

INFORMED BY SCIENTIFIC FINDINGS: PLANNING FOR TOMORROW

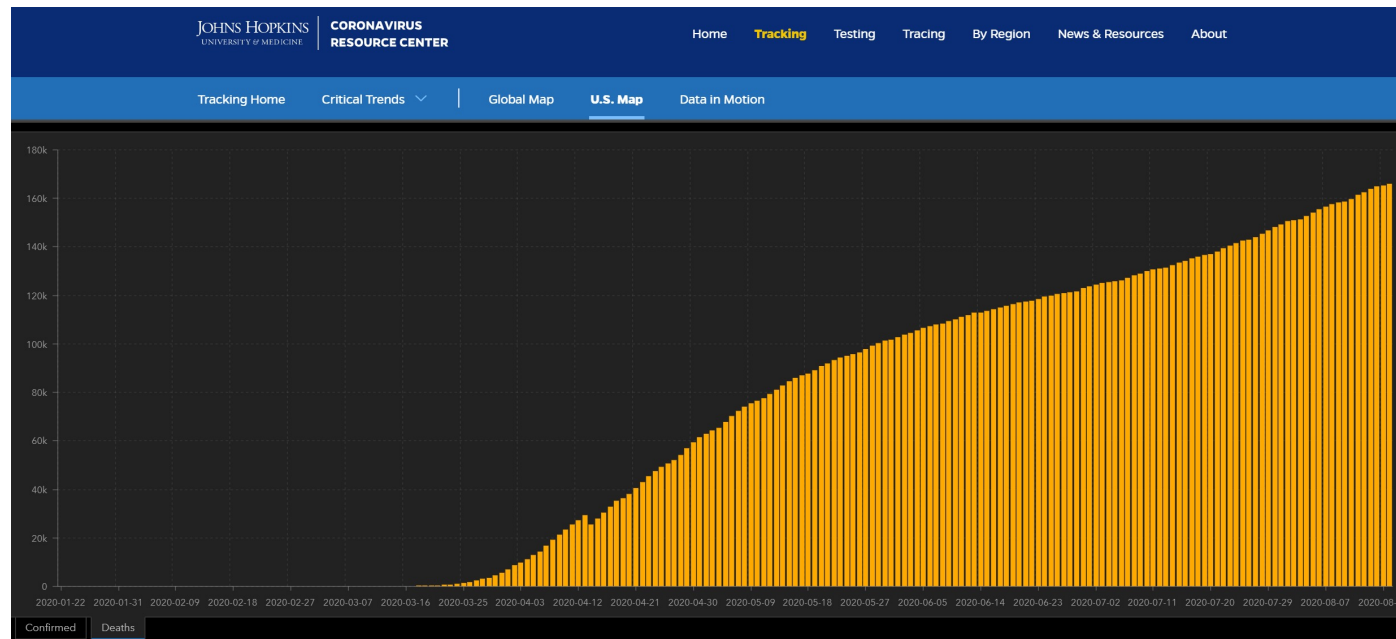
Adam Schwalje, MD, DMA

University of Iowa Hospitals and Clinics

Department of Otolaryngology – Head and Neck Surgery

COVID: A Pandemic

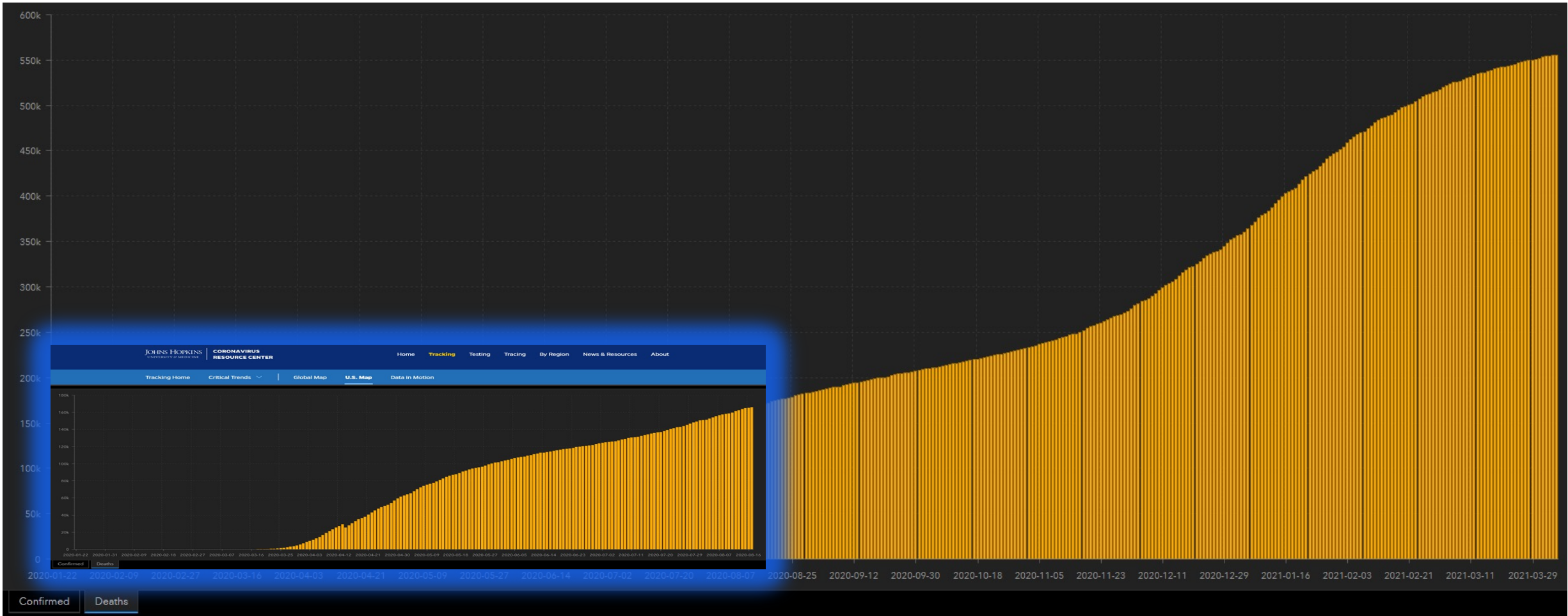
August 2020: 170 thousand deaths, 1K per day



<https://coronavirus.jhu.edu/us-map>

Today, COVID Is Still Pandemic

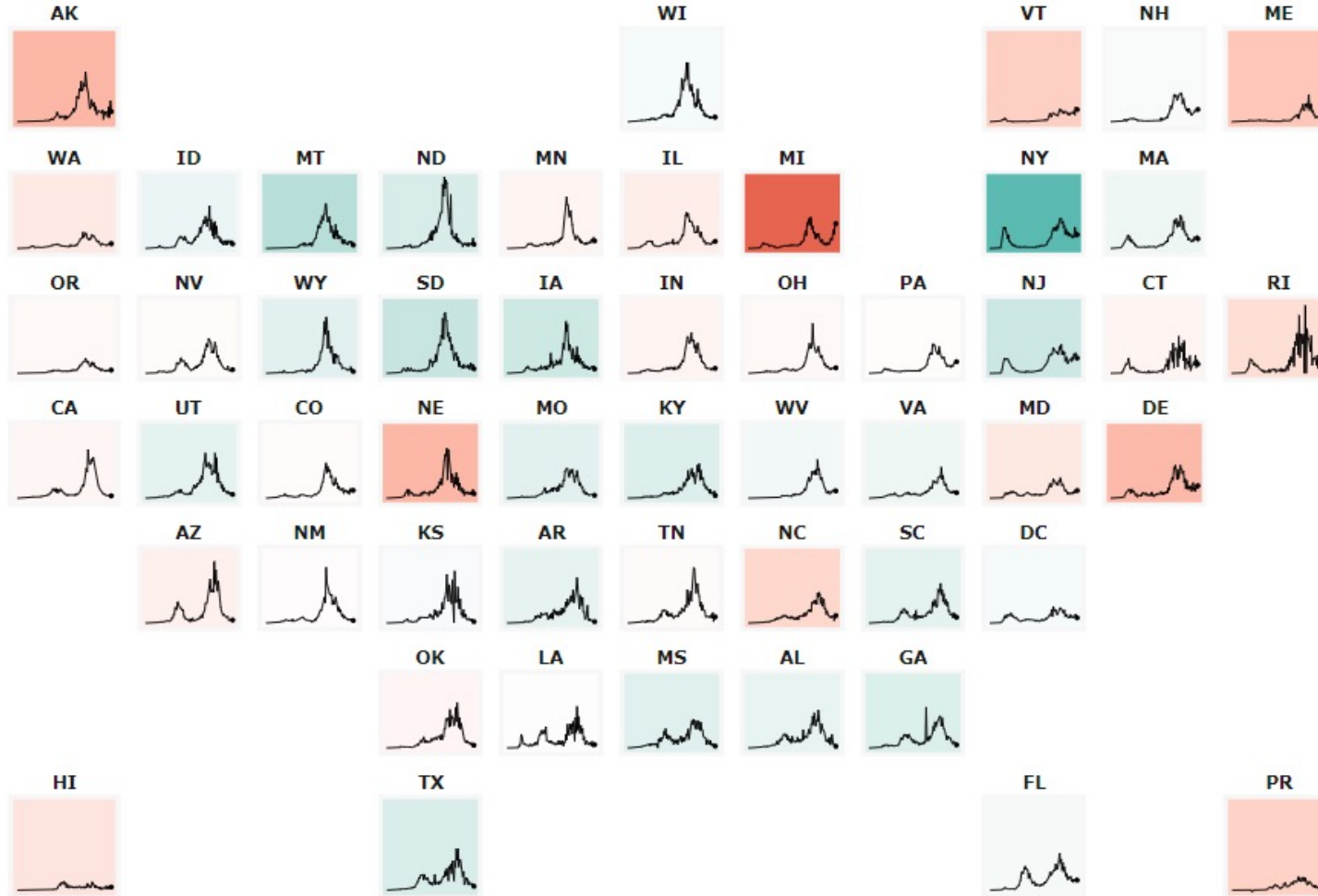
30.8 million cases, 555.6 thousand deaths (down to 1K per day from a peak of 4K per day)



<https://coronavirus.jhu.edu/us-map>

COVID: Some Good News

Daily New Cases per 100k people. Data shown from 1/22/20 to 4/5/21.



Most states have a decreasing seven-day average over the last two weeks (shades of green)

Don't know whether to sing or cry

HEALTH AND SCIENCE

CDC chief warns U.S. headed for 'impending doom' as Covid cases rise again: 'Right now I'm scared'

PUBLISHED MON, MAR 29 2021 11:31 AM EDT | UPDATED MON, MAR 29 2021 1:47 PM EDT

 Noah Higgins-Dunn
@HIGGINS-DUNN

SHARE    

5:36 a.m. ET, March 29, 2021

Merkel says she is considering new restrictions to bring coronavirus under control

From CNN's Stephanie Halasz in London

MONDAY, MAR 29 2021

FULL ISSUE

Variants Pulling Ahead? Covid Cases Rising In Closely Watched States

3:32 p.m. ET, March 29, 2021

Italian prime minister hopeful EU will achieve herd immunity by end of July

From CNN's Livia Borghese

2:43 p.m. ET, March 29, 2021

More than one in five US adults are fully vaccinated, CDC data shows

From CNN's Deldre McPhillips

7:42 p.m. ET, March 29, 2021

Alabama governor will end state's mask mandate next week

From CNN's Jamie Lynch and Dave Alsop

August 2020

“Each institution needs to do the hard work to figure out what is best for your spaces, your learners, your educators, and within your communities.”

Informed decision making: Analytic, deliberative, accurate, balanced, shared.

Judgment

Good Judgment

How to choose a good option from many possible paths?

- First Principles
- Mission
- Ethics

Pillars of Medical Ethics

These may indeed be life and death decisions.

PRINCIPLES OF ETHICS



AUTONOMY



BENEFICENCE



NONMALEFICENCE



JUSTICE

Non-maleficence

- How to do no harm, *including*
 - Don't expose people to disease if you can help it

An Update on Aerosols and COVID

- 1 copy per ml in breath of some infected individuals (each breath ~450 ml)
- Viable COVID found in hospital room air
 - Estimates of viable viral concentrations ranged from 6 to 74 units/L of air

Li X, Li J, Ge Q, Du Y, Li G, Li W, Zhang T, Tan L, Zhang R, Yuan X, Zhang H, Zhang C, Liu W, Ding W, Sun L, Chen K, Wang Z, Shen N, Lu J. Detecting SARS-CoV-2 in the Breath of COVID-19 Patients. *Front Med (Lausanne)*. 2021 Mar 17;8:604392. doi: 10.3389/fmed.2021.604392. PMID: 33816516; PMCID: PMC8010128.

Lednicky JA, Lauzardo M, Fan ZH, Jutla A, Tilly TB, Gangwar M, Usmani M, Shankar SN, Mohamed K, Eiguren-Fernandez A, Stephenson CJ, Alam MM, Elbadry MA, Loeb JC, Subramaniam K, Waltzek TB, Cherabuddi K, Morris JG Jr, Wu CY. Viable SARS-CoV-2 in the air of a hospital room with COVID-19 patients. *Int J Infect Dis*. 2020 Nov;100:476-482. doi: 10.1016/j.ijid.2020.09.025. Epub 2020 Sep 16. PMID: 32949774; PMCID: PMC7493737.

Aerosol spread

Experts push CDC, White House to address COVID-19 aerosol spread

Filed Under: **COVID-19**

Stephanie Soucheray | News Reporter | CIDRAP News | Feb 17, 2021



Wearing a mask that fits tightly to your face can help limit spread of the virus that causes COVID-19

In lab tests with dummies, exposure to potentially infectious aerosols decreased by **about 95%** when they both wore tightly fitted masks

Other effective options to improve fit include:



Cloth mask over medical procedure mask



Medical procedure mask with knotted ear loops and tucked-in sides



Mask fitter



Nylon covering over mask

An Update on Testing

- COVID testing more widely available though test characteristics are still problematic
- Saliva tests just as effective as swabs

Student-athletes get COVID-19 tests 3 times a week, while experts say testing for other students is lagging



An Update on Monitoring

- CO2 monitoring (from exhaled breath) is correlated with aerosol dispersion

Washington Releases Increasingly Elaborate Guidelines for Outdoor Dining

There are CO2 monitors involved now

by [Gabe Guarente](#) | Jan 13, 2021, 11:00am PST

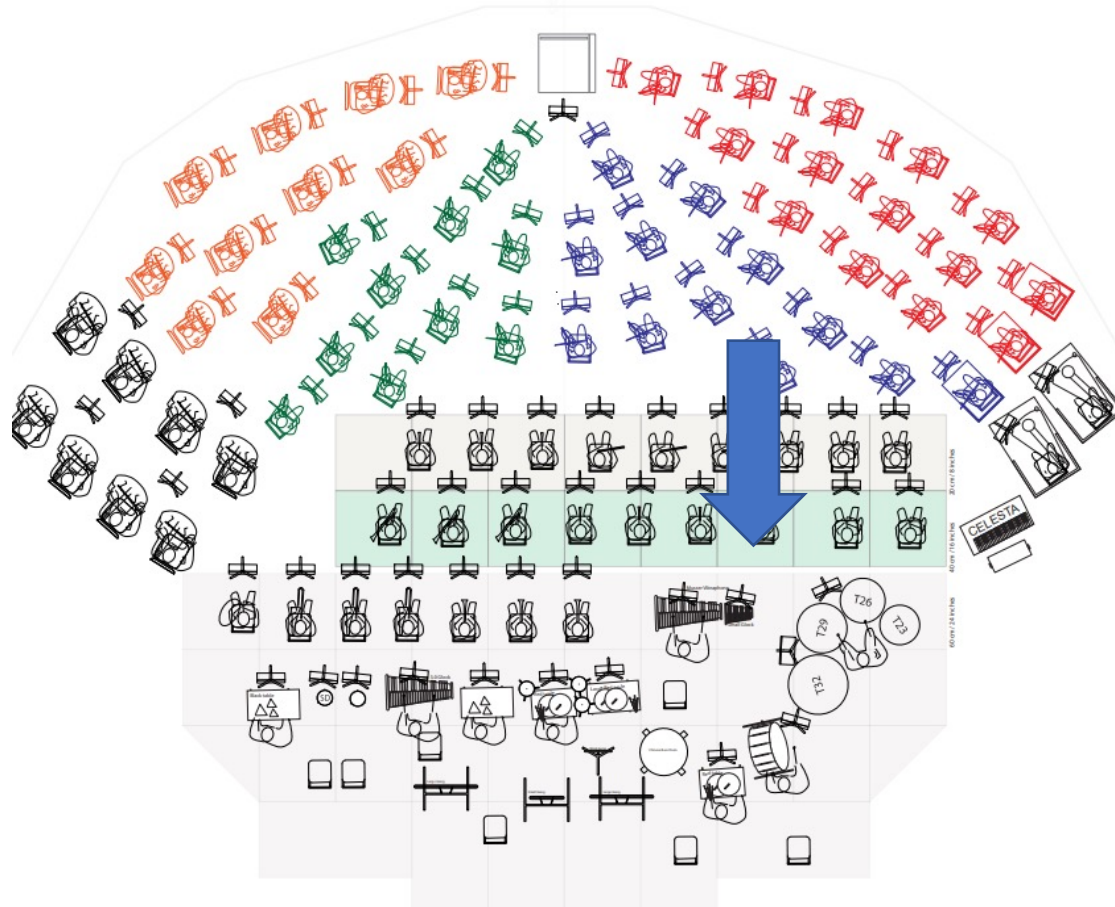


An Update on Wind Musicians and aerosol

- Very little has changed
 - 3/19/2021 NFHS study update: 60 minutes allowed for outdoor rehearsal
 - 3rd release of NFHS preliminary results 11/2020: Very similar recommendations as prior releases
 - J Hong et al, Univ. Minnesota: “Influence zone” of particles from wind instruments will potentially cause aerosols to accumulate above players’ heads. Bell covers may be useful.

Lots we still don't know

- e.g., how bad is wind playing anyway?



Hong Kong orchestra quarantines after member contracts COVID

About 100 members of the Hong Kong Philharmonic Orchestra are being quarantined after one of its members tested positive for the coronavirus

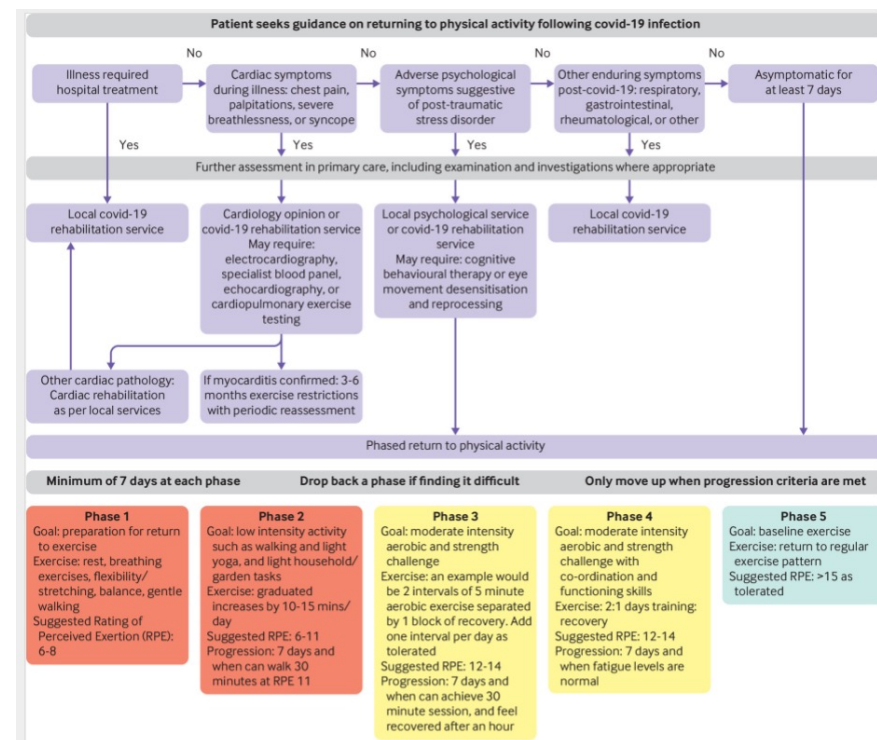
By ZEN SOO Associated Press

October 13, 2020, 8:06 AM • 1 min read



Post-COVID complications

- Myocarditis, pulmonary function, brain fog, psychiatric sequelae
- Consider cardiology / pulmonary consultation before resuming heavy activity



Questions?



Beneficence

- How to do good, *including*
 - Share your art with the world
 - Prevent disease

Share your art with the world

CRITIC'S NOTEBOOK

Think Outside the Opera House, and Inside the Parking Garage

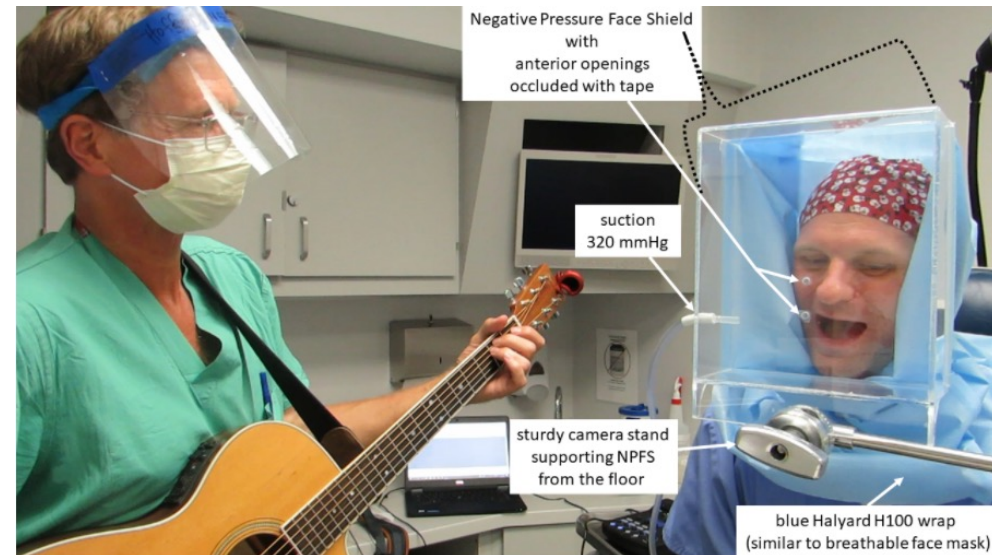
In Detroit, “Twilight: Gods” joins other recent performances that offer a path forward for the arts amid the pandemic.



Share your art with the world



Hoffman HT, Walsh JE, Pratt A, Miller RM, Schwalje A, Stegall HR, Nonnenmann M. Laser plume containment during flexible transnasal laryngoscopy. *Laryngoscope Investig Otolaryngol.* 2021 Feb 5:10.1002/lio2.526. doi: 10.1002/lio2.526. Epub ahead of print. PMID: 33821216; PMCID: PMC8013799.



Vaccines

Total Vaccine Doses

Delivered 219,194,215

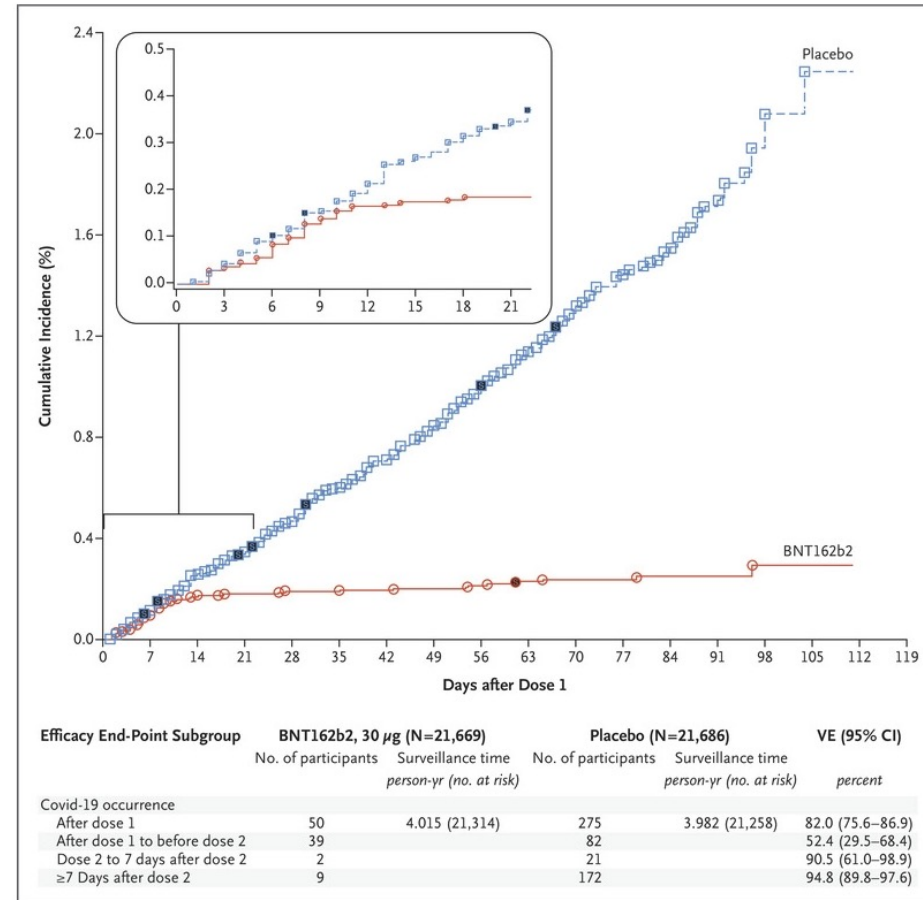
Administered 168,592,075

[Learn more about the distribution of vaccines.](#)

People Vaccinated

	At Least One Dose	Fully Vaccinated
Total	108,301,234	63,016,976
% of Total Population	32.6%	19%
Population ≥ 18 Years of Age	107,609,937	62,885,968
% of Population ≥ 18 Years of Age	41.7%	24.4%
Population ≥ 65 Years of Age	41,537,908	30,976,740
% of Population ≥ 65 Years of Age	75.9%	56.6%

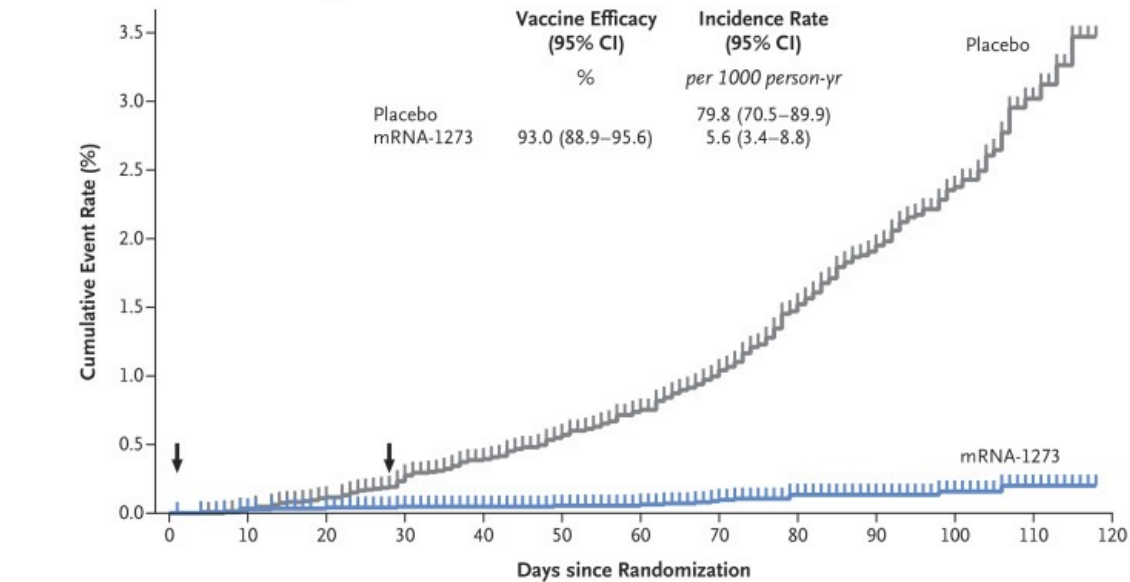
Pfizer efficacy December 2020



Polack FP, Thomas SJ, Kitchin N, Absalon J, Gurtman A, Lockhart S, Perez JL, Pérez Marc G, Moreira ED, Zerbini C, Bailey R, Swanson KA, Roychoudhury S, Koury K, Li P, Kalina WV, Cooper D, Frenck RW Jr, Hammitt LL, Türeci Ö, Nell H, Schaefer A, Ünal S, Tresnan DB, Mather S, Dormitzer PR, Şahin U, Jansen KU, Gruber WC; C4591001 Clinical Trial Group. Safety and Efficacy of the BNT162b2 mRNA Covid-19 Vaccine. *N Engl J Med.* 2020 Dec 31;383(27):2603-2615. doi: 10.1056/NEJMoa2034577. Epub 2020 Dec 10. PMID: 33301246; PMCID: PMC7745181.

Moderna efficacy

B Modified Intention-to-Treat Analysis

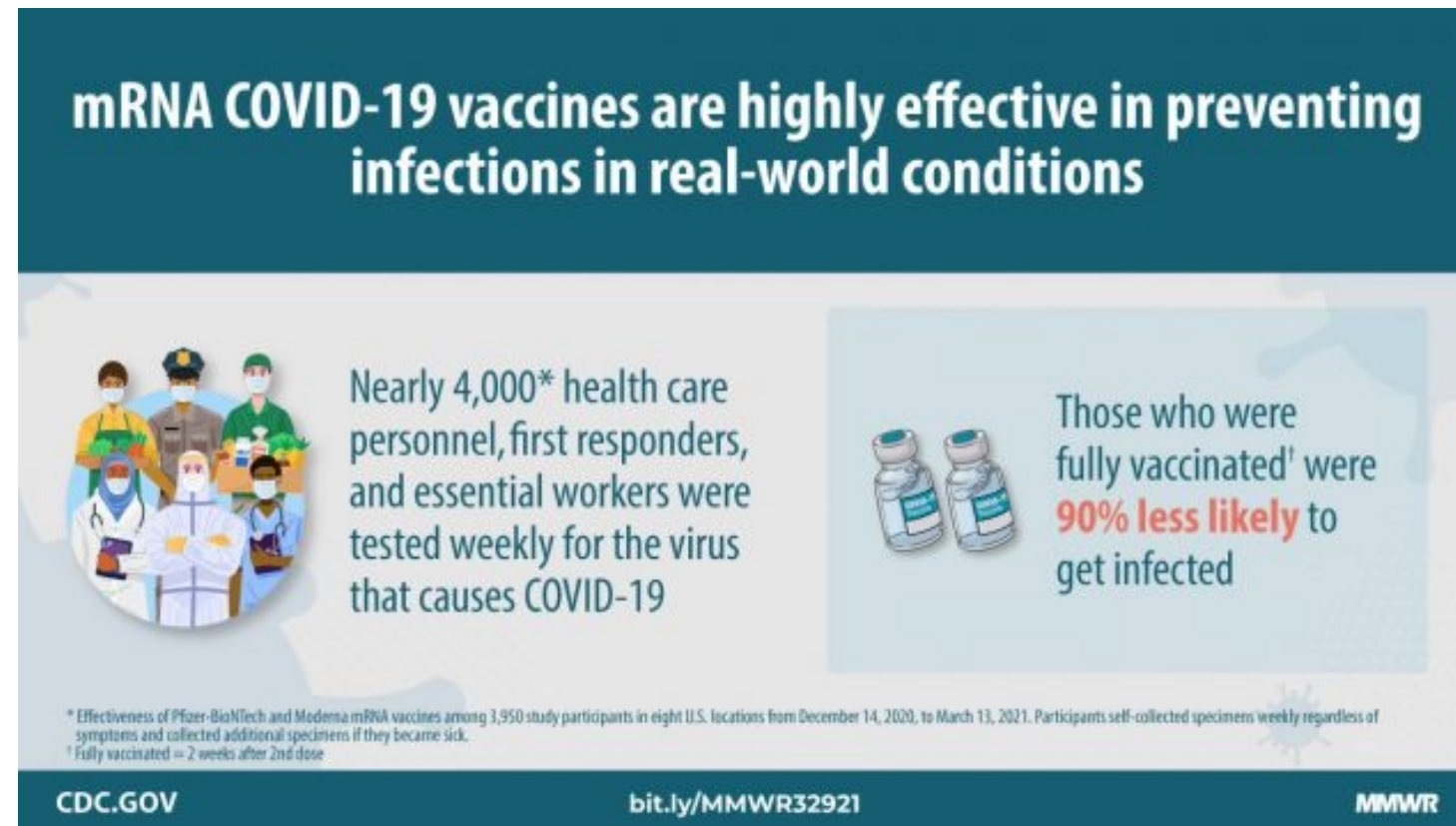


No. at Risk	0	10	20	30	40	50	60	70	80	90	100	110	120
Placebo	14,598	14,590	14,567	14,515	13,806	12,352	12,694	11,450	9736	6729	4067	1200	0
mRNA-1273	14,550	14,543	14,532	14,504	13,825	13,398	12,791	11,573	9911	6871	4179	1238	0

Covid-19 Onset	Placebo (N=14,598)	mRNA-1273 (N=14,550)
Randomization to 14 days after dose 1	11	5
14 Days after dose 1 to dose 2	35	2
Dose 2 to 14 days after dose 2	19	0
Starting 14 days after dose 2	204	12
Total (any time after randomization)	269	19

Baden LR, El Sahly HM, Essink B, Kotloff K, Frey S, Novak R, Diemert D, Spector SA, Roupael N, Creech CB, McGettigan J, Khetan S, Segall N, Solis J, Brosz A, Fierro C, Schwartz H, Neuzil K, Corey L, Gilbert P, Janes H, Follmann D, Marovich M, Mascola J, Polakowski L, Ledgerwood J, Graham BS, Bennett H, Pajon R, Knightly C, Leav B, Deng W, Zhou H, Han S, Ivarsson M, Miller J, Zaks T; COVE Study Group. Efficacy and Safety of the mRNA-1273 SARS-CoV-2 Vaccine. *N Engl J Med*. 2021 Feb 4;384(5):403-416. doi: 10.1056/NEJMoa2035389. Epub 2020 Dec 30. PMID: 33378609; PMCID: PMC7787219.

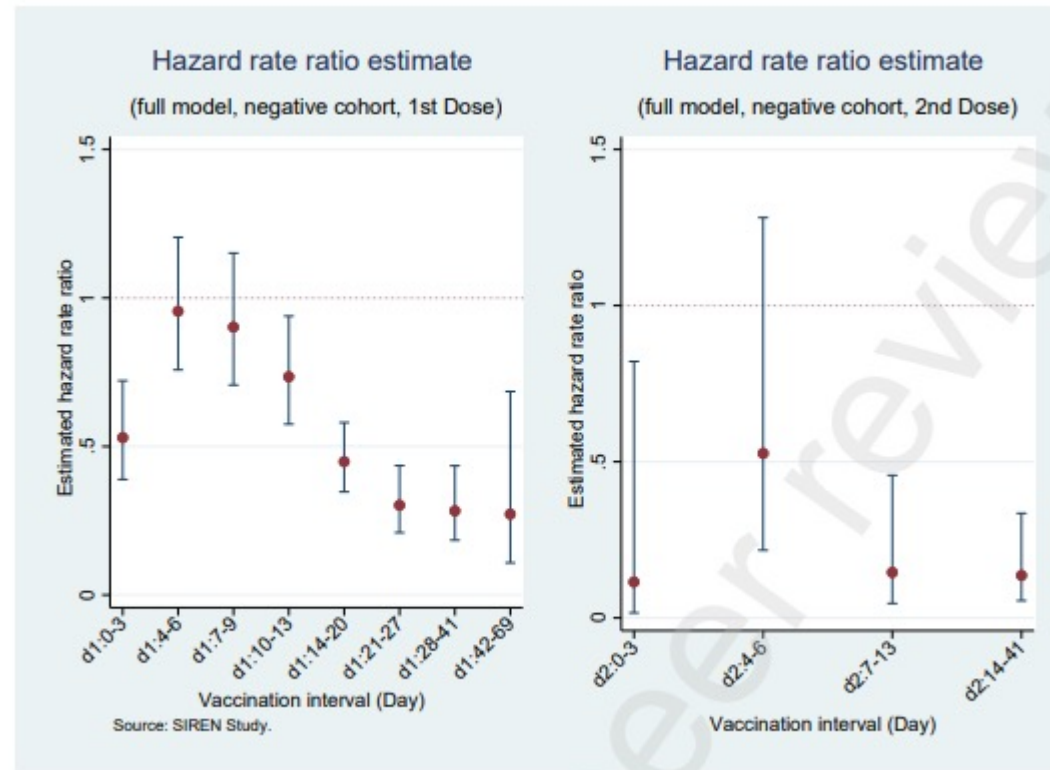
Efficacy of mRNA vaccines "HEROES-RECOVER" trial



Thompson MG, Burgess JL, Naleway AL, et al. Interim Estimates of Vaccine Effectiveness of BNT162b2 and mRNA-1273 COVID-19 Vaccines in Preventing SARS-CoV-2 Infection Among Health Care Personnel, First Responders, and Other Essential and Frontline Workers — Eight U.S. Locations, December 2020–March 2021. MMWR Morb Mortal Wkly Rep 2021;70:495–500.

DOI: <http://dx.doi.org/10.15585/mmwr.mm7013e3>

Efficacy of Pfizer vaccine against asymptomatic infection



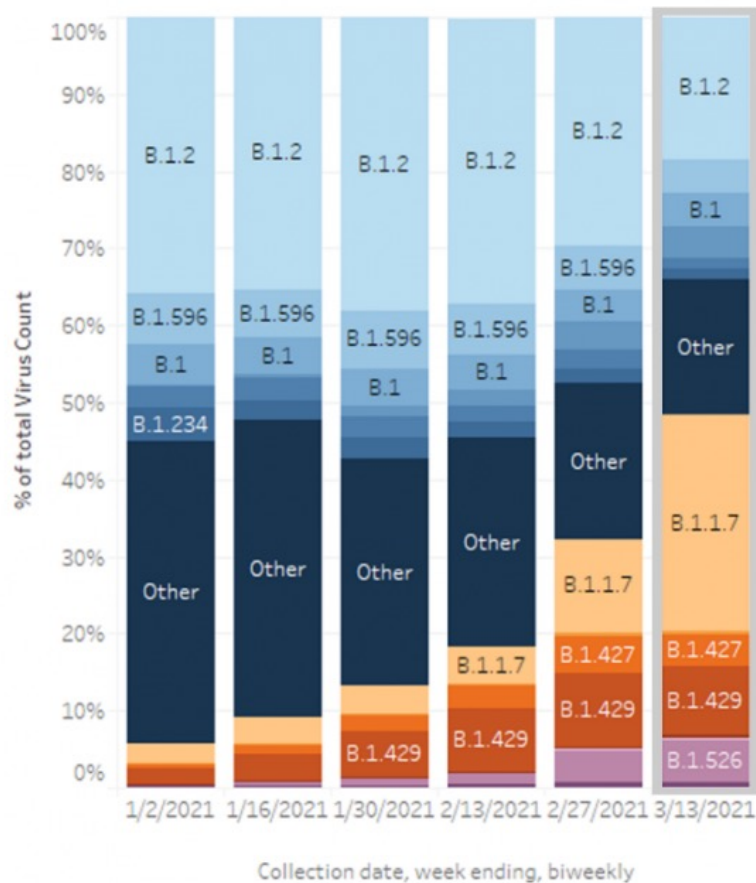
Hall, Victoria Jane and Foulkes, Sarah and Saei, Ayoub and Andrews, Nick and Oguti, Blanche and Charlett, Andre and Wellington, Edgar and Stowe, Julia and Gillson, Natalie and Atti, Ana and Islam, Jasmin and Karagiannis, Ioannis and Munro, Katie and Khawam, Jameel and Group, The SIREN Study and Chand, Meera A. and Brown, Colin and Ramsay, Mary E. and Bernal, Jamie Lopez and Hopkins, Susan, Effectiveness of BNT162b2 mRNA Vaccine Against Infection and COVID-19 Vaccine Coverage in Healthcare Workers in England, Multicentre Prospective Cohort Study (the SIREN Study). Available at SSRN: <https://ssrn.com/abstract=3790399> or <http://dx.doi.org/10.2139/ssrn.3790399>

Length of time of Efficacy

PFIZER AND BIONTECH CONFIRM HIGH EFFICACY AND NO SERIOUS SAFETY CONCERNS THROUGH UP TO SIX MONTHS FOLLOWING SECOND DOSE IN UPDATED TOPLINE ANALYSIS OF LANDMARK COVID-19 VACCINE STUDY

Moderna data released 4/6/21 shows similar results past 6 months

Variant proportions in the US



	Lineage	% Total	95% CI	Type
Most common lineages	B.1.2	15.5	12.3 - 19.3	
	B.1.429	8.2	5.9 - 11.4	VOC
	B.1.1.7	32.0	27.7 - 36.6	VOC
	B.1.596	3.7	2.7 - 5.1	
	B.1	4.7	3.3 - 6.6	
	B.1.427	4.2	2.9 - 6.1	VOC
	B.1.526	6.2	3.5 - 10.6	VOI
	B.1.1.519	3.4	2.5 - 4.8	
	B.1.243	1.2	0.8 - 1.8	
	B.1.234	1.6	1 - 2.6	
Additional VOI/VOC lineages	P.2	0.5	0.3 - 0.9	VOI
	B.1.351	0.7	0.4 - 1.3	VOC
	B.1.525	0.1	0 - 0.4	VOI
	P.1	0.4	0.2 0 - 0.8	VOC
Other*	Other	17.6	13.8 - 22.1	

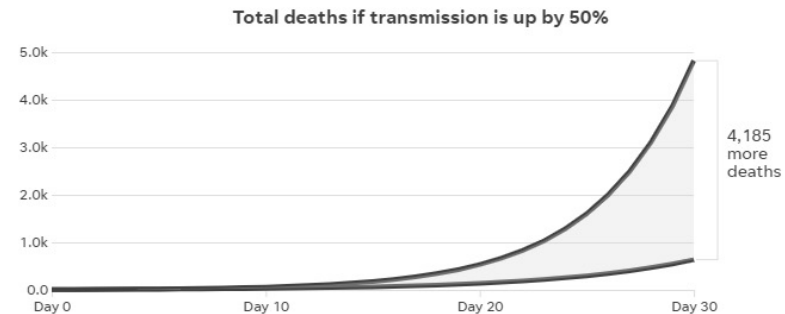
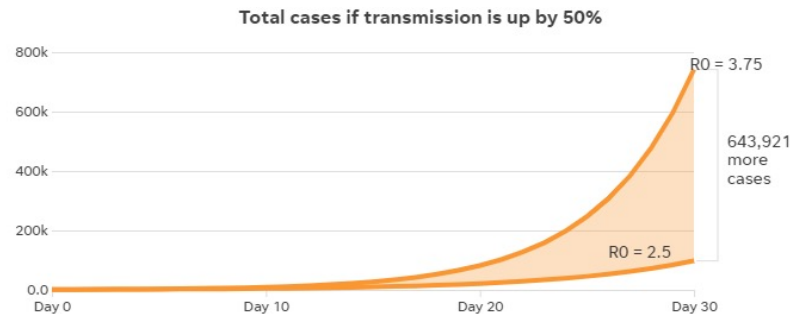
Percentages represent the proportion of viruses belonging to the indicated lineage, based on two weeks of data with collection dates ending March 13.

*Other represents >200 additional lineages, which are each circulating at <2% of viruses.

** Most recent data (shaded) are subject to change as samples from that period are still being processed.

Why Variants Matter

- B.1.1.7: 55% greater mortality, 43-90% more transmissible
- B.1.351: 50% more transmissible (non-peer-reviewed)



USA Today

Davies NG, Abbott S, Barnard RC, Jarvis CI, Kucharski AJ, Munday JD, Pearson CAB, Russell TW, Tully DC, Washburne AD, Wenseleers T, Gimma A, Waites W, Wong KLM, van Zandvoort K, Silverman JD; CMMID COVID-19 Working Group; COVID-19 Genomics UK (COG-UK) Consortium, Diaz-Ordaz K, Keogh R, Eggo RM, Funk S, Jit M, Atkins KE, Edmunds WJ. Estimated transmissibility and impact of SARS-CoV-2 lineage B.1.1.7 in England. *Science*. 2021 Mar 3:eabg3055. doi: 10.1126/science.abg3055. Epub ahead of print. PMID: 33658326.

Davies NG, Jarvis CI; CMMID COVID-19 Working Group, Edmunds WJ, Jewell NP, Diaz-Ordaz K, Keogh RH. Increased mortality in community-tested cases of SARS-CoV-2 lineage B.1.1.7. *Nature*. 2021 Mar 15. doi: 10.1038/s41586-021-03426-1. Epub ahead of print. PMID: 33723411.

Estimates of severity and transmissibility of novel South Africa SARS-CoV-2 variant 501Y.V2 Carl AB Pearson 1,2 , Timothy W Russell 1 , Nicholas G Davies 1 , Adam J Kucharski 1 , CMMID COVID-19 working group 1 , W John Edmunds 1 , Rosalind M Eggo 1 .

Efficacy of Pfizer vaccine against variants

PFIZER AND BIONTECH CONFIRM HIGH EFFICACY AND NO SERIOUS SAFETY CONCERNS THROUGH UP TO SIX MONTHS FOLLOWING SECOND DOSE IN UPDATED TOPLINE ANALYSIS OF LANDMARK COVID-19 VACCINE STUDY

REAL-WORLD EVIDENCE CONFIRMS HIGH EFFECTIVENESS OF PFIZER-BIONTECH COVID-19 VACCINE AND PROFOUND PUBLIC HEALTH IMPACT OF VACCINATION ONE YEAR AFTER PANDEMIC DECLARED

J&J efficacy data

Vaccine efficacy (VE) against central laboratory-confirmed **moderate to severe/critical COVID19** across all geographic areas in which the trial was conducted was 66.9% (95% CI 59.0, 73.4) when considering cases occurring at least 14 days after the single-dose vaccination and **66.1%** (55.0, 74.8) when considering cases occurring **at least 28 days after vaccination**

J&J efficacy to prevent asymptomatic infection

• **After day 29**, there were 22 cases of asymptomatic SARS-CoV-2 infection in the vaccinated group and 54 in the placebo group (vaccine **efficacy of 59.7%**; 95% CI 32.8-76.6).

<https://www.idsociety.org/covid-19-real-time-learning-network/vaccines/johnson-johnson-janssen-covid-19-vaccine/#Key>

COVID-19 Real-Time Learning Network
Brought to you by CDC and 

J&J efficacy against variants

vaccine **efficacy was lower in South Africa** (vaccine efficacy of 52.0%; 95%CI 30.3-67.4) compared to the United States (vaccine efficacy of 74.4%; 95%CI 65.0-81.6).

<https://www.idsociety.org/covid-19-real-time-learning-network/vaccines/johnson-johnson-janssen-covid-19-vaccine/#Key>



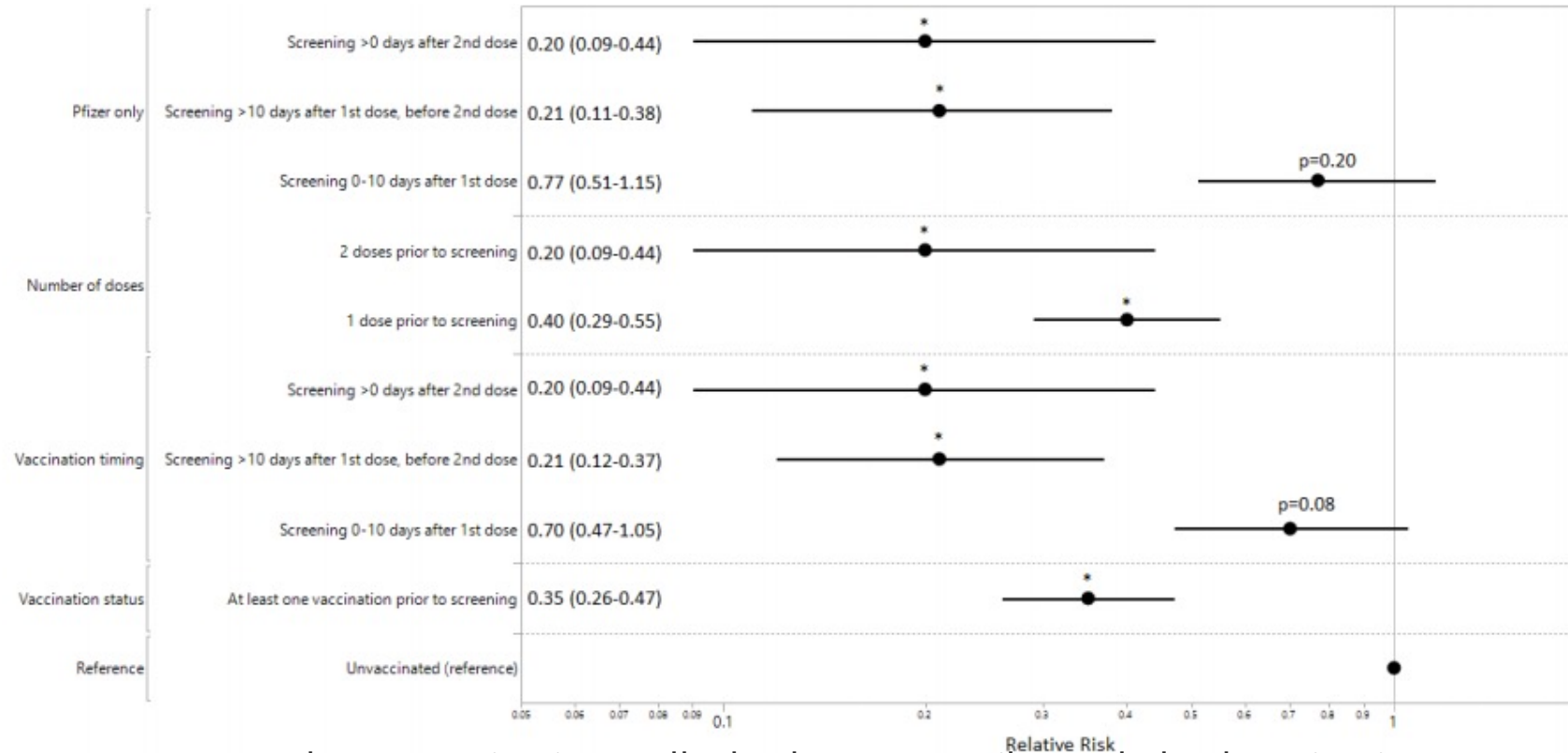
<https://www.ucsf.edu/news/2021/03/420071/how-effective-johnson-johnson-covid-19-vaccine-heres-what-you-should-know>

Although the J&J vaccine appeared to be **less effective against mild and moderate disease in these regions, it remained strongly protective against severe disease, hospitalizations and deaths.**

"We cannot say definitively that the difference in efficacy in these regions is due to more variants, but it's an assumption..."

Summary of vaccine efficacy - transmission

- Pfizer / Moderna vs ASYMPTOMATIC COVID: **80% relative risk reduction**
- J&J vs ASYMPTOMATIC COVID: **60% relative risk reduction**



Aaron J Tande, MD, Benjamin D Pollock, PhD, MSPH, Nilay D Shah, PhD, Gianrico Farrugia, MD, Abinash Virk, MD, Melanie Swift, MD, MPH, Laura Breeher, MD, MPH, Matthew Binnicker, PhD, Elie F Barbari, MD, Impact of the COVID-19 Vaccine on Asymptomatic Infection Among Patients Undergoing Pre-Procedural COVID-19 Molecular Screening, *Clinical Infectious Diseases*, 2021;, ciab229, <https://doi.org/10.1093/cid/ciab229>

Summary of vaccine efficacy – moderate to severe disease

Depends on variants

- J&J: 74.4% efficacy in *prevention of moderate to severe disease* in the US
 - No evidence yet on B.1.1.7 variant
- Pfizer / Moderna: 95% efficacy in prevention of symptomatic disease in the US
 - 97% efficacy in prevention of symptomatic disease in Israel when B.1.1.7 variant was dominant (non-peer-reviewed data)

If you are symptomatic then stay home

<https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>

Symptoms of Coronavirus (COVID-19)

Know the symptoms of COVID-19, which can include the following:



Symptoms can range from mild to severe illness, and appear 2–14 days after you are exposed to the virus that causes COVID-19.

Watch for symptoms

People with COVID-19 have had a wide range of symptoms reported – ranging from mild symptoms to severe illness. Symptoms may appear **2-14 days after exposure to the virus**. People with these symptoms may have COVID-19:

- Fever or chills
- Cough
- Shortness of breath or difficulty breathing
- Fatigue
- Muscle or body aches
- Headache
- New loss of taste or smell
- Sore throat
- Congestion or runny nose
- Nausea or vomiting
- Diarrhea

This list does not include all possible symptoms. CDC will continue to update this list as we learn more about COVID-19.

Questions?



Autonomy

- How to respect and encourage self-determination *including*
 - The decision to adopt a more protective stance than the status quo
 - The decision to not vaccinate?

Require vaccinations?

THE CHRONICLE OF HIGHER EDUCATION

Here's a List of Colleges That Will Require Students to Be Vaccinated Against Covid-19

By *Andy Thomason* | APRIL 6, 2021

[Last updated: 4/7/2021, 3:59 p.m.]

Justice

- How to protect your organizations and communities
- How to allocate scarce resources *including*
 - How to sustain the resources of art, dance, music, theater
 - How to sustain one's personal resources

Most important resource is YOU

COVID'S MENTAL STRESS

The percentage of people experiencing symptoms of depression and anxiety has surged amid the COVID-19 pandemic, data from nationally representative surveys show.

■ Before pandemic ■ During pandemic

UK adults reporting symptoms of depression



US adults reporting symptoms of anxiety or depression



©nature

Source: Office for National Statistics (UK data); Centers for Disease Control and Prevention (US data).

NEWS · 03 FEBRUARY 2021

COVID's mental-health toll: how scientists are tracking a surge in depression

Researchers are using huge data sets to link changes in mental health to coronavirus-response measures.

[Alison Abbott](#)

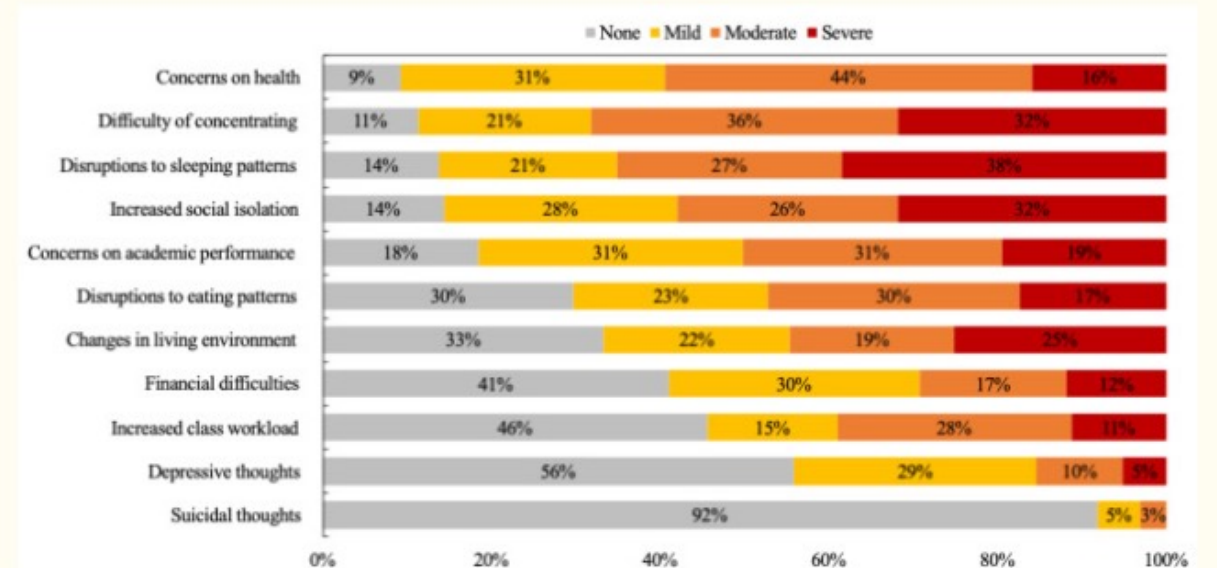


Figure 2

Participants' ratings on mental health aspects in an order of negative impacts (mild, moderate, and severe).

HELP IS AVAILABLE:

<https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/stress-coping/index.html>

Triggers for a Relaxation of Restrictions

- Decreasing Prevalence / Deaths / Hospitalizations
- Increasing Vaccination Rates
- variable, no one-size-fits-all solution



Thanks

adam-schwalje@uiowa.edu



Questions?

