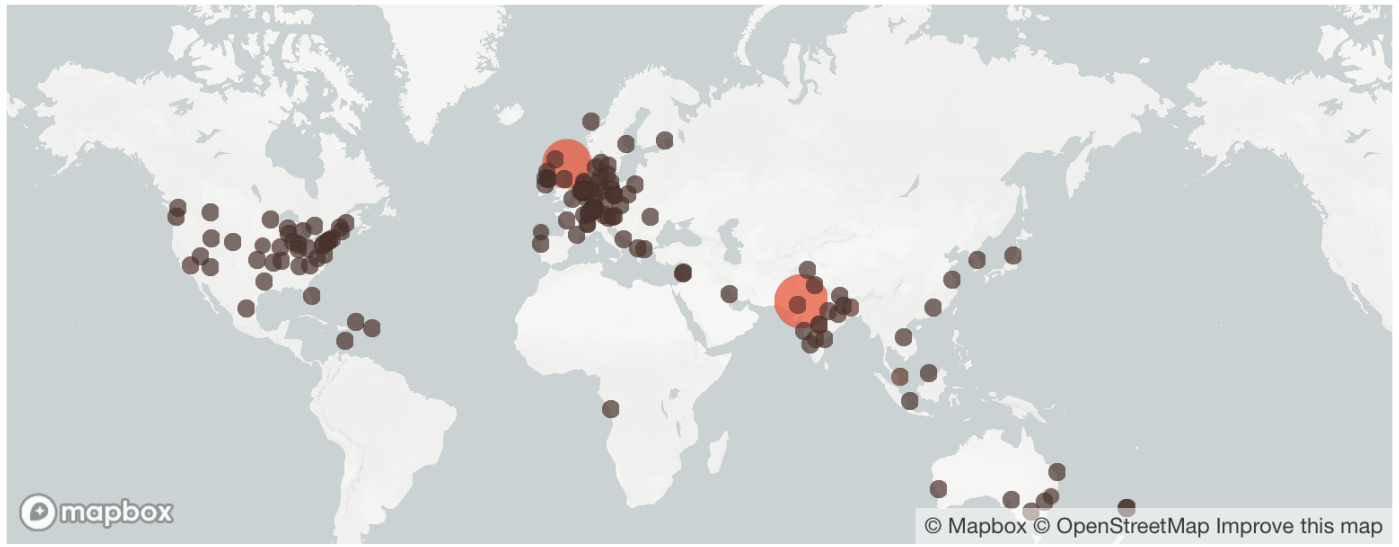
7 May 2021

- B.1.617.2 escalated to variant of concern on 6 May 2021.
- "It is assessed as having at least equivalent transmissibility to B.1.1.7 based on available data (moderate confidence)."
- Insufficient data currently to assess the potential for immune escape.

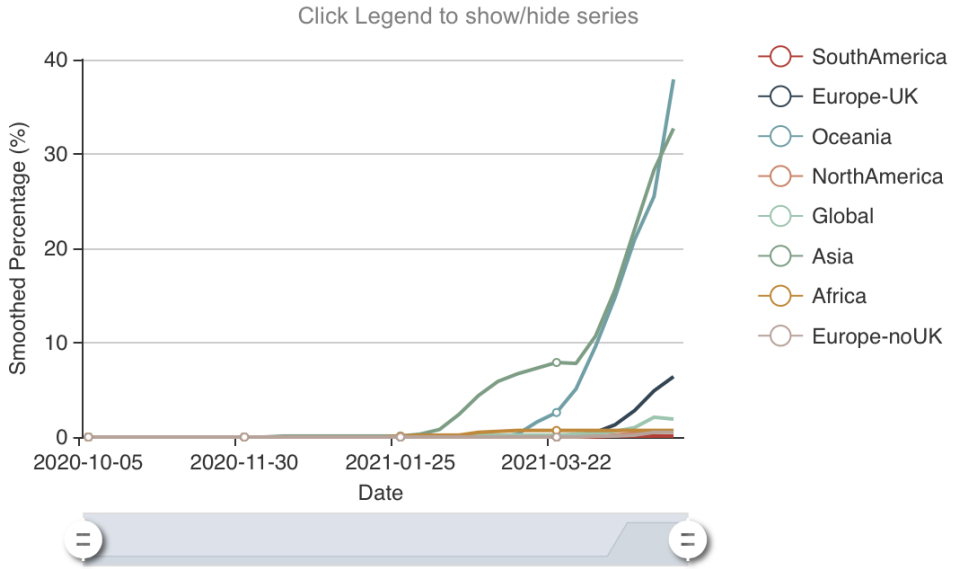
https://www.gov.uk/government/publications/investigation-of-novel-sars-cov-2-variant-variant-of-concern-20201201

B.1.617: May 8, 2021

Map of tracked variant occurrence



Relative Variant Genome Frequency per Region
(exponentially smoothed alpha=0.3)



Country	Total # B.1.617	#B.1.617 in past 4 wk	%B.1.617 in past 4 wk
India	1494	163	64.9
UK	946	729	5.0
US	334	197	0.7

Note: Small numbers, potential confounders limit ability to draw conclusions

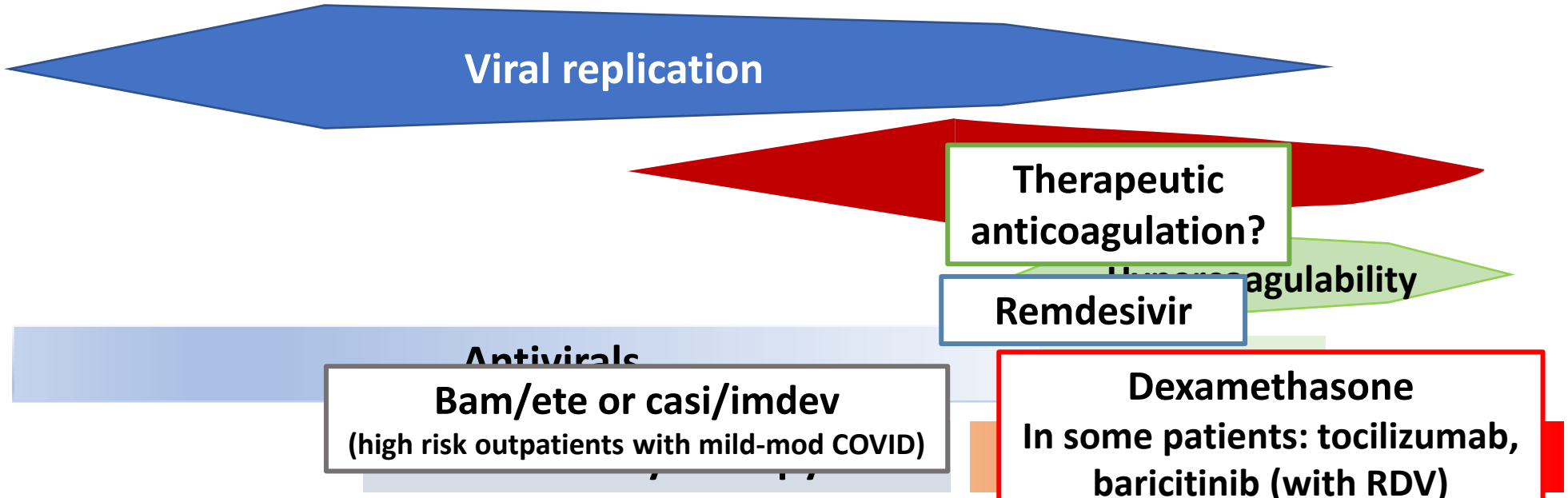
https://www.gisaid.org/hcov19-variants/

COVID-19 outbreak highlighting importance of finding better treatments, particularly oral agents, to prevent progression and transmission

Treatment Across the COVID-19 Spectrum

Stage/ Severity:	Asymptomatic/ Presymptomatic	Mild Illness	Moderate Illness	Severe Illness	Critical illness
	+ SARS-CoV-2 test but no symptoms	Mild symptoms (eg fever, cough, taste/smell changes); no dyspnea	O_2 saturation >=94%, lower respiratory tract disease	O_2 saturation <94%, respiratory rate >30/min; lung infiltrates >50%	Respiratory failure, shock, multi-organ dysfunction/failure

Disease Pathogenesis:



Potential treatment:

Outpatient treatment | **Inpatient treatment** | Vaccines

Gandhi RT, CID, 2020
Gandhi RT, Lynch J, del Rio C. NEJM 2020

Conclusions

- Role of variants in the COVID-19 surge in India and their effect on vaccination is under active investigation

- We need better treatments for COVID-19, particularly oral agents, to prevent progression and transmission
  - Need to double down on efforts to find out what does (and doesn’t) work

Extra Slides

Variants and Anti-SARS-CoV-2 Antibodies: In Vitro Studies

- B.1.1.7
  - Susceptible to bam/ete, casi/imdev.
- B.1.351, P.1
  - 484K: marked reduction in susceptibility to bam/ete, bam
  - K417N and E484K: reduce casi activity; casi/imdev appears to retain activity
- B1.429/B.1.427 (20C/CAL.20C)
  - L452R: marked reduction in susceptibility to bam; modest reduction in susceptibility to bam/ete
- B.1.526
  - Sometimes has E484K: marked reduction in susceptibility to bam; decrease in susceptibility to bam/ete; may reduce casi activity; casi/imd retain susceptibility

Clinical impact of in vitro susceptibilities unknown

https://www.covid19treatmentguidelines.nih.gov/statement-on-anti-sars-cov-2-monoclonal-antibodies-eua/

India

cases

21,094,875: today

20,682,376: yesterday

+ 412,499

↑ 2%

deaths

230,659: today

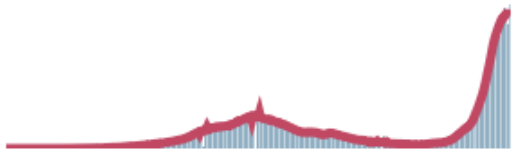
226,675: yesterday

+ 3,984

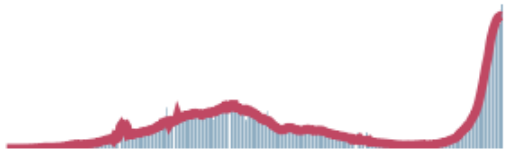
↑ 2%

cumulative cases

new cases per day



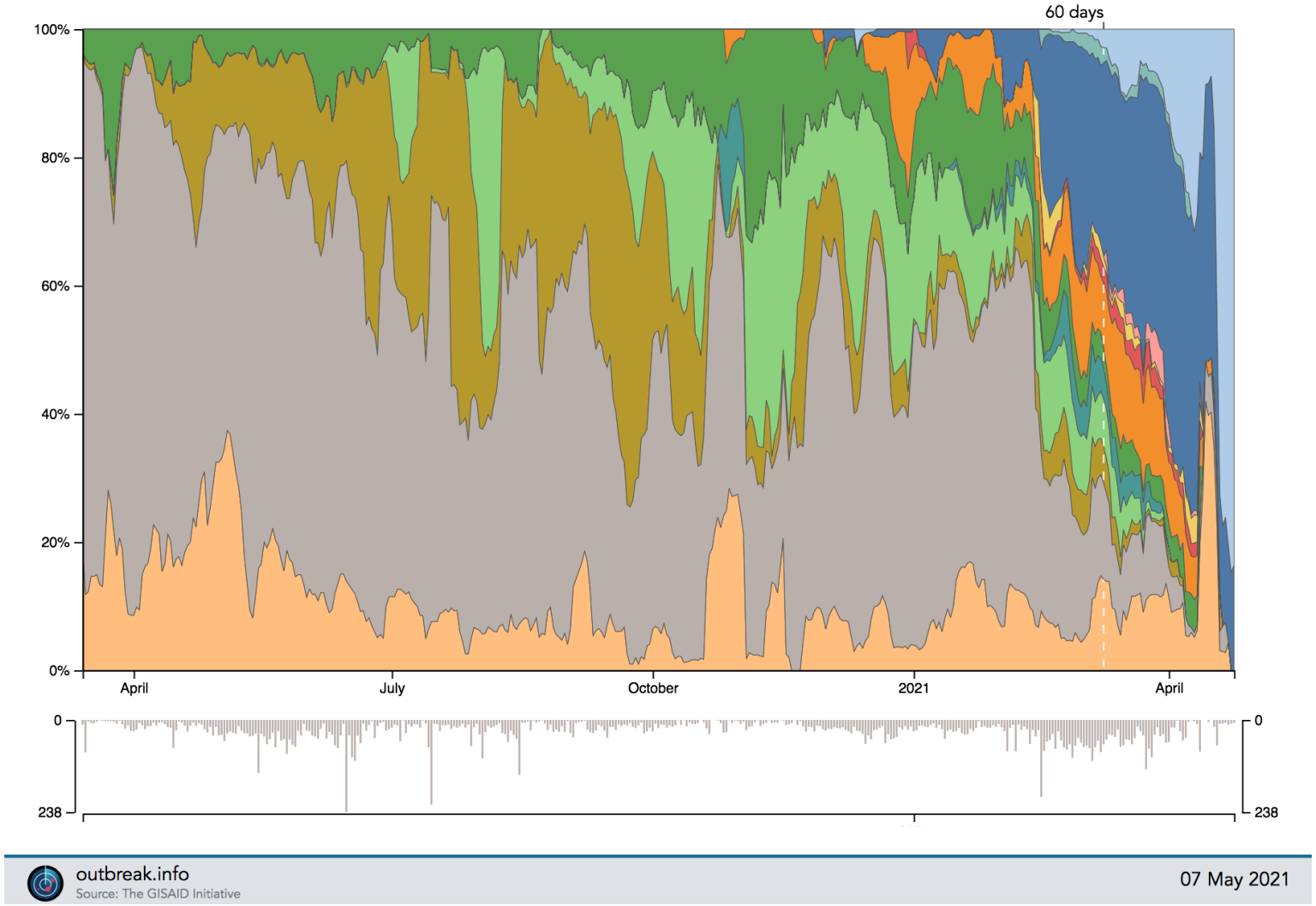
new deaths per day

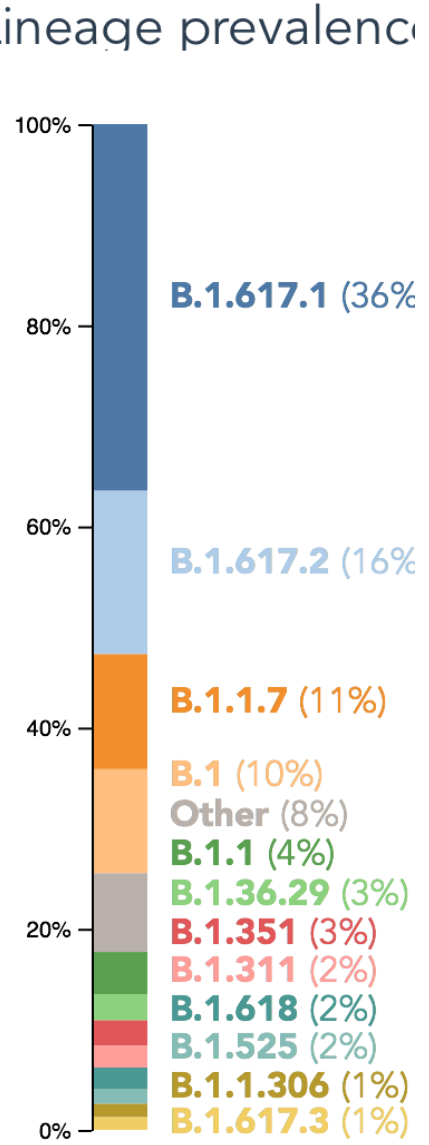


Variants of Concern & Interest

21%	9%	6%	2%	2%	< 0.5%	< 0.5%	< 0.5%	none
B.1.617.1	**B.1.1.7**	**B.1.617.2**	**B.1.617.3**	**B.1.351**	**P.1**	**P.2**	**B.1.617**	**B.1.526.1**
VOI	VOC	VOC	VOI	VOC	VOC	VOI	VOI	VOI

Lineage prevalence over time in India

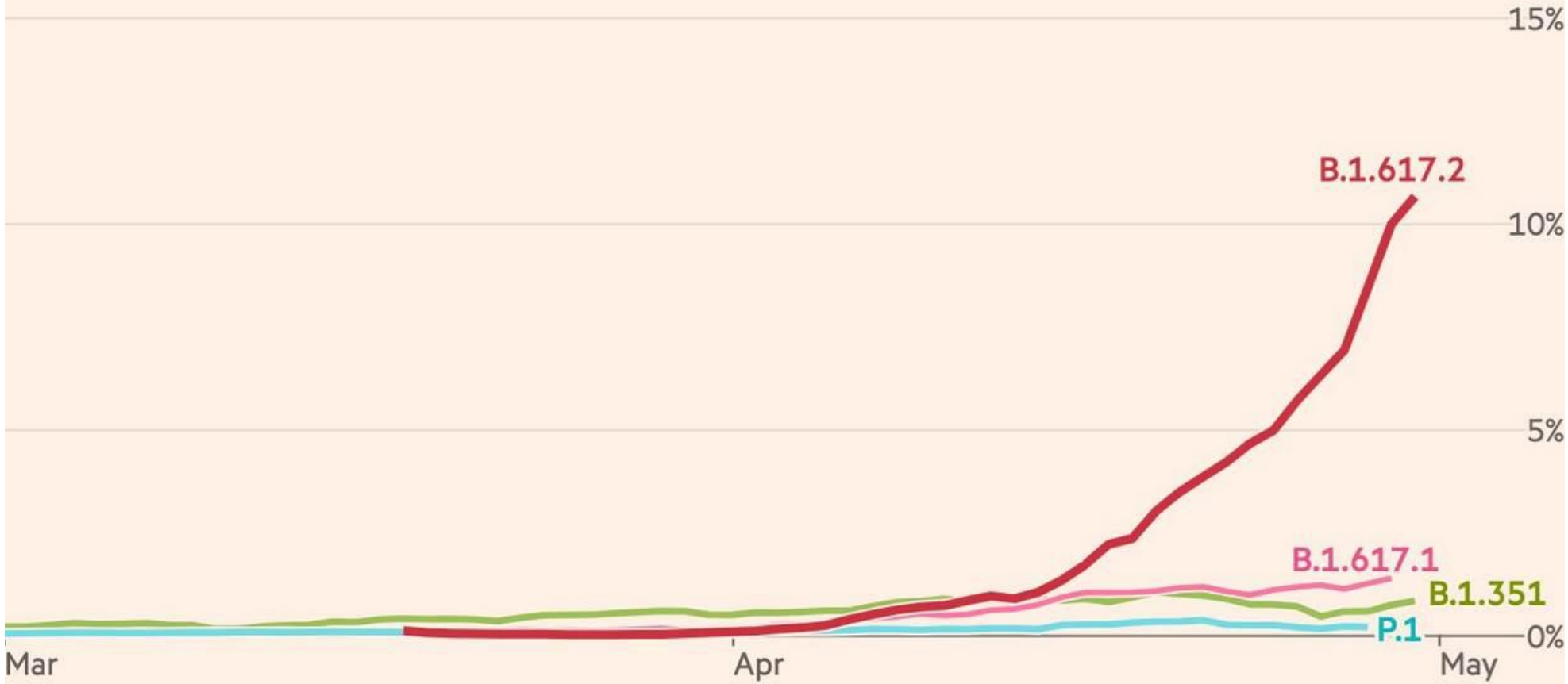




https://outbreak.info/

The Indian variant subtype B.1.617.2 is spreading faster in the UK than other imported variants

Each variant's share of all sequenced UK cases of Covid-19



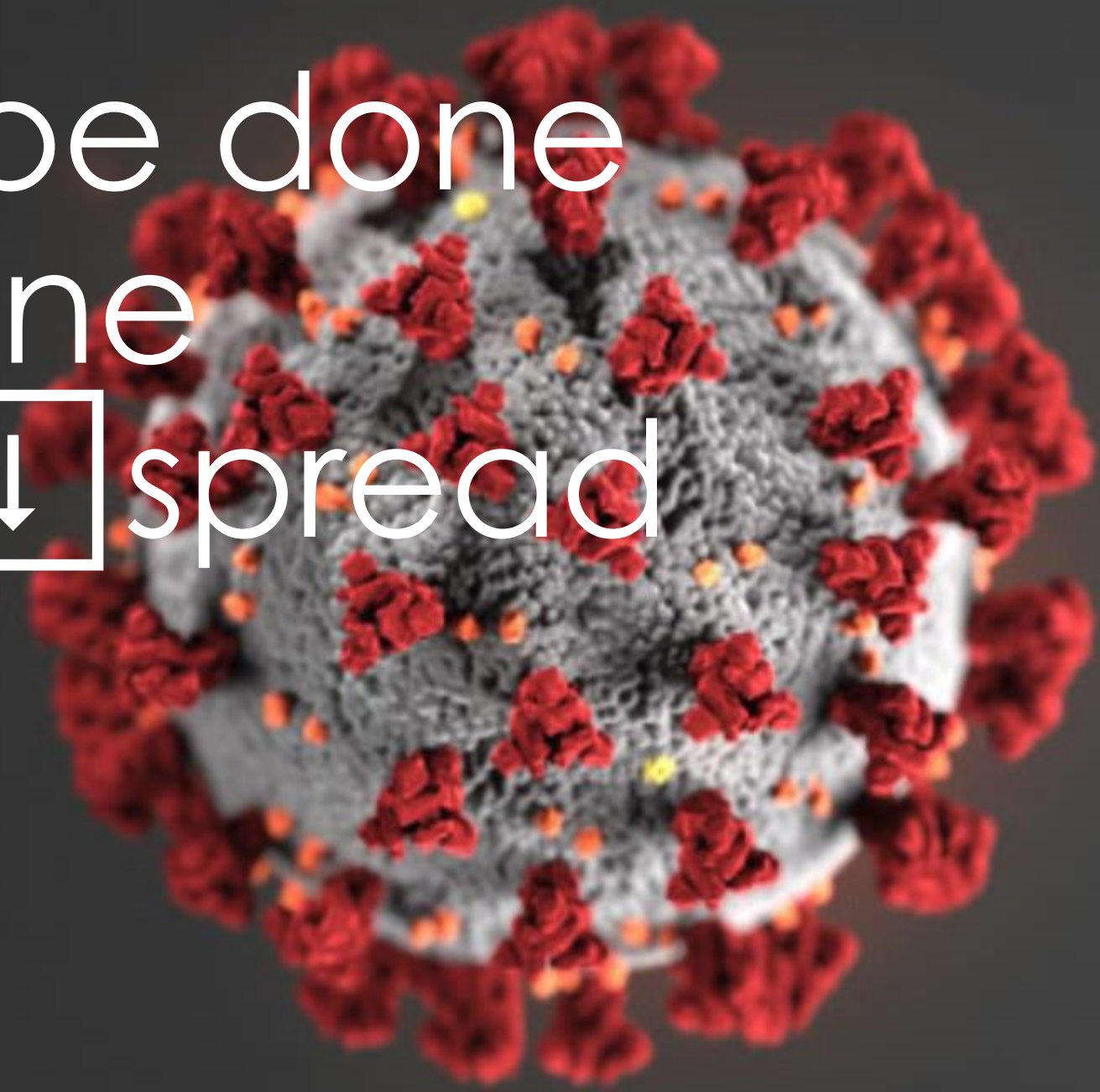
Source: FT analysis of COG-UK data

What Can be Done to Increase Vaccine and Reduce Spread?

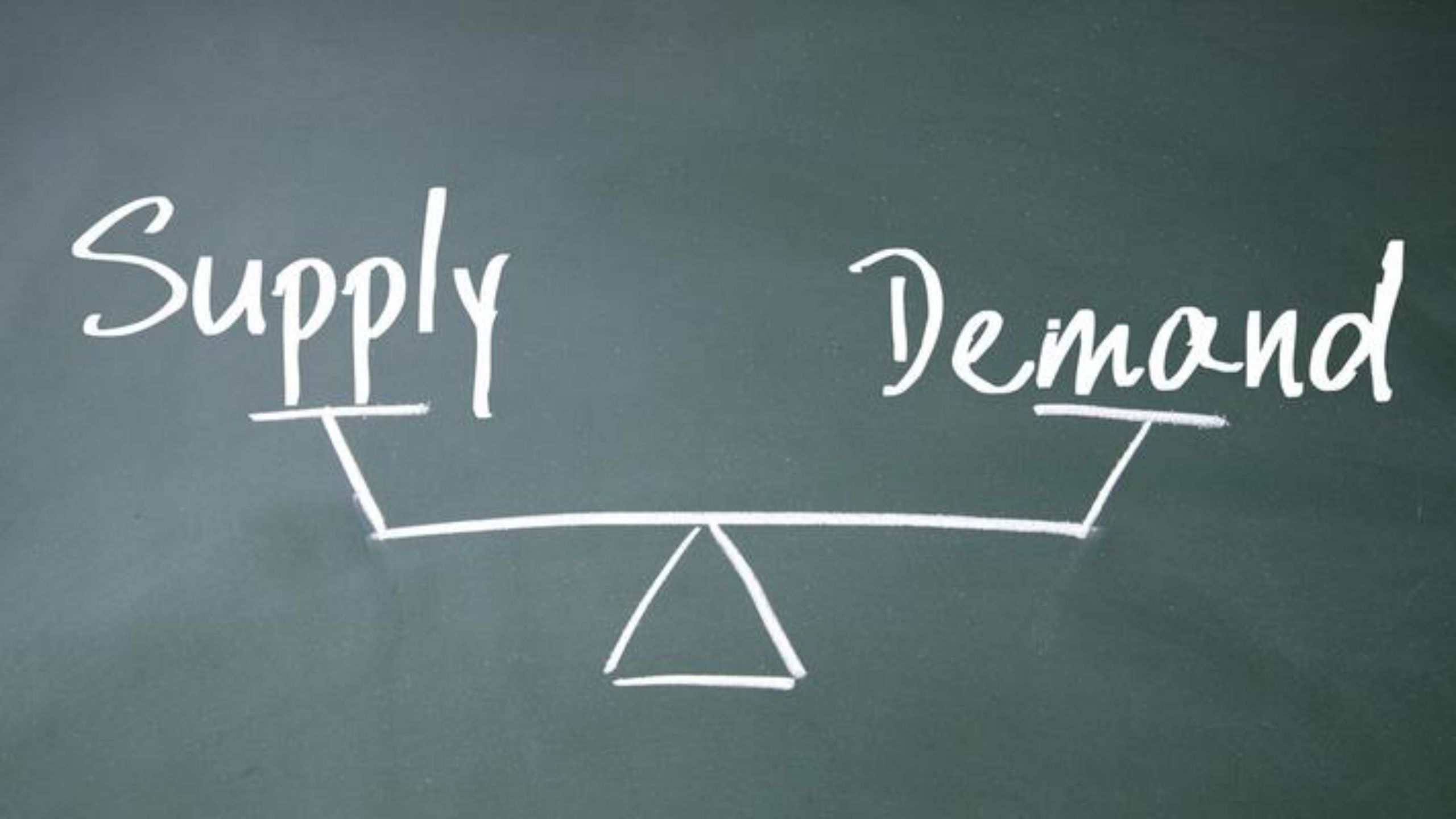
Peter V. Chin-Hong, MD

Professor of Medicine
Associate Dean for Regional Campus
Director, Transplant and Immunocompromised Host Infectious Disease Program
University of California, San Francisco

What can be done to ↑ vaccine uptake & ↓ spread

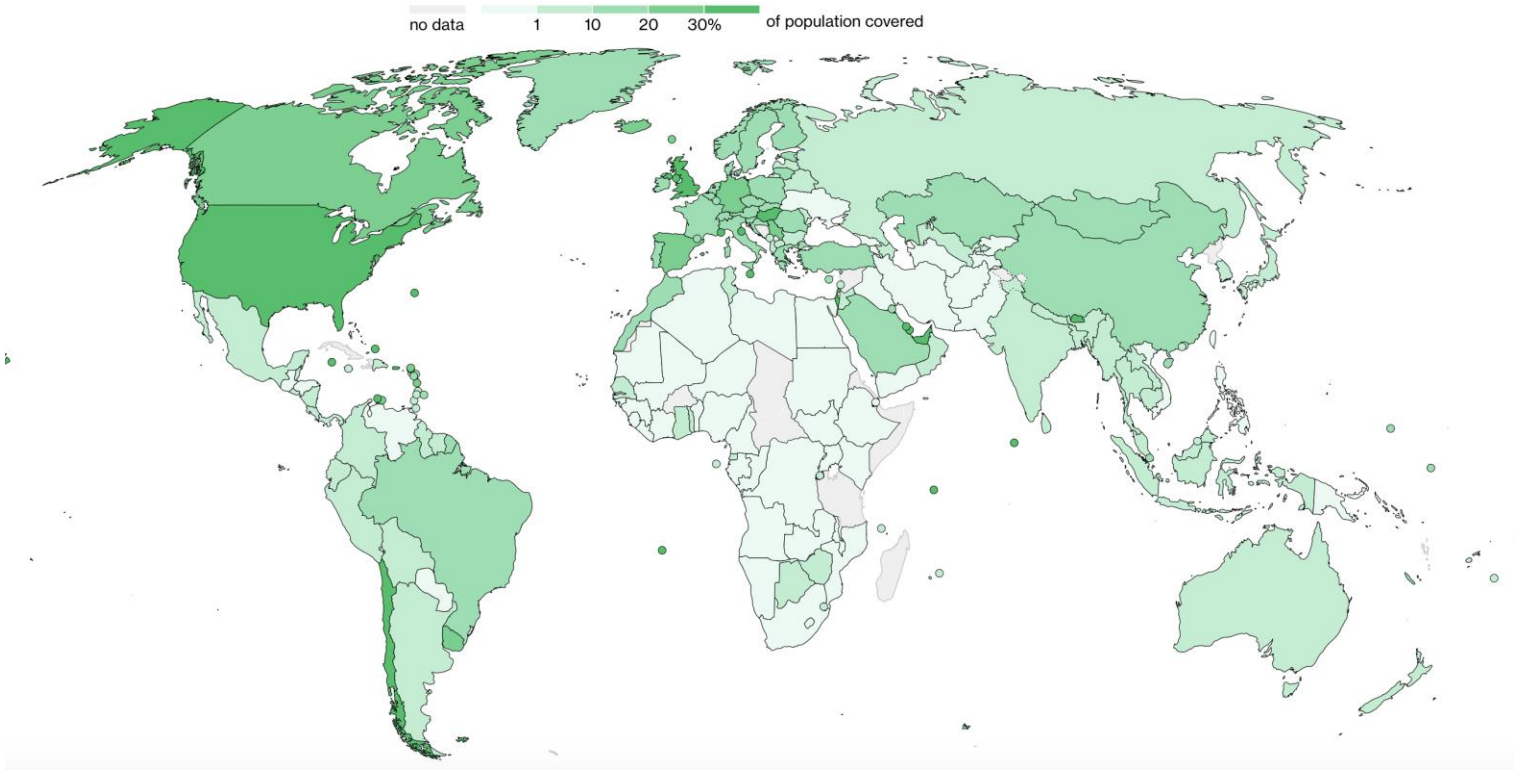


Peter Chin-Hong, MD
UCSF
May 8, 2021


Supply
Demand

Outline

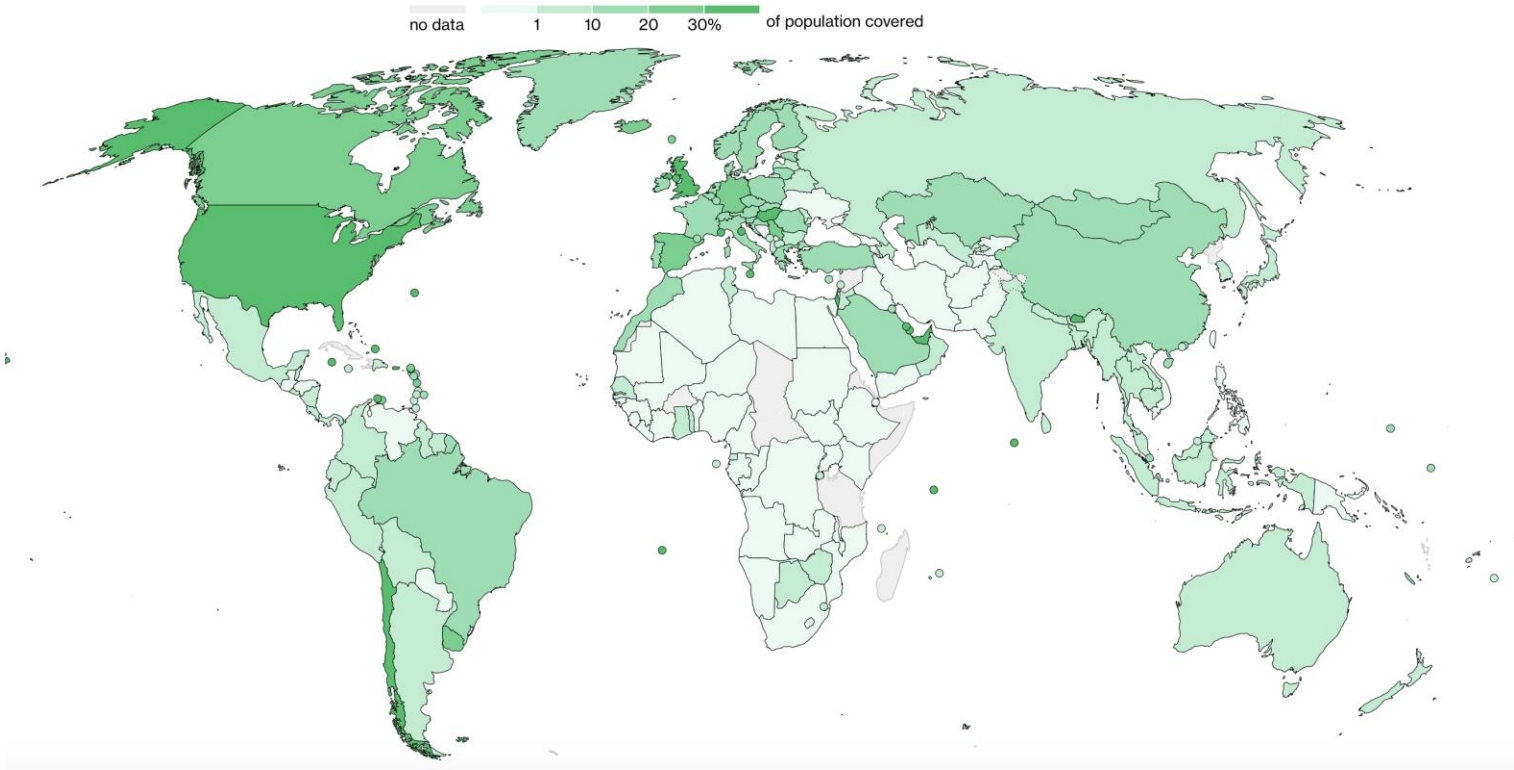
- Supply
- Demand
- Post vaccine world



https://www.bloomberg.com/graphics/covid-vaccine-tracker-global-distribution/
Updated 5/8/21

Outline

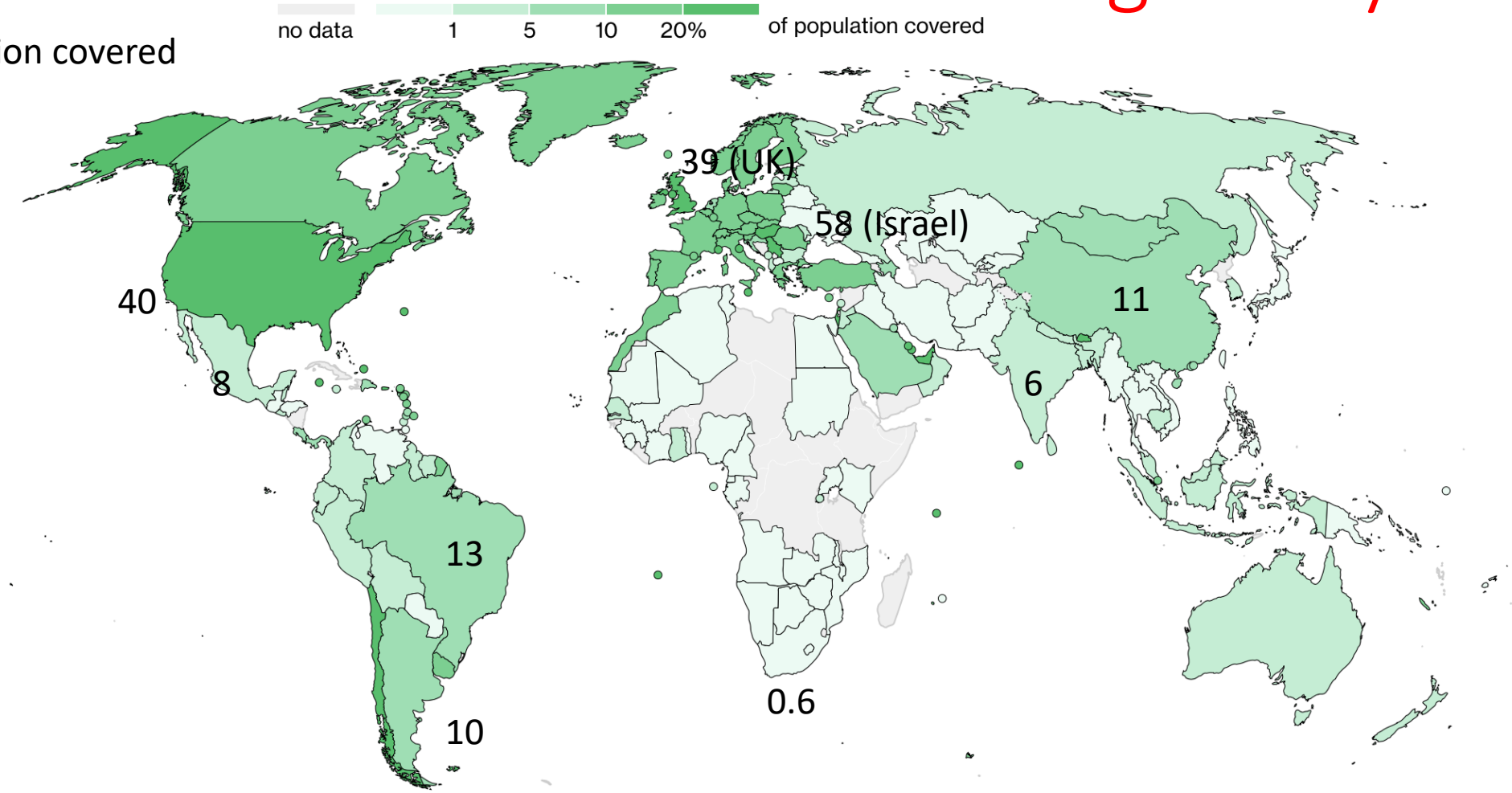
- **Supply**
- Demand
- Post vaccine world



https://www.bloomberg.com/graphics/covid-vaccine-tracker-global-distribution/
Updated 5/8/21

Vaccines: Variable administration globally

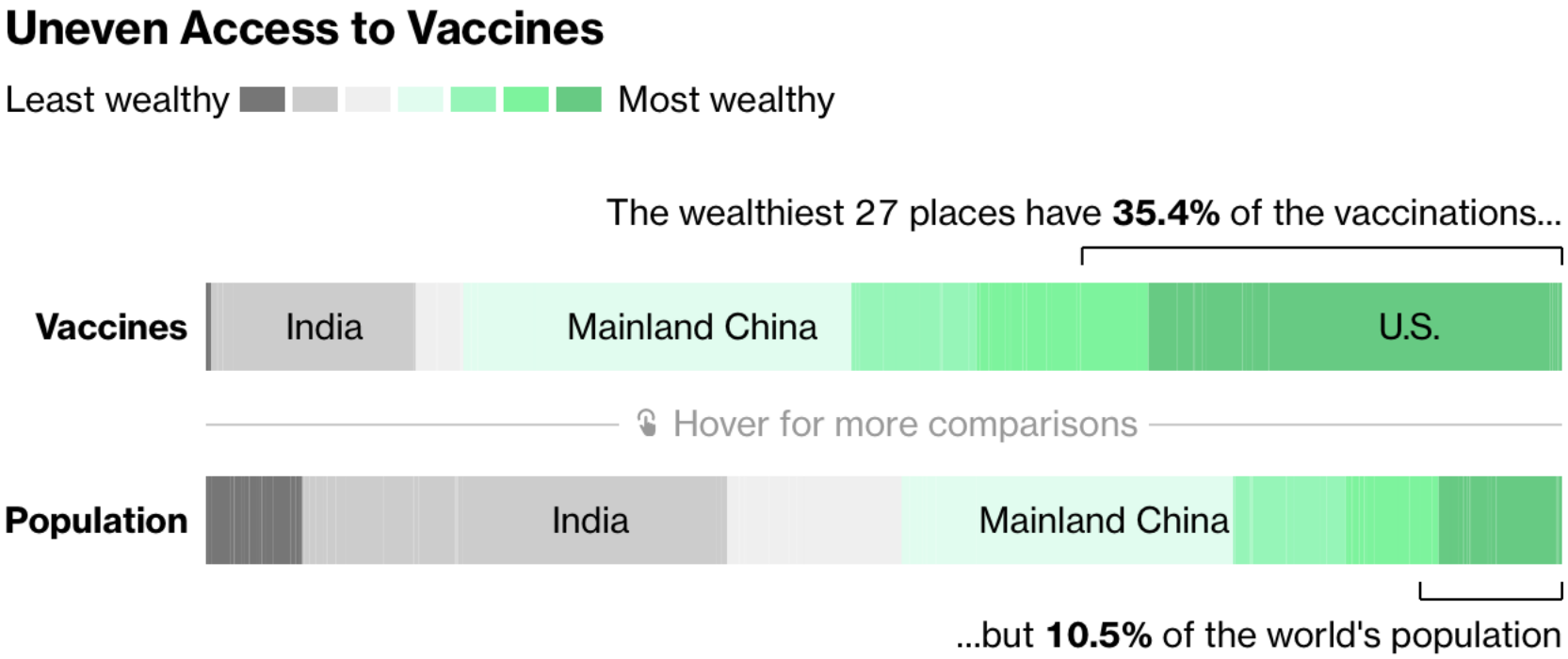
% population covered



https://www.bloomberg.com/graphics/covid-vaccine-tracker-global-distribution/

Updated 5/7/21

Highest income countries getting vaccinated 25X more



Note: Vaccine access calculations account for the number of doses needed for full protection; some vaccines require a two-dose regimen while others require just a single dose. Countries and regions are ordered by GDP per capita (PPP).

https://www.bloomberg.com/graphics/covid-vaccine-tracker-global-distribution/

Updated 5/7/21

The US pre-paid for 1.2 billion vaccines

Table 2: COVID-19 Vaccine Doses Owned by the U.S.		
Vaccine	**Number of doses owned**	**Number of people that could be vaccinated**
Pfizer	300 million	150 million
Moderna	300 million	150 million
Johnson & Johnson	200 million	200 million
AstraZeneca*	300 million	150 million
Novavax*	100 million	50 million
Total	1.2 billion	700 million
U.S. Population	—	331 million
Potential "Surplus"	—	369 million

NOTES: * Not yet authorized by the FDA for use in the U.S.
SOURCE: KFF analysis of Operation Warp Speed contracts and US government announcements.

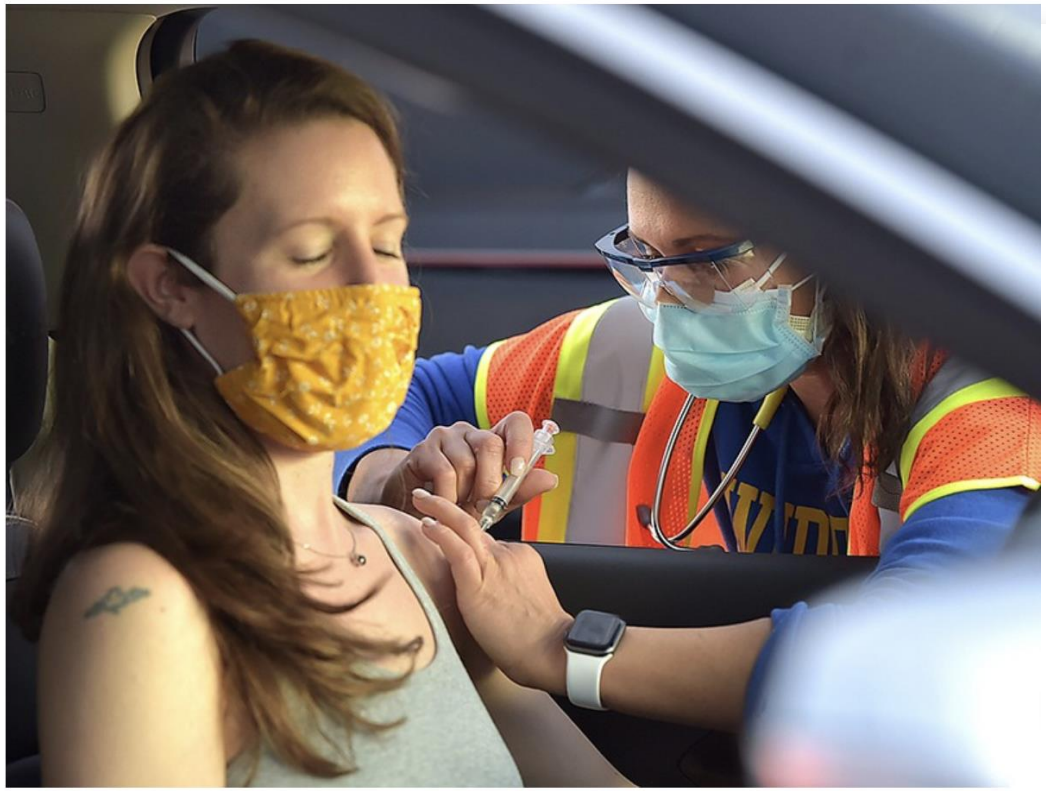
What can the US (and others) do?

Strategy	What done?	Can still do
Donate vaccines	4 million AZ to Mexico, Canada 60 million AZ promised to India	Give more and to more countries
Fund global vaccine efforts	$4 billion to COVAX	Give more $ Give others (eg World Bank)
Expand manufacturing	Enacted Defense Production Act Gave raw materials	More incentives
Patents	Support waive IP	Support WTO, WHO efforts

NEWS · 06 MAY 2021

In shock move, US backs waiving patents on COVID vaccines

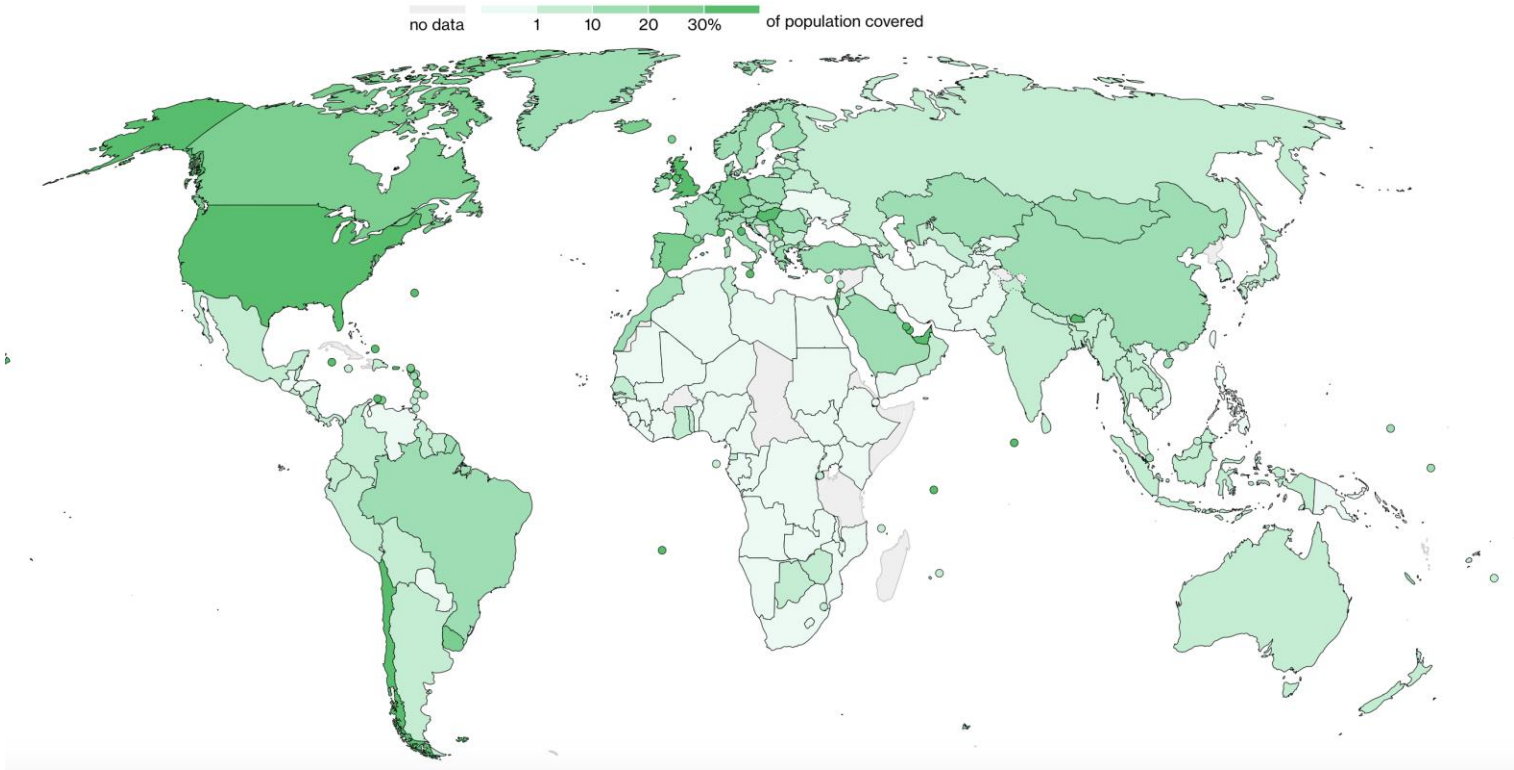
The development from the Biden administration draws cheers from public-health researchers and ire from drugmakers



Nature

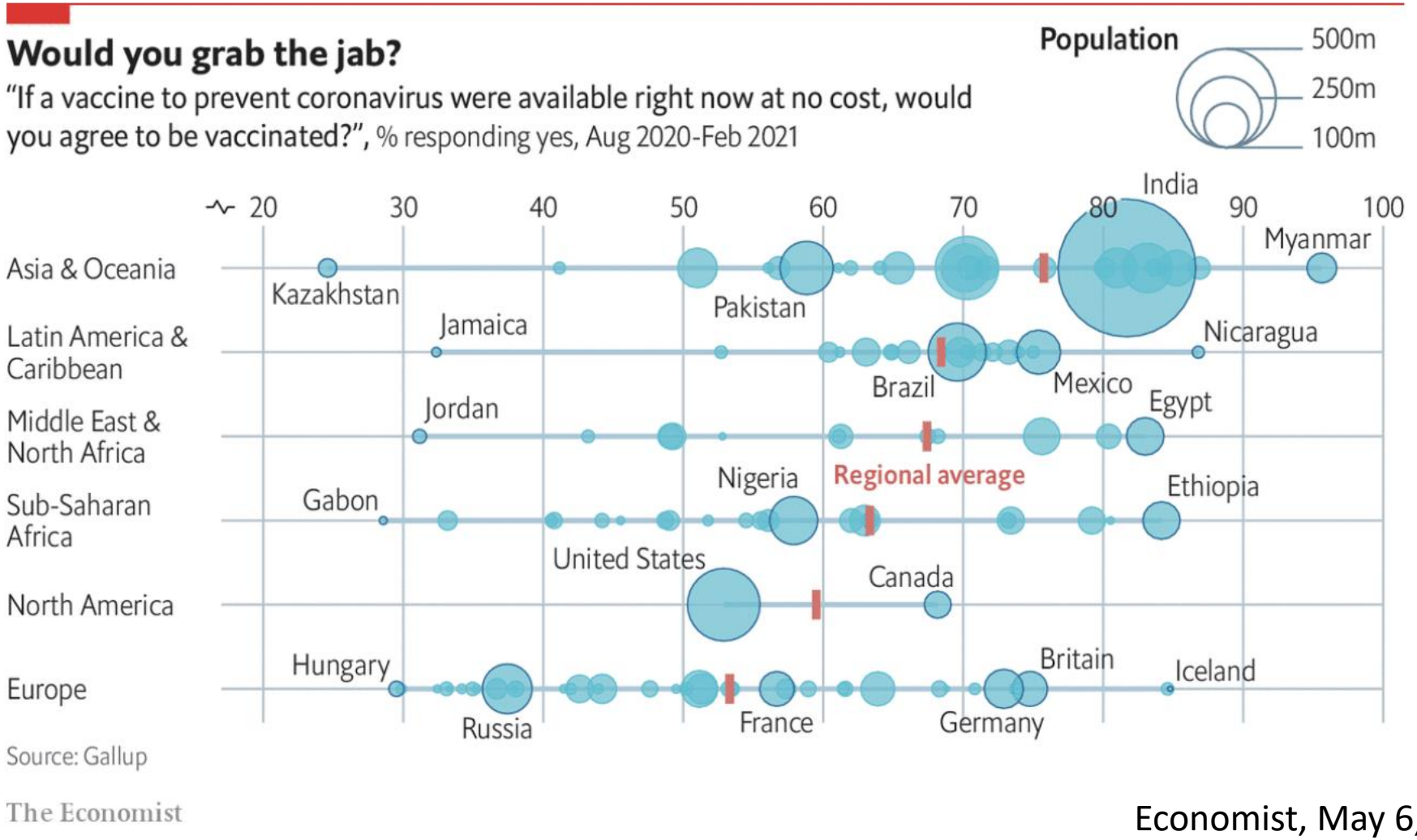
Outline

- Supply
- **Demand**
- Post vaccine world



https://www.bloomberg.com/graphics/covid-vaccine-tracker-global-distribution/
Updated 5/8/21

Vaccine hesitancy is a global phenomenon



Economist, May 6, 2021

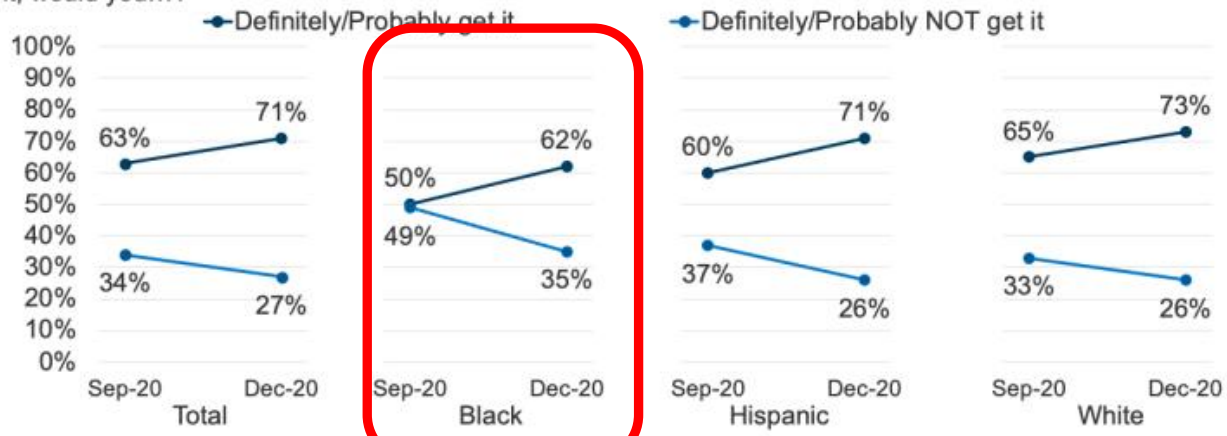
African Americans and vaccine trust

35% Blacks still NOT willing to get vaccine

Figure 2

Willingness To Get COVID-19 Vaccine Has Increased Across Racial/Ethnic Groups

If a COVID-19 vaccine was determined to be safe by scientists and available for free to everyone who wanted it, would you…?



SOURCE: KFF COVID-19 Vaccine Monitor (KFF Health Tracking Poll, Nov. 30-Dec. 8, 2020); KFF/The Undefeated Survey on Race and Health (conducted Aug. 20-Sept. 14, 2020). See topline for full question wording.

KFF COVID-19 Vaccine Monitor

National

Black doctors want to vet vaccine process, worried about mistrust from years of medical racism

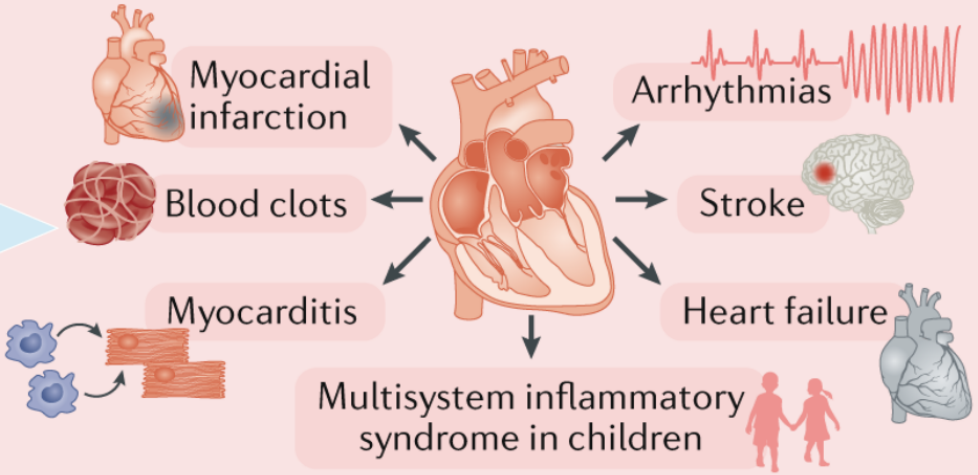
Jeremiah Young, 11, receives one of a series of vaccinations during his back-to-school physical exam with Dr. Janice Bacon, Aug. 14, 2020, while at the Community Health Care Center on the Tougaloo College campus in Tougaloo, Miss. A Black primary care physician practicing in Mississippi for nearly four decades, Bacon works at an all-African American-run trio of community health centers in Hinds County, where the population is overwhelmingly Black — and where the most coronavirus cases have been reported in the state. (AP Photo/Rogelio V. Solis)

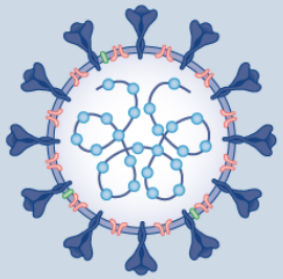
Washington Post 9/26/20

Vulnerable populations

For example, racial/ethnic minorities and those from low socioeconomic backgrounds

Poor cardiovascular outcomes related to COVID-19





VACCINE DISTRIBUTION

COVID-19 ~~testing~~ challenges

- Accessibility
- Mistrust
- Outreach
- Financial
- Digital divide
- Transportation

Limitations of COVID-19 clinical trials

- Usually performed at large academic centres with differential commitment to vulnerable populations
- Majority of clinical trials participants are from the USA, Western Europe and Asia (particularly Japan and China)
- Lack of vulnerable patient groups (such as racial/ethnic minorities or individuals from low socioeconomic backgrounds)
- Lack of principal investigators from under-represented racial/ethnic backgrounds in medicine

Need for equitable government and public health oversight

Chin-Hong P, Alexander KM, Haynes N, Albert MA; Association of Black Cardiologists. Nature Reviews Cardiology 2020

Potential solutions

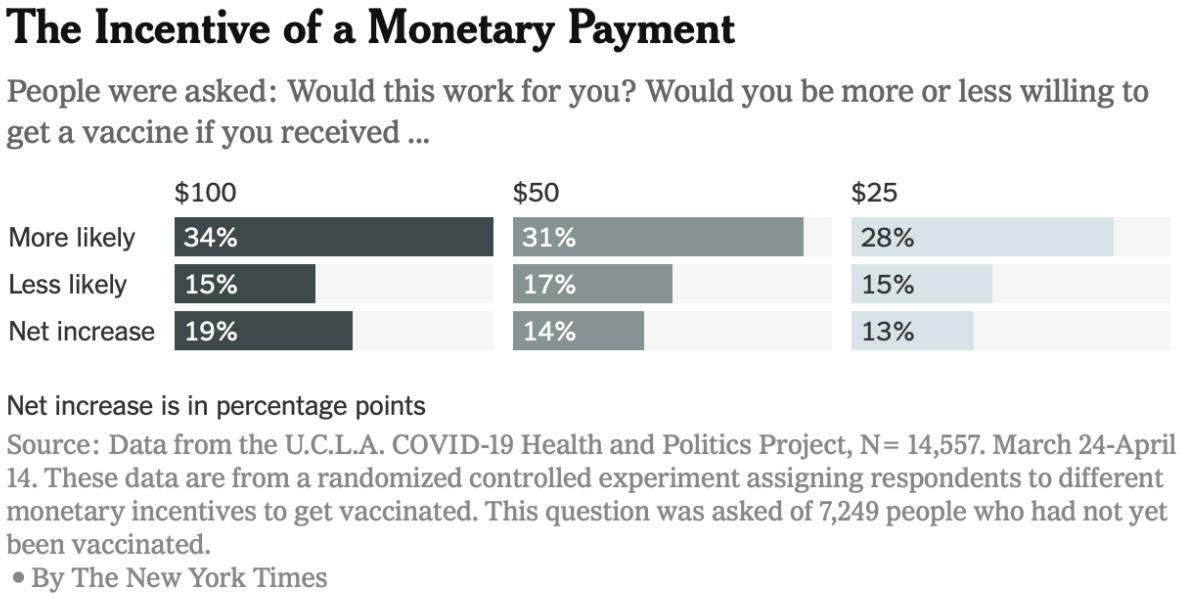
- Listen, acknowledge & validate
- Educate & dispel myths
- Diversify workforce
- Engage with community

- The key “is for them to feel a sense of empowerment and control over their own health and their own decisions"

Lisa Cooper, MD

Potential solutions

- One size doesn't fit all
- Carrots
  - **Cash incentives**
  - Treats
  - Admission to concerts, sporting events
- Sticks
  - Employers
  - Schools
- Myth busting
- Peer education



New York Times

Potential solutions

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Potential solutions

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SF Giants 'vaccinated only' section offers more traditional ballgame experience

By Christien Kafton | **Published** April 27 | San Francisco Giants | KTVU FOX 2

SF Giants 'vaccinated only' section offers more traditional ballgame experience

As more people around the Bay Area get vaccinated more locations are opening up options for those who've received their shots. The San Francisco Giants have set up vaccinated only sections for fans to get a little closer to a traditional baseball experience.

Potential solutions

- One size doesn't fit all
- Carrots
  - **Cash incentives**
  - Treats
  - Admission to concerts, sporting events
- **Sticks**
  - **Employers**
  - **Schools**
- Myth busting
- Peer education

Los Angeles Times

CALIFORNIA

California's massive UC and Cal State systems plan to require COVID-19 vaccinations this fall

Alex Harris, right, waits in line with a friend for COVID-19 vaccination at Cal State L.A. on April 9. The UC and Cal State systems announced that COVID-19 vaccinations will be required for students and staff. (Al Seib / Los Angeles Times)

By NINA AGRAWAL, TERESA WATANABE, COLLEEN SHALBY

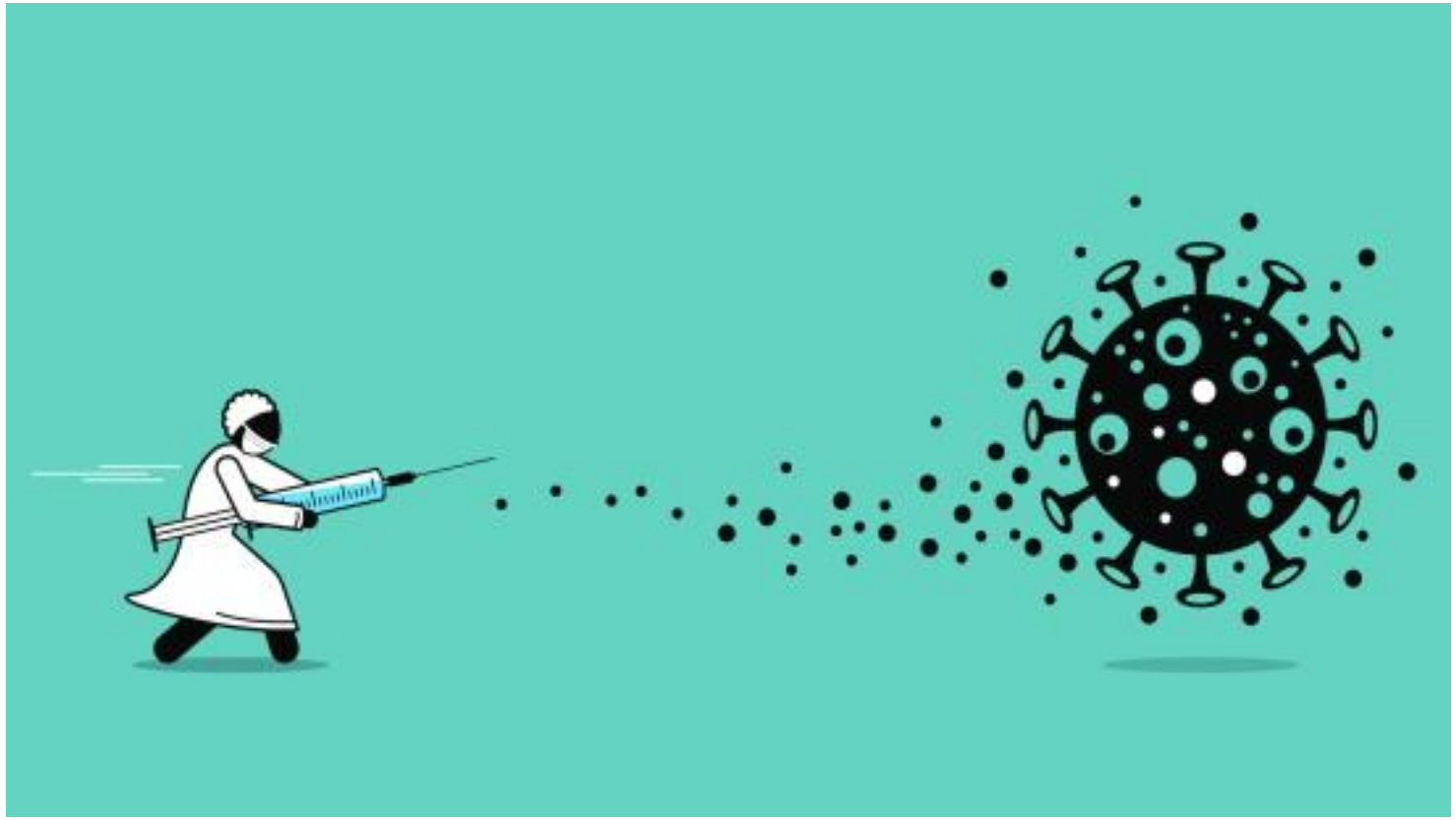
APRIL 22, 2021 1:15 PM PT

Potential solutions

- One size doesn’t fit all
- Carrots
  - **Cash incentives**
  - Treats
  - Admission to concerts, sporting events
- Sticks
  - Employers
  - Schools
- **Myth busting**
- **Peer education**

Myth: I could get COVID from the vaccine
Reality: Nope

- Live Virus = Infection
- Vaccine = No Live Virus

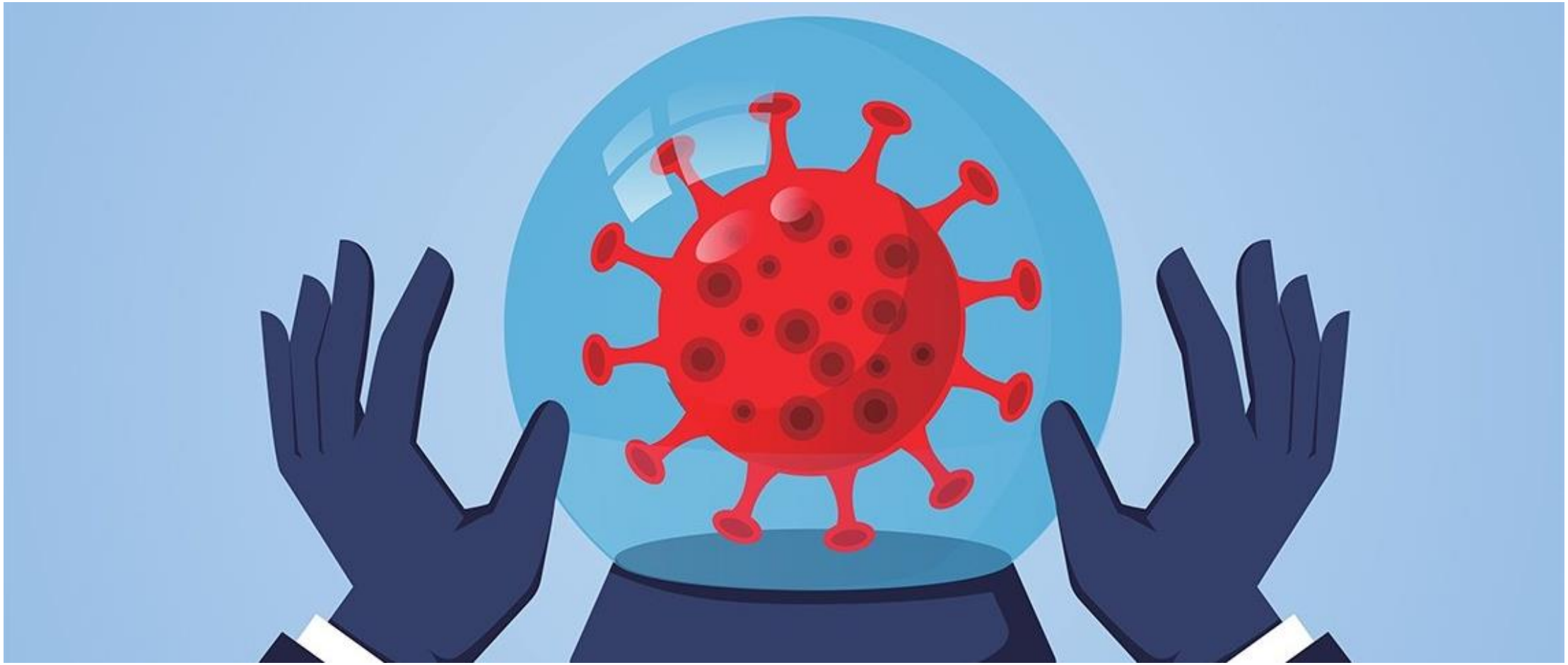


The vaccine trains your immune system to recognize the virus so it can leap into action to protect you if you're infected.

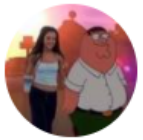
https://www.cdc.gov/coronavirus/2019-ncov/vaccines/facts.html

ABC

COVID future



Have fun
Thank you

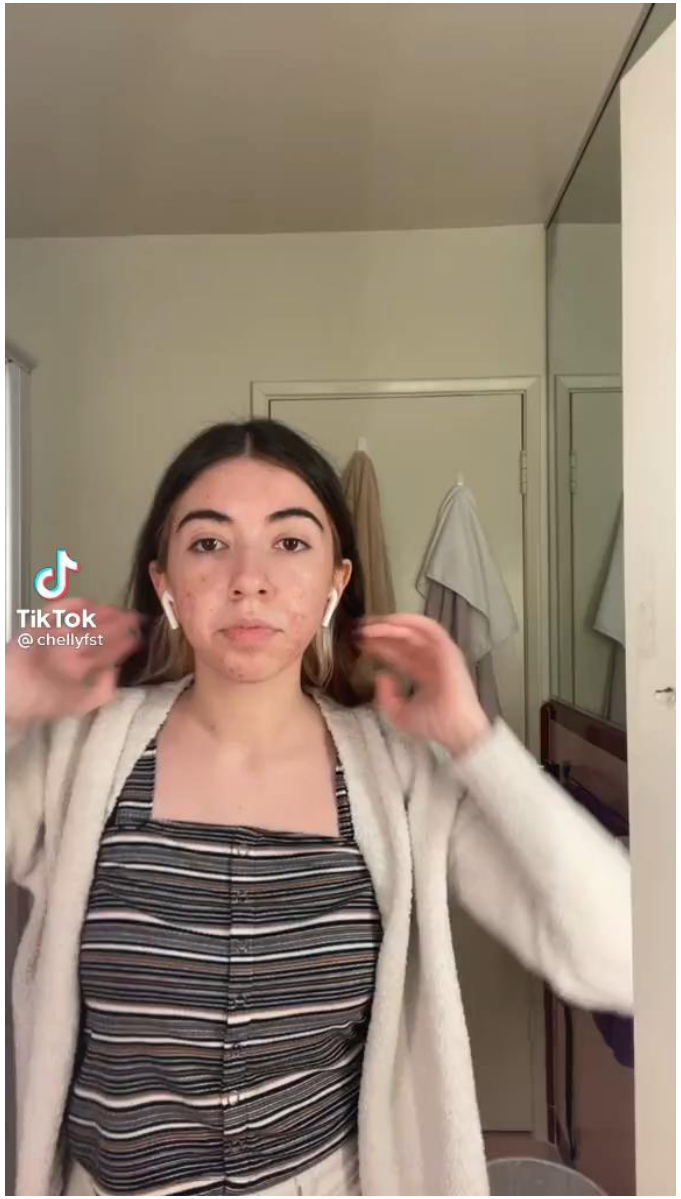


chellyfst Chelly · 4-8

this shit better work so my arm doesn't hurt tomorrow fr

#vaccinated #vaccine #pfizergang #vaccinequeen #fyp #foryou

♫ **Please Don't Go - Mike Posner**

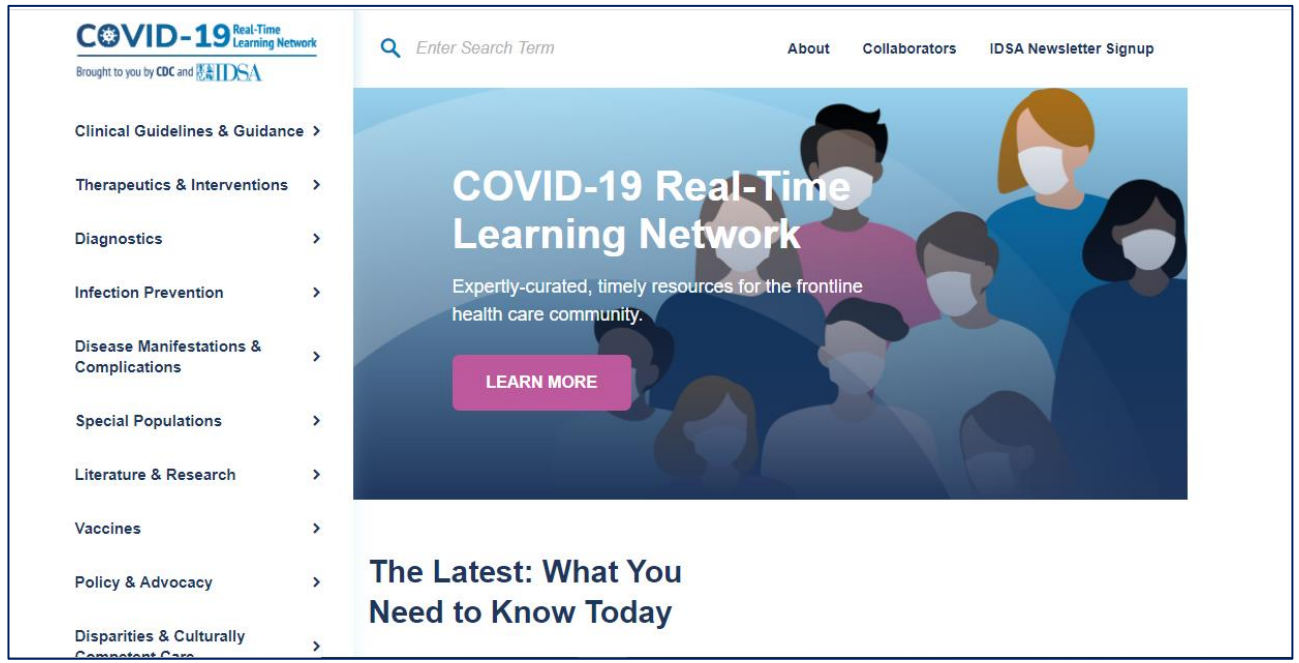


Q&A and Discussion

COVID-19 Real-Time Learning Network

Brought to you by CDC and IDSA

An online community bringing together information and opportunities for discussion on latest research, guidelines, tools and resources from a variety of medical subspecialties around the world.



Specialty Society Collaborators

American Academy of Family Physicians
American Academy of Pediatrics
American College of Emergency Physicians
American College of Physicians
American Geriatrics Society
American Thoracic Society
Pediatric Infectious Diseases Society
Society for Critical Care Medicine
Society for Healthcare Epidemiology of America
Society of Hospital Medicine
Society of Infectious Diseases Pharmacists

www.COVID19LearningNetwork.org
@RealTimeCOVID19
#RealTimeCOVID19

CDC-IDSA Partnership: Clinical Management Call Support

FOR WHOM?

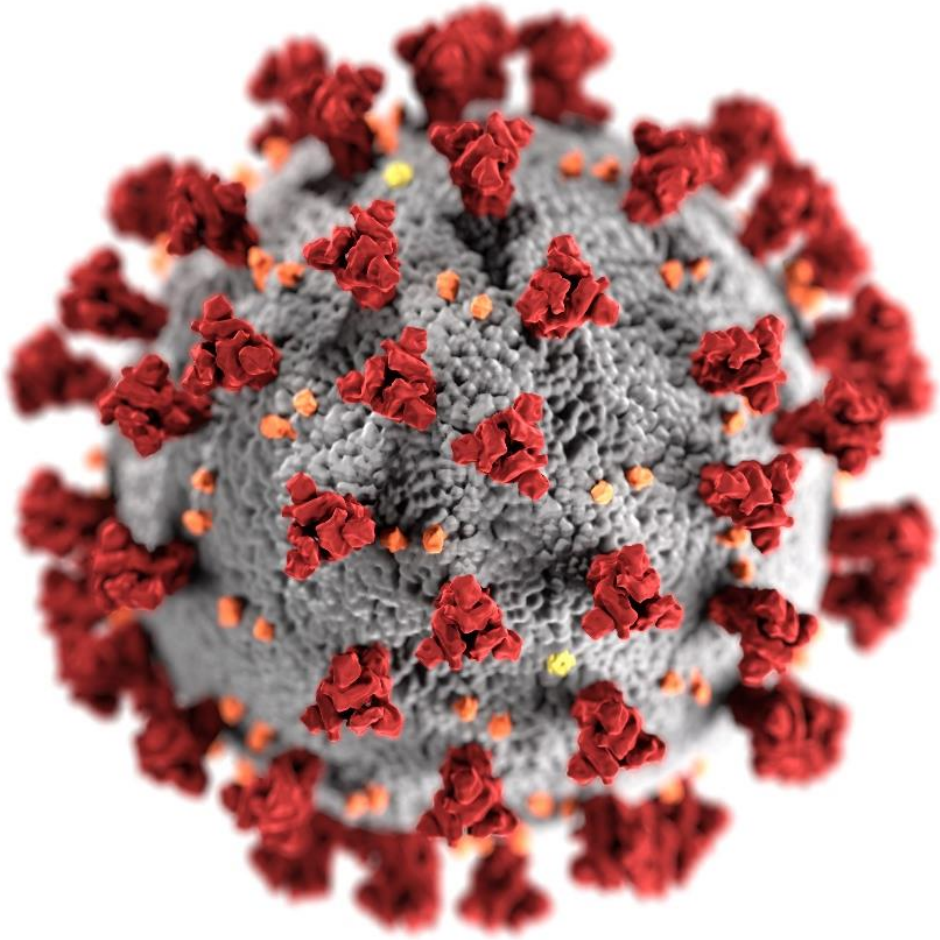
- Clinicians who have questions about the clinical management of COVID-19

WHAT?

- Calls from clinicians will be triaged by CDC to a group of IDSA volunteer clinicians for peer-to-peer support

HOW?

- Clinicians may call the main CDC information line at 800-CDC-INFO (800-232-4636)
- To submit your question in writing, go to www.cdc.gov/cdc-info and click on Contact Form



IDSA
Infectious Diseases Society of America

cdc.gov/coronavirus

Continue the conversation on Twitter

@RealTimeCOVID19
#RealTimeCOVID19

We want to hear from you!

Please complete the post-call survey.

Next Call: **Sat., May 15**

A recording of this call will be posted at **www.idsociety.org/cliniciancalls**

-- library of all past calls now available --

Contact Us:

Dana Wollins (dwollins@idsociety.org)

Deirdre Lewis (dlewis@idsociety.org)