

Corona By the Numbers

Corona and Cyber

Curated & Compiled by

Dr. Michael L. Thomas

Updated 23Jun2020

Topic	Slide
Change Happens	4
Pandemics 101	11
- History, Recent and 1918	12
- Actions We Can Take (flatten the curve)	23
- Social Distancing Explained	27
- What it looks like and Who is Most Vulnerable	37
China – What, When etc.	63
Numbers and Stats	88
- Flu vs. Corona	98
- Global Numbers	100
- National Numbers & US Military Numbers (28Apr)	104
- State Numbers	112
- What is “R” - Mental Health Impacts	128
- Mortality Numbers & Herd Immunity	137
- Imperial College Study (return to flatten the curve),	151
- Economic Impacts & Testing, Vaccine Development Reopening Smartly	179
- R0 vs Rt	2
Corona and Cyber	242
- Infodemics, Privacy, Contact Tracing & Vetting & Disinformation Against the US	284-381

Why “By the Numbers?”

“When the emotions we feel aren’t calibrated for the threat or when we’re making judgments in domains where we have little knowledge or relevant information, our feelings become more likely to lead us astray.”

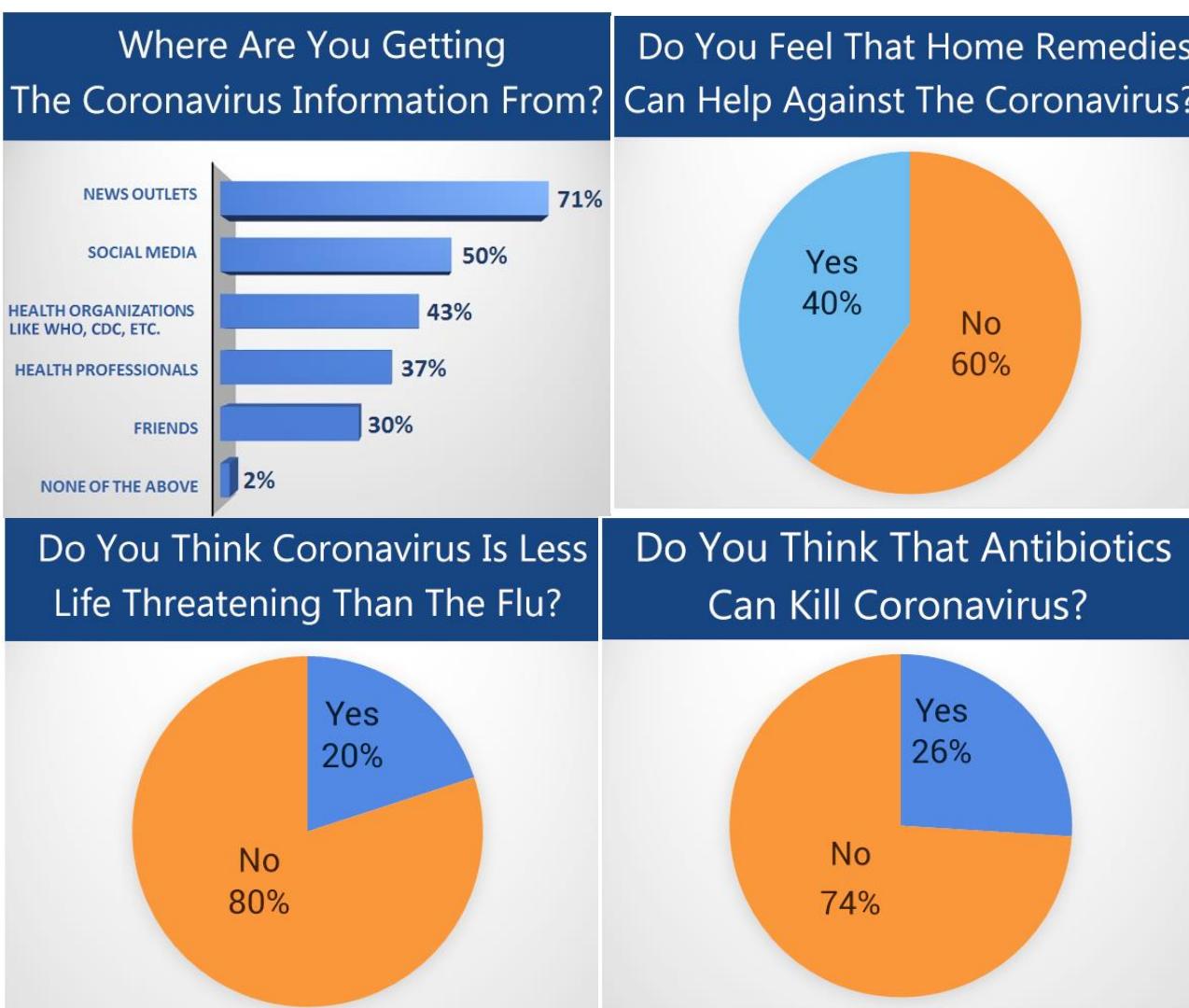
Dr. David DeSteno in the [New York Times Feb. 11, 2020](#)

“Currently disinformation ops are being run against the West by China, Russia and Iran – at a minimum. The goal – blame the US for creating the virus as a bioweapon and deflect from their own mistakes for poor management of the spread to other countries. People need data to make good decisions. That’s one point of this brief.”

*“Know the virus, know the data, and you **might** not click on a bad link.”*

Dr. Michael L. Thomas

Examples of Poor Information Vetting



Point 1 – Home remedies haven't been proven to work.

Point 2 – COVID 19 is far more contagious and deadlier.

Point 3 – Antibiotics won't work against COVID 19.

Hit the link below to see other examples of poor info...

<https://www.emedihealth.com/covid-19-survey.html>

Life Has Changed

I DON'T THINK WE SHOULD
OVERREACT TO THE CORONAVIRUS,
BUT IT MIGHT BE TIME TO PUT AN
END TO THE CUSTOM OF STARTING
BUSINESS MEETINGS BY EVERYONE
LICKING EACH OTHERS' EYEBALLS.



SECDEF 13Fri2020 Evening Memo



DEPUTY SECRETARY OF DEFENSE
1010 DEFENSE PENTAGON
WASHINGTON, DC 20301-1010

MAR 13 2020

MEMORANDUM FOR CHIEF MANAGEMENT OFFICER OF THE DEPARTMENT OF DEFENSE
SECRETARIES OF THE MILITARY DEPARTMENTS
CHAIRMAN OF THE JOINT CHIEFS OF STAFF
UNDER SECRETARIES OF DEFENSE
CHIEF OF THE NATIONAL GUARD BUREAU
COMMANDERS OF THE COMBATANT COMMANDS
GENERAL COUNSEL OF THE DEPARTMENT OF DEFENSE
DIRECTOR OF COST ASSESSMENT AND PROGRAM EVALUATION
INSPECTOR GENERAL OF THE DEPARTMENT OF DEFENSE
DIRECTOR OF OPERATIONAL TEST AND EVALUATION
CHIEF INFORMATION OFFICER OF THE DEPARTMENT OF DEFENSE
ASSISTANT SECRETARY OF DEFENSE FOR LEGISLATIVE AFFAIRS
ASSISTANT TO THE SECRETARY OF DEFENSE FOR PUBLIC AFFAIRS
DIRECTOR OF NET ASSESSMENT
DIRECTORS OF DEFENSE AGENCIES
DIRECTORS OF DOD FIELD ACTIVITIES

SUBJECT: Stop Movement for all Domestic Travel for DoD Components in Response to Coronavirus Disease 2019.

References: (a) Secretary of Defense Memorandum, "Travel Restrictions for DoD Components in Response to Coronavirus Disease 2019" March 11, 2020
(b) Office of the Under Secretary of Defense for Personnel and Readiness Memorandum, "Force Health Protection Guidance (Supplement 4) – Department of Defense Guidance for Personnel Traveling During the Novel Coronavirus Outbreak" March 11, 2020
(c) Office of the Under Secretary of Defense for Personnel and Readiness Memorandum, "Force Health Protection Guidance (Supplement 2) – Department of Defense Guidance for Military Installation Commander Risk-Based Measured Responses to the Novel Coronavirus Outbreak" February 25, 2020
(d) DoD Instruction 6200.03, "Public Health Emergency Management within the DoD," March 28, 2019

The continuing spread of the 2019 Novel Coronavirus (COVID-19) necessitates immediate implementation of travel restrictions for domestic Department of Defense (DoD) travel. These restrictions are necessary to preserve force readiness, limit the continuing spread of

the virus, and preserve the health and welfare of Service members, DoD civilian employees, their families, and the local communities in which we live.

This memorandum applies to all DoD military and civilian personnel and their families assigned to DoD installations, facilities, and surrounding areas in the United States and its territories. All DoD military personnel will stop movement while this memorandum is in effect. In addition, DoD civilian personnel and DoD family members, whose transportation is government-funded, will also stop movement. This policy applies to Permanent Change of Station (PCS) and Temporary Duty. Additionally, until the domestic travel restrictions prescribed above are lifted, DoD Components may only onboard civilian employees within the local commuting area, and military members are only authorized local leave in accordance with Service policies.

A travel exception may be granted in writing to the guidance contained herein for compelling cases where the travel is: (1) determined to be mission-essential; (2) necessary for humanitarian reasons; or (3) warranted due to extreme hardship. Mission-essential travel refers to work that must be performed to ensure the continued operations of mission-essential functions, as determined by the DoD Component. Approval authority for these exceptions belongs to the Combatant Commander if the individual is assigned to a combatant command; the Chairman of the Joint Chiefs of Staff if the individual is assigned to the Joint Staff; the Secretary of the Military Department concerned for personnel under his or her jurisdiction; or the Chief Management Officer for the Office of the Secretary for Defense, Defense Field Activities and Agencies. This authority may be delegated in writing to a level no lower than the first general officer, flag officer, or member of the Senior Executive Service in the traveler's chain of command or supervision. These exceptions are to be done on a case by case basis, shall be limited in number, and shall be coordinated between the gaining and losing organizations, as appropriate.

Travel by patients and medical providers for the purpose of medical treatment for DoD personnel and their family members is authorized. Individuals who have already initiated travel (including intermediate stops) are authorized to continue to their final destination. Individuals whose TDY ends while this memorandum is in effect are authorized to return to their home station. Individuals pending retirement or separation during this period are exempt. Authorized travelers will adhere to the Force Health Protection guidelines in reference (b) and later guidance, if any.

Our understanding of COVID-19 is rapidly evolving, and this guidance will be continuously evaluated as conditions warrant. Component heads should ensure this stop movement guidance is clearly communicated. For overseas travel, refer to the Travel Restrictions for DoD Components in Response to Coronavirus Disease 2019 memorandum dated March 11, 2020. This guidance is effective March 16, 2020, and expires May 11, 2020. The expiration aligns with the expiration date of reference (a), the Secretary of Defense memorandum published on March 11, 2020.

Type of Response Comes From Personal Knowledge Level



WE WERE WARNED

Everyone Saw This Coming

2003



2004



2005



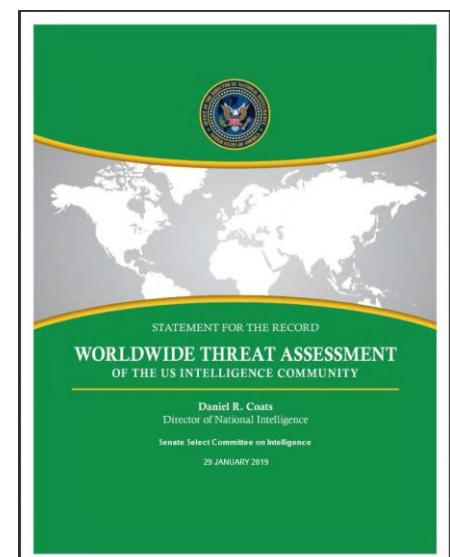
2007



2009

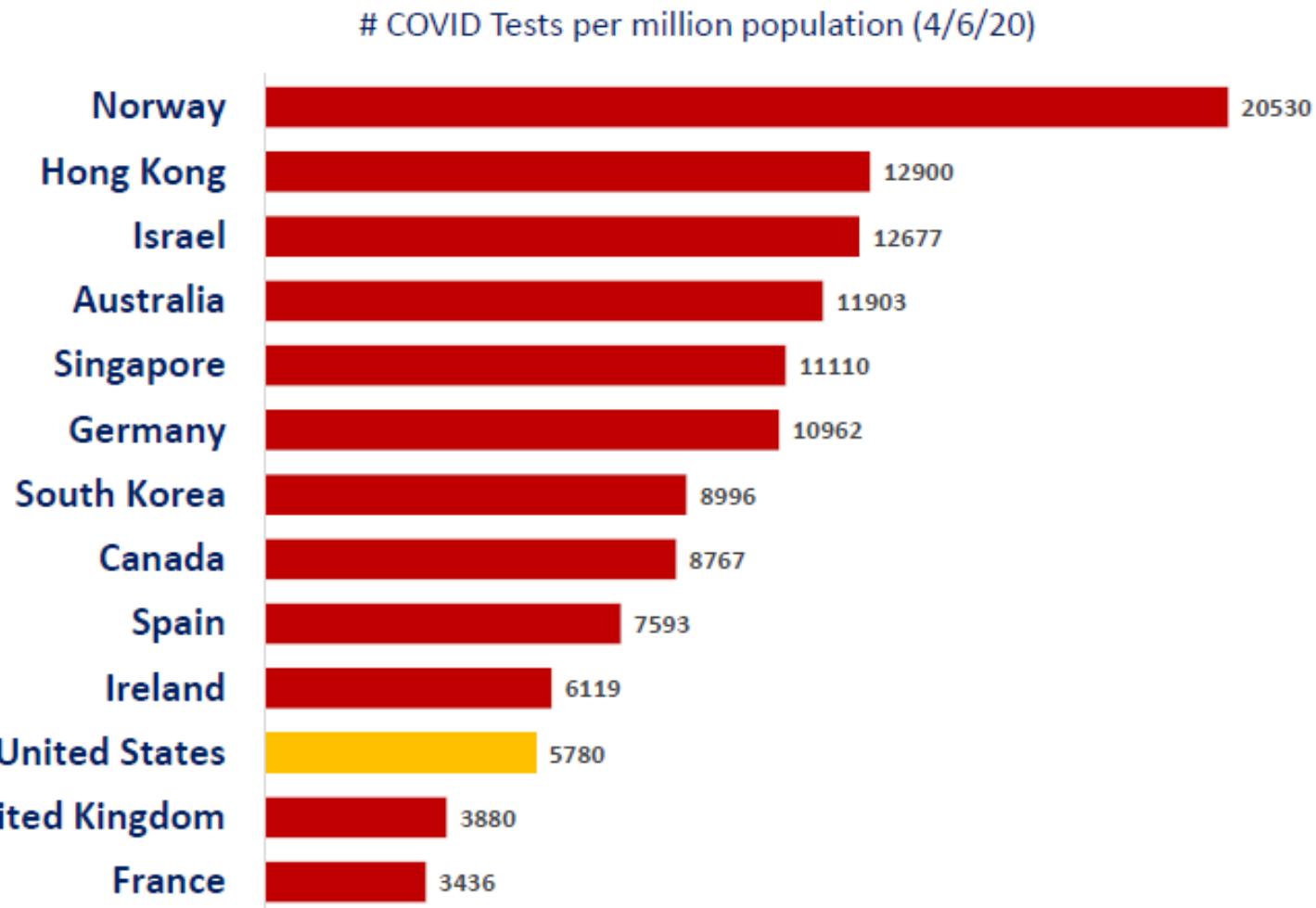


2017



WE FAILED THE TEST(ING)

Nations With Early, Widespread Testing Fared Best



WE WERE TOO VULNERABLE

Safety Net Lacking Even Before the Coronavirus Era...



53% of U.S. households had no emergency savings



33.6M civilian workers lacked paid sick leave



27.9M non-elderly lacked health insurance

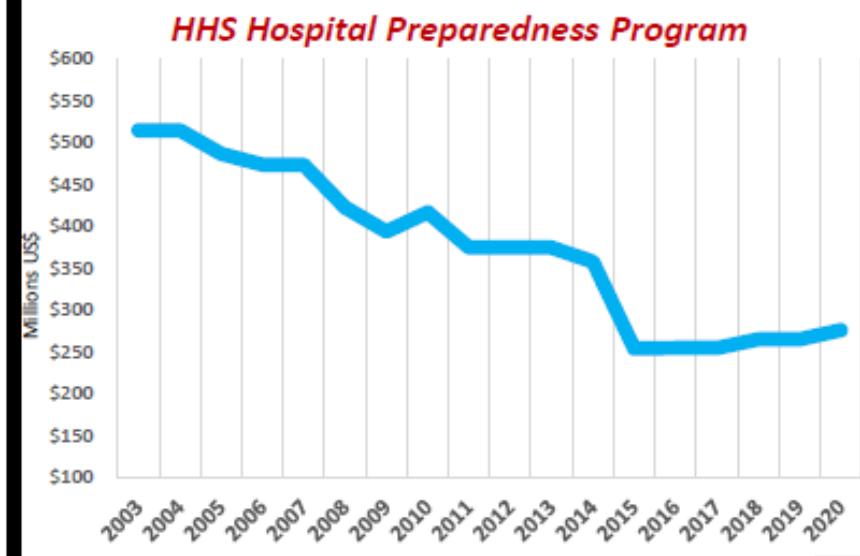
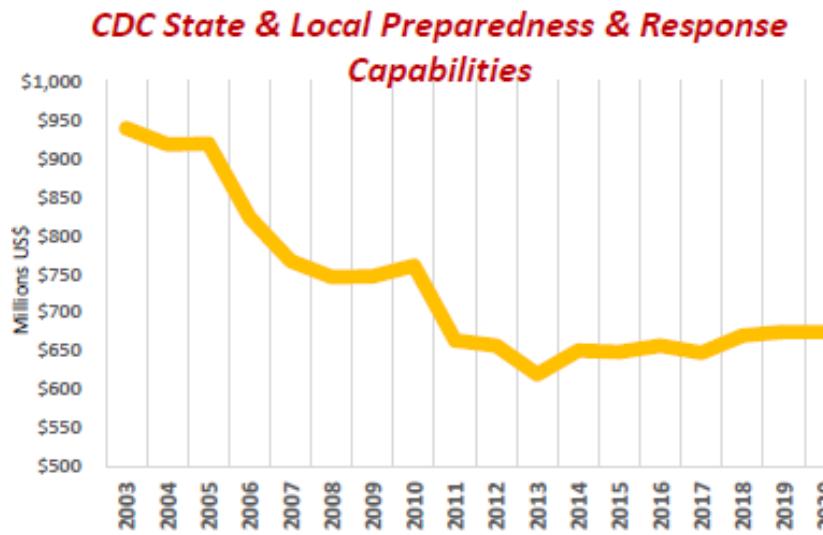


21.3M lacked adequate broadband

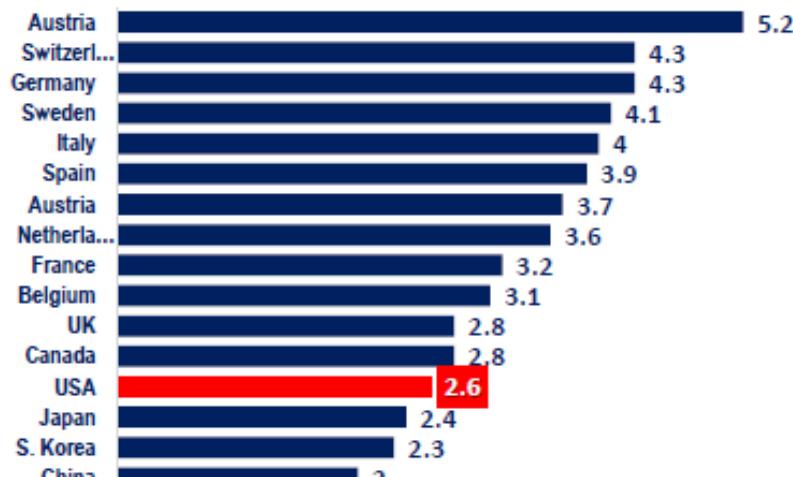


550,000 homeless were living on streets

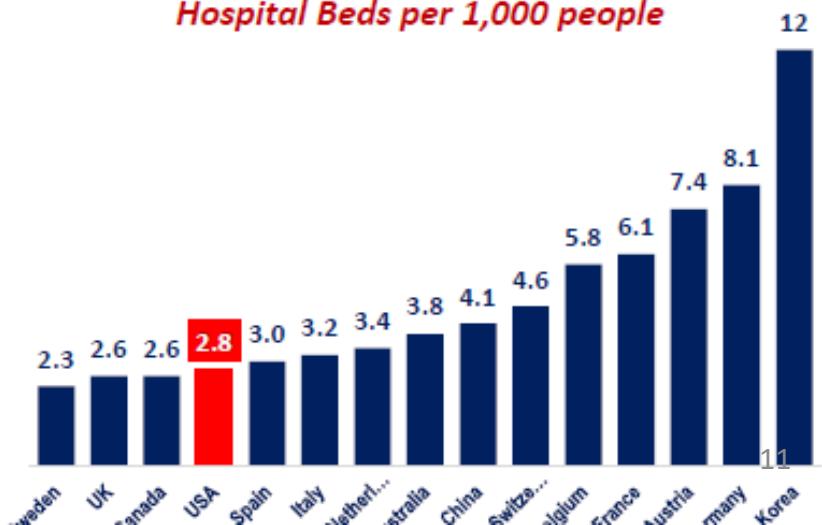
WE UNDER-FUNDED PREPAREDNESS & LACKED SURGE CAPACITY



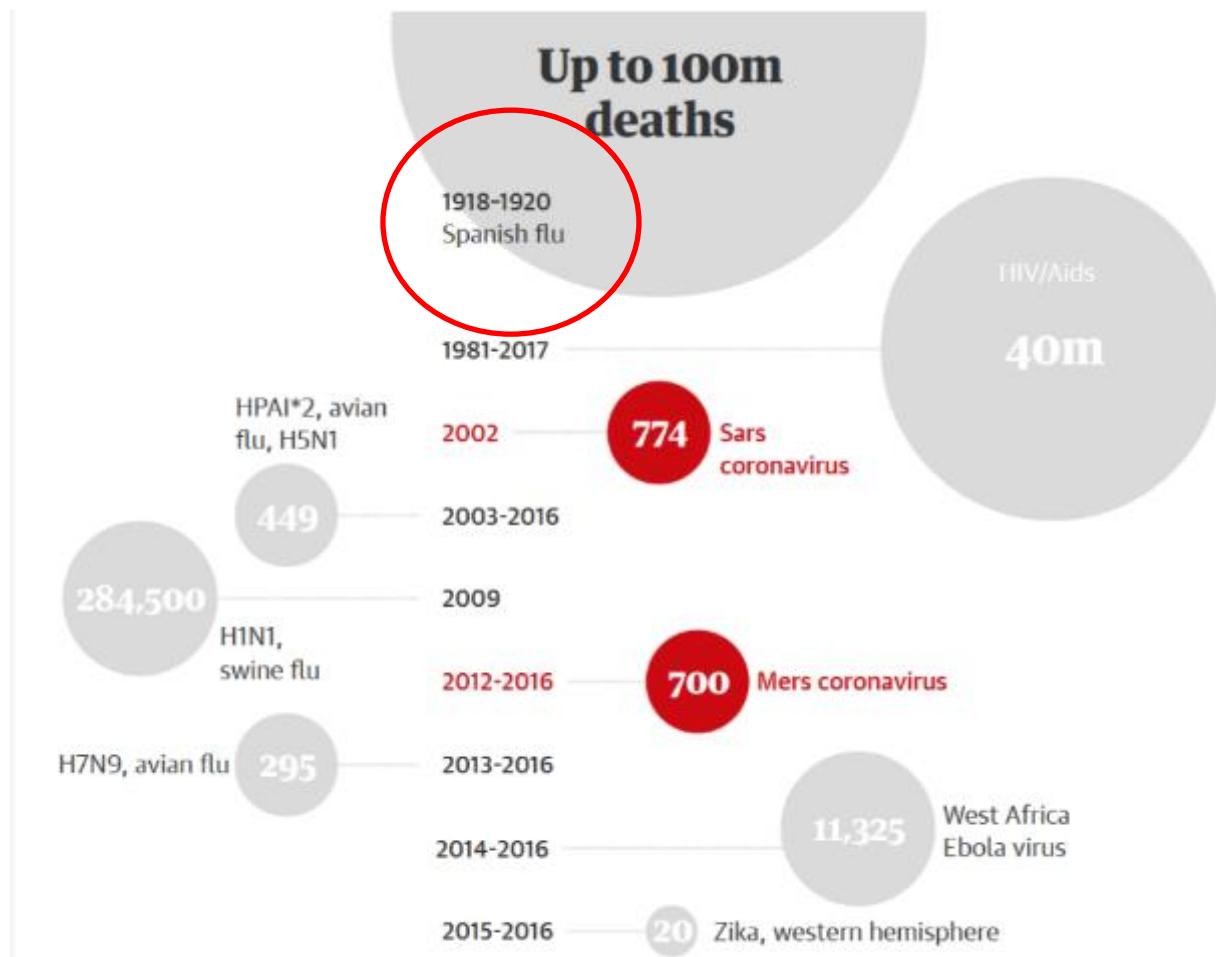
Practicing Physicians per 1,000 people



Hospital Beds per 1,000 people



Global Pandemics – Last 100 Years



Source: Bean A, Baker M, Stewart C et al. Studying immunity to zoonotic diseases in the natural host – keeping it real. *Nature Reviews: Immunology* 2013;13:851-61. Sizes of circles are not proportional

All four pandemics in last 100 years have had some genes that originated from avian influenza viruses

2009 Pandemic
(2009)
Estimated US Deaths**
= 12,500


CDC
Centers for Disease Control and Prevention

1968 Pandemic

(1968-1972)

Estimated US Deaths*
= 100,000

H1N1

1957 Pandemic

(1957-1960)

Estimated US Deaths*
= 116,000

H3N2

1918 Pandemic

(1918-1920)

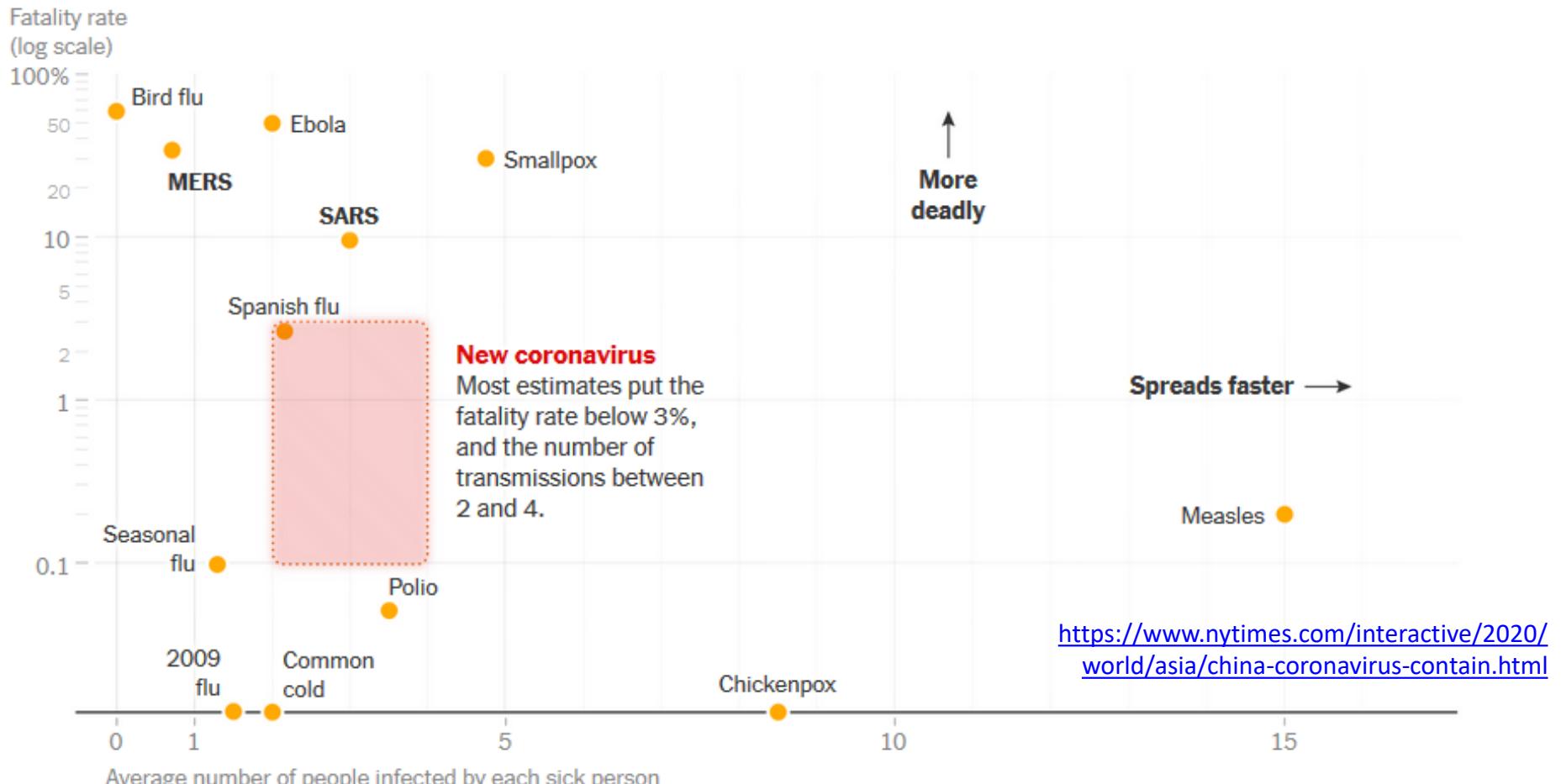
Estimated US Deaths*
= 675,000

H2N2

H1N1



Corona Compared to Other Contagions



Note: Average case-fatality rates and transmission numbers are shown. Estimates of case-fatality rates can

History Has Lessons

Midland DAILY NEWS News Sports Opinion Lifestyles Culture Throwback LPGA Virtual Horse Trials

Midland History: Helen Dow Hale and the flu pandemic of 1918

Terry Ryan Hale, of Ryan-Brown Consulting Inc., Published 1:05 am EDT, Tuesday, 1



Facebook Twitter Email Print



IMAGE 1 OF 20

Philadelphia didn't cancel a parade during a 1918 pandemic. The results were devastating

By CNN

Posted Mar 15, 2020 7:18 PM CDT



In October 1918, Philadelphia held a盛大的 Liberty Loan Parade, despite the global pandemic. But the parades helped spread the disease, contributing to the "Spanish Flu," one of the deadliest pandemics in history.

By Leah Aminiyan, CNN

CNN — The speed of the [coronavirus](#) has resulted in events in country — everything from the [CDC](#) and [WHO](#) to [WHO](#) and [WHO](#).

What happens if parades aren't canceled during pandemics? Philadelphia found out in 1918, with disastrous results.

PHOTO BY AP



In this Oct. 28, 1918 photo, the Naval Aircraft Factory float moves down Broad Street in Philadelphia during a盛大的 Liberty Loan Parade.

The New York Times

In 1918, It Wasn't the Coronavirus. It Was the Flu.

The "Spanish flu" pandemic, the subject of a new, inspiring exhibit at the Winter Museum, killed tens of millions of people worldwide.



AP PHOTO BY ASSOCIATED PRESS/REPRINTED FROM THE WINTER MUSEUM IN PHILADELPHIA, 2018. USED WITH PERMISSION FROM THE MUSEUM

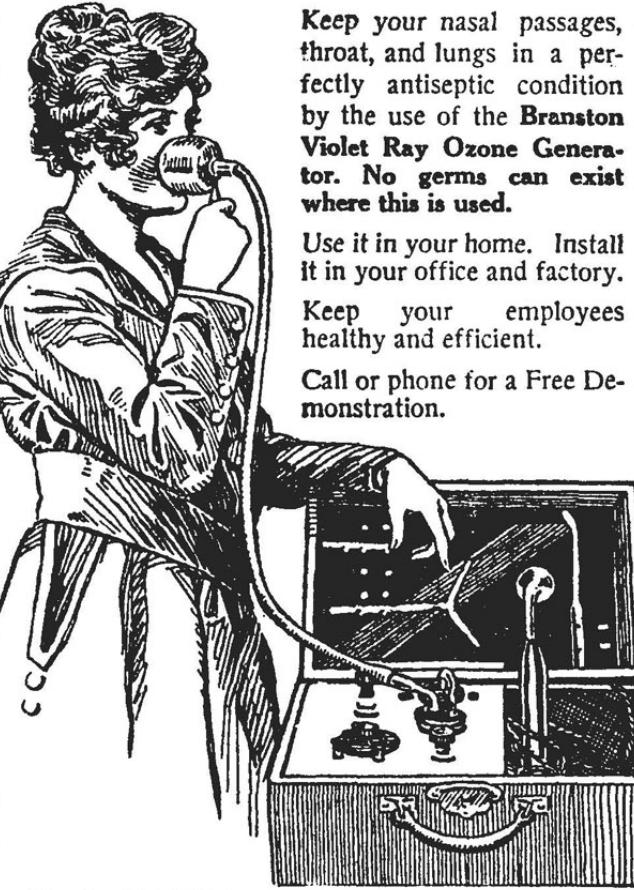
By Jennifer Egan

KATHMARDY, 2018. LAST UPDATED 11:20 AM

This article is part of our latest special report on [histories](#), which focuses on the intersection of art and politics.

PHILADELPHIA — A virus makes its way around the globe, causing sickness, death, and spreading panic. And it's the media in action that can turn heads.

Preventing Spanish Influenza Is Better than Curing It



Keep your nasal passages, throat, and lungs in a perfectly antiseptic condition by the use of the Branston Violet Ray Ozone Generator. No germs can exist where this is used.

Use it in your home. Install it in your office and factory.

Keep your employees healthy and efficient.

Call or phone for a Free Demonstration.

Showing Model 29 in use. Several other models to choose from

Manufactured by
THE CHAS. A. BRANSTON CO.
355 Yonge Street, Toronto
Phones Main 1211 and 1212

Quack Therapies

Abounded

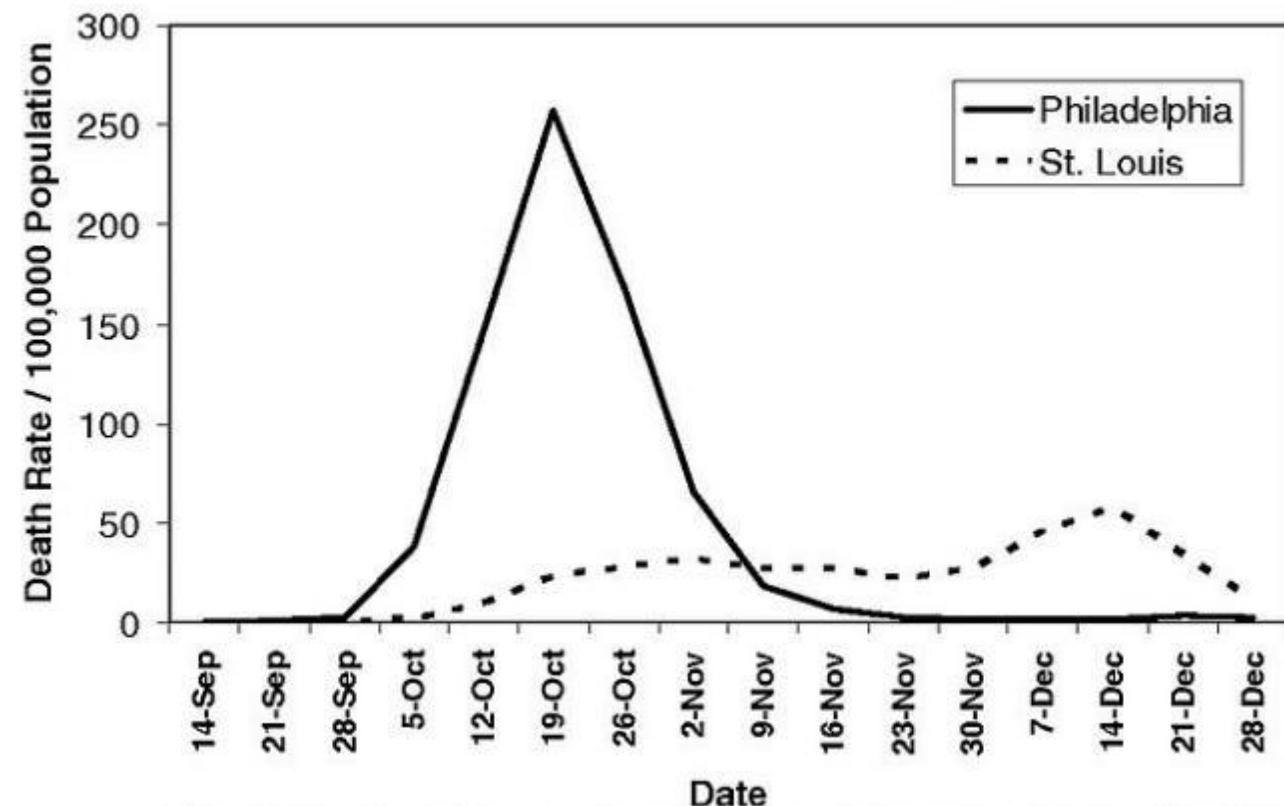
And Some Bought Into Them

Vox



Many Ways to Look at Data

Chart 19: Death Rate of 1918 Flu Pandemic in Cities with Different Social Distancing Measures



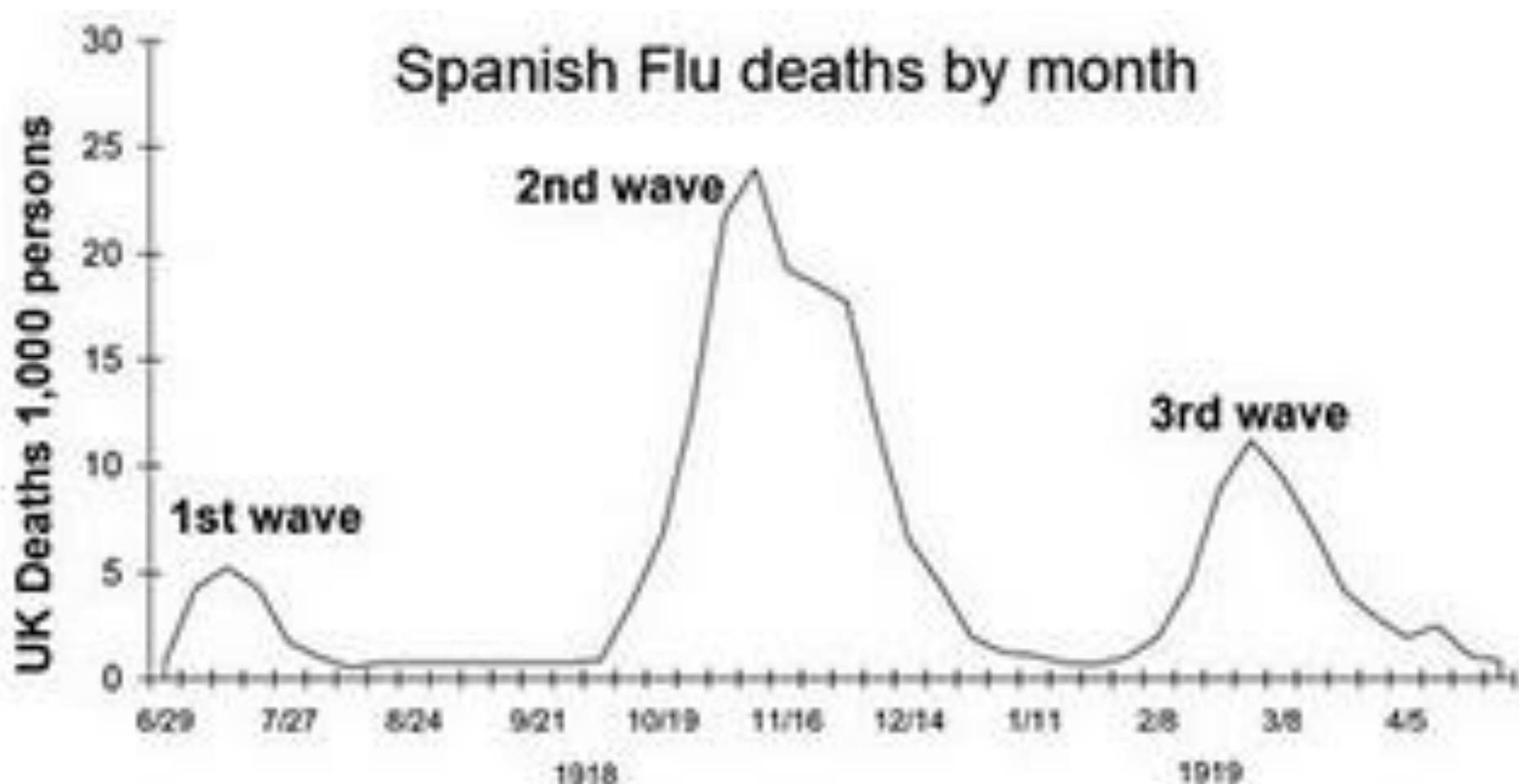
The first cases of disease among civilians in Philadelphia were reported on September 17, 1918, but authorities downplayed their significance and allowed large public gatherings, notably a city-wide parade on September 28, 1918, to continue. School closures, bans on public gatherings, and other social distancing interventions were not implemented until October 3, when disease spread had already begun to overwhelm local medical and public health resources.

In contrast, the first cases of disease among civilians in St. Louis were reported on October 5, and authorities moved rapidly to introduce a broad series of measures designed to promote social distancing, implementing these on October 7.

The difference in response times between the two cities (=14 days, when measured from the first reported cases) represents approximately three to five doubling times for an influenza epidemic.

Source: Public health interventions and epidemic intensity during the 1918 influenza pandemic, Proceedings of the National Academy of Sciences of the USA
<https://www.pnas.org/content/104/18/7582>

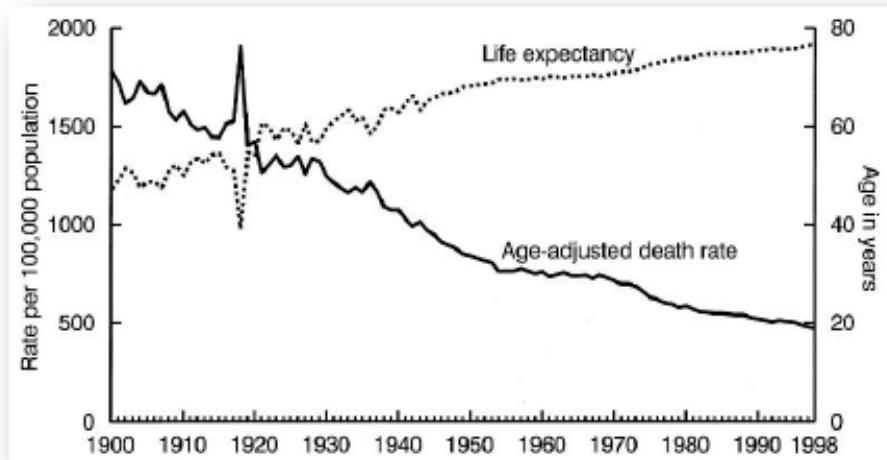
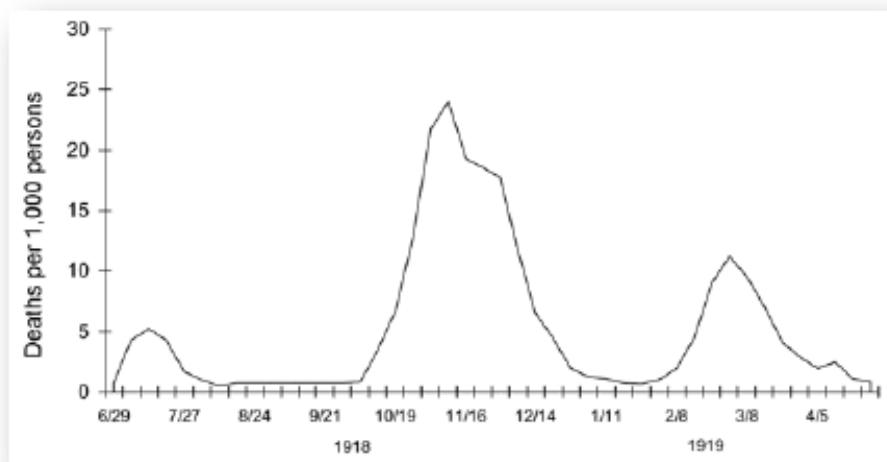
Temporal Variation -



1918 Left Some Lessons

Fatality of 1918 Flu

- Three pandemic waves with high fatality
- Estimated 50M deaths globally
- Five times the military losses of WWI
- Depressed overall average life expectancy by 12 years



1918 Flu Documentary



Exit full screen (f)

|| ▶ 🔍 0:02 / 39:35

Scroll for details
▼

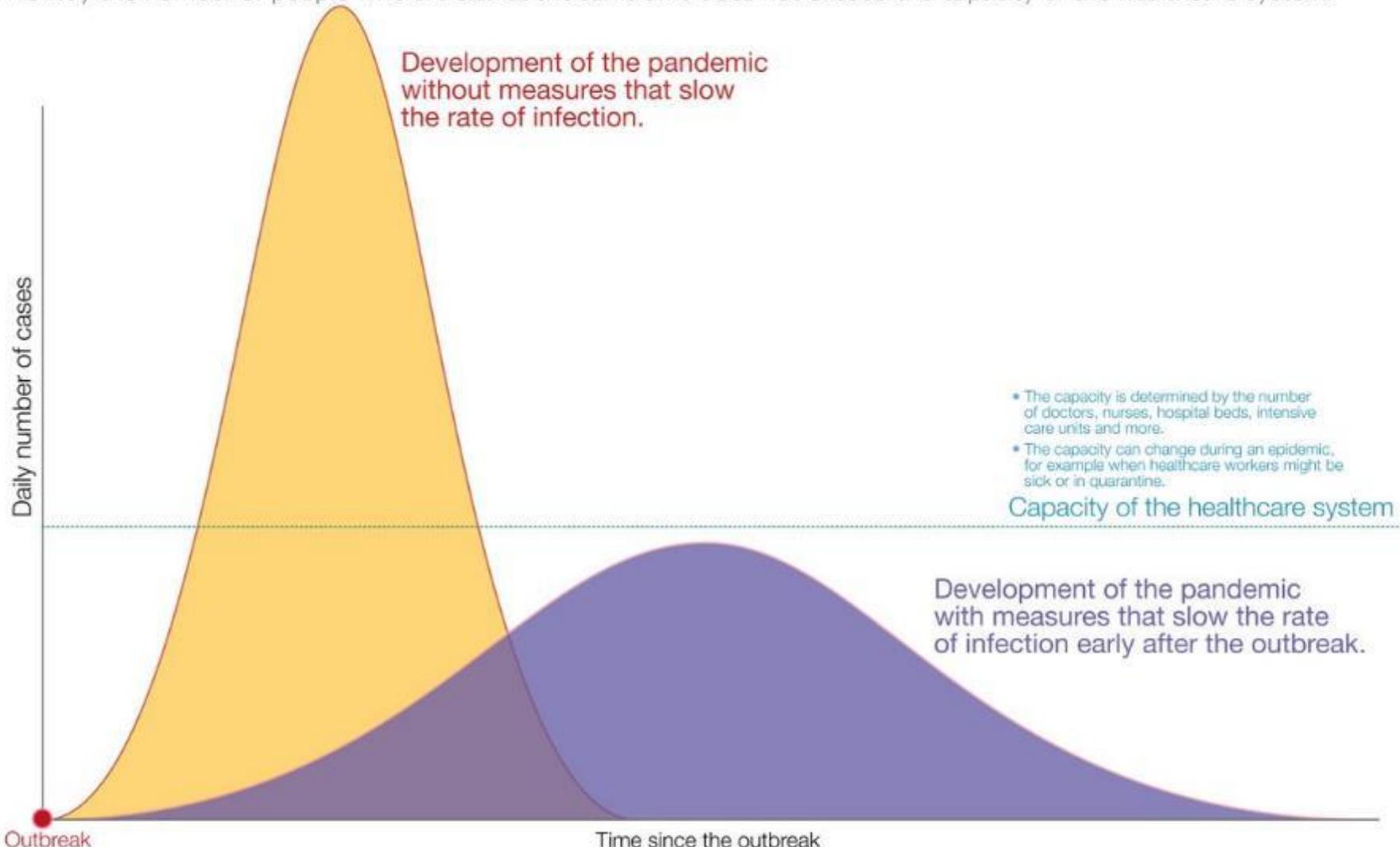
CC ⚙️ 📺

<https://www.youtube.com/watch?v=UDY5COg2P2c> 20

In the outbreak of an epidemic *early* counter measures are important

Their intention is to 'flatten the curve': to lower the rate of infection to spread out the epidemic.

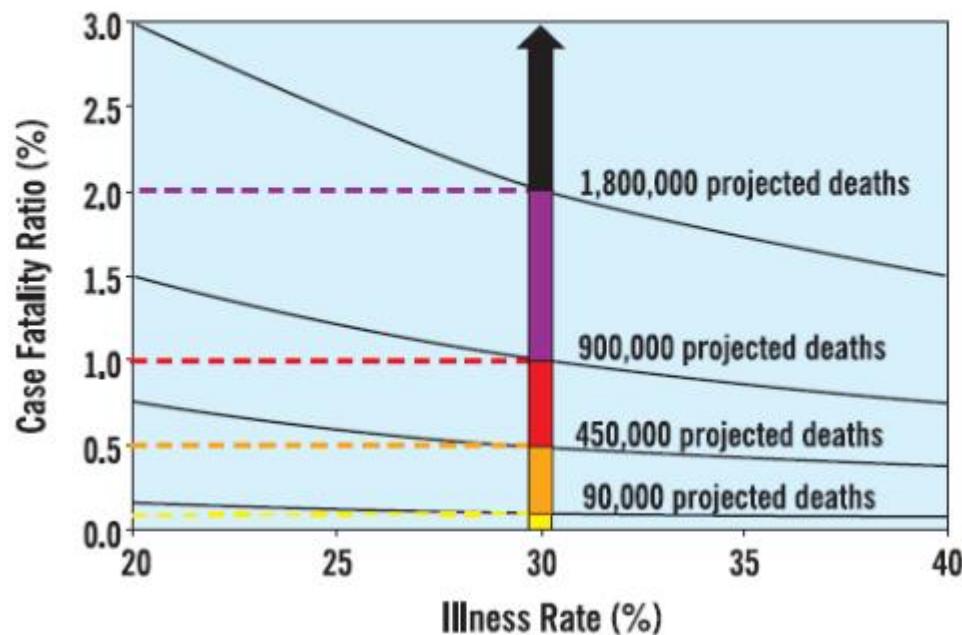
This way the number of people who are sick at the same time does not exceed the capacity of the healthcare system.



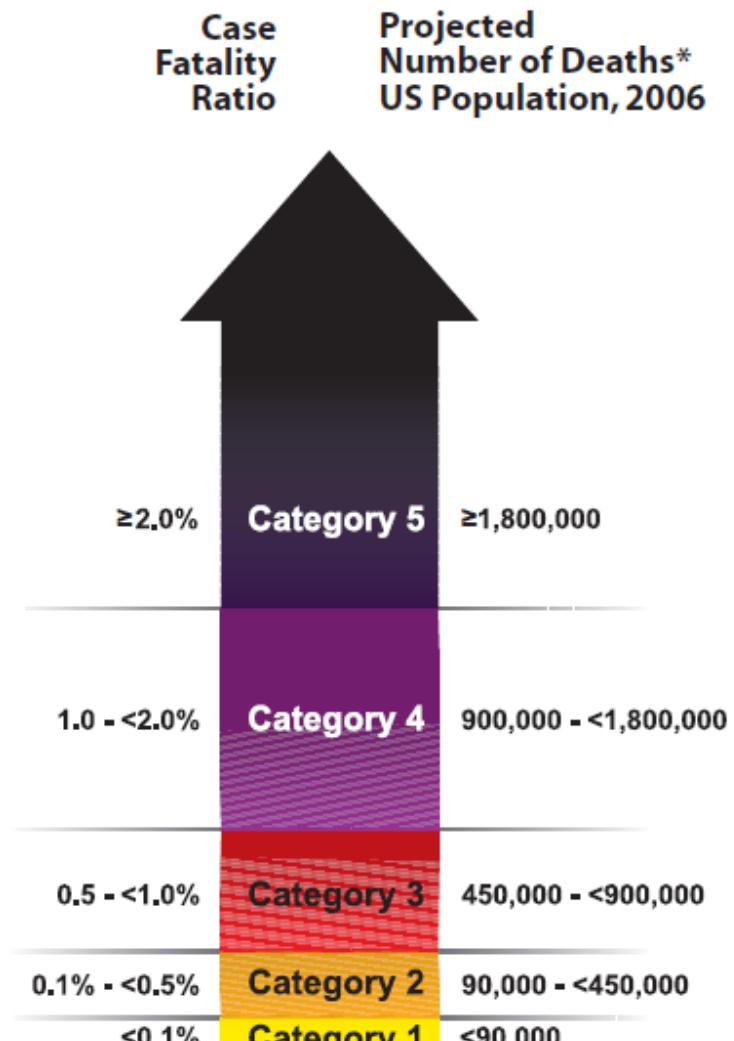
How To Use Models

hint – the numbers will change as we mitigate

Figure 3B. Pandemic Severity Categories as Determined by Differences in Case Fatality Ratio



So, as an example, if **30%** of the US population gets infected, based on the model on the left, we see numbers on the right.



Mapping COVID-19's Spread from Blue to Red America

- Partial or complete economic shutdown has lasted > 2 months.
- COVID-19 continues to spread to more parts of the country;
 - since late April, counties with a high prevalence of cases have transitioned from “blue” America to “red,” where arguments for immediate reopening have been stronger.
 - Over the 6 weeks from 20Apr to 31May, counties *newly designated* as having a high COVID-19 prevalence are less dense, less diverse, and more likely to have voted Trump in the 2016 election than was the case for *new* high-prevalence counties before mid-April.
- Analysis consists of weekly monitoring of counties reaching high COVID-19 prevalence (defined as at least 100 cases per 100,000 population based on case data reported by The New York Times and 2019 population data reported by the U.S. Census Bureau).

- On 29Mar, 8% of the U.S. population lived in the then-59 high COVID-19 prevalence counties.
- By 31May, the number of high-prevalence counties increased to 1,859, representing 86% of the population.
- There seems a clear distinction in the demographic and political make-up of counties that reached high COVID-19 prevalence between March 30 and April 19, and those reaching that status between April 20 and May 31.

Populations Residing in High COVID 19 Prevalence* Counties 29Mar-31May

Values as of	No. of Counties**	Population (millions)	% of US Population
29Mar	59	25.7	8%
19Apr	714	155.9	48%
31May	1859	281.9	86%

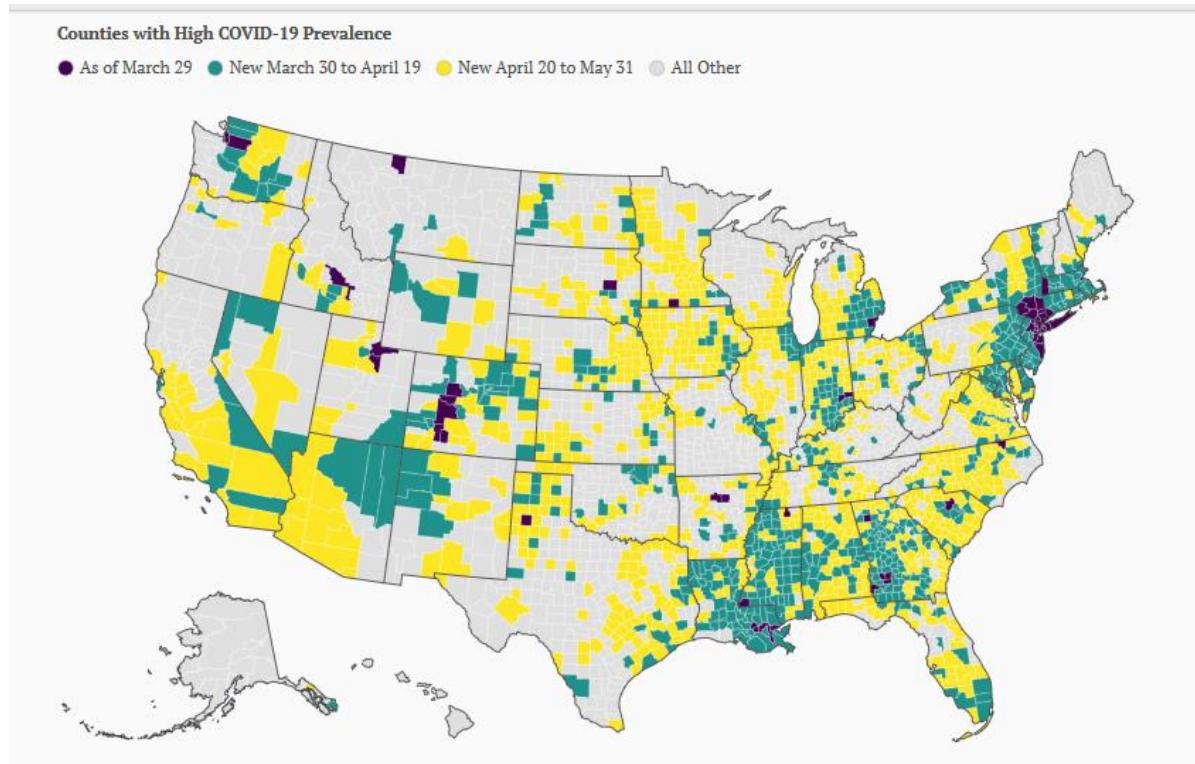
*Note: High prevalence counties showed rates of COVID-19 cases per 100k equal to or > 100. (Because of data considerations, NYC is reported as the combined counties of the Bronx, Kings, New York, Queens, and Richmond, NY; and the MO counties of Cass, Clay, Jackson, and Platte, including The city of Kansas City are reported as a separate unit. Approx 2% of reported COVID-19 are not included because the county was not identified.)

**net county changes

Mapping the shift in demographics

- High COVID-19 prevalence counties as of March 29 were distinct in terms of their demographic make-up and geographic location.
- Heavily concentrated in the Northeast region and especially in the New York metropolitan area, these were the pandemic's initial "hot spots," which included counties associated with metropolitan Boston, Detroit, Seattle, and New Orleans.
- Figure 1 shows, more than four-fifths of the residents in these counties live in highly dense urban cores.
 - Fewer than half (48%) of these counties' residents are white, with 22%, 18%, and 10% identifying as Latino or Hispanic, Black, and Asian American, respectively.
 - Fully one-quarter of these counties' residents are foreign-born.

Map 1: Spread of high COVID-19 prevalence counties from March 29



Source: William H. Frey analysis of New York Times data for confirmed COVID-19 cases and 2019 Census population estimates
Note: High-prevalence counties showed rates of COVID-19 cases per 100,000 equal to or exceeding 100 for date shown

Figure 1: Attributes of Residents in New High Prevalence Counties.

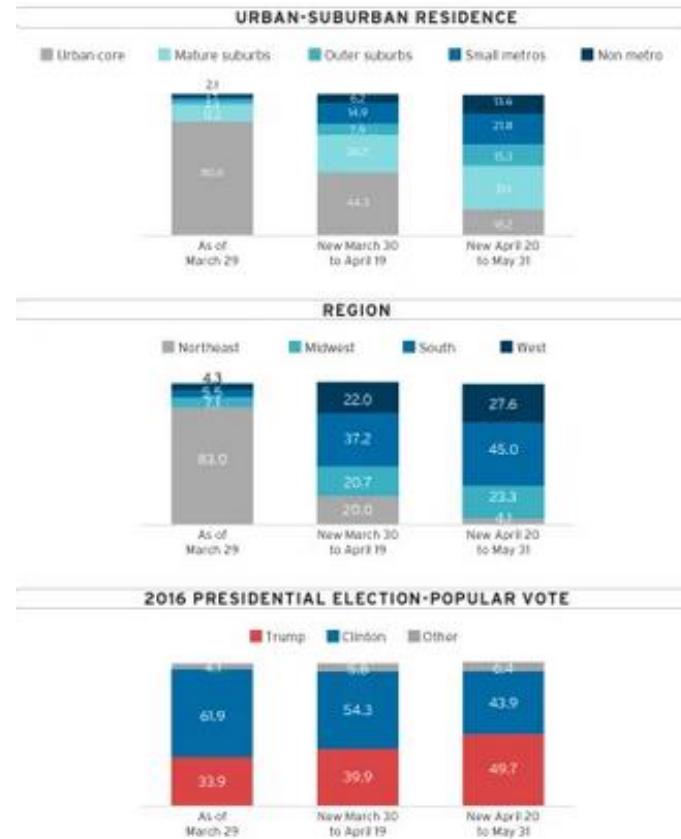


Table 2: Demographic Attributes of High COVID-19 Prevalence Counties, 29Mar-31May

Attributes (%)	New for period:		
	As of March 29	March 30 to April 19	April 20 to May 31
Race Ethnicity			
White	48.4	55.8	62.1
Black#	18.0	16.4	10.4
Latino or Hispanic	21.8	18.9	19.2
Asian#	9.9	6.3	5.5
Other#	2.0	2.6	2.9
	100.0	100.0	100.0
% Foreign Born			
	25.0	15.5	11.6
Household Income			
\$100,000 and over	35.7	30.1	26.6
\$ 50,000 - \$99,999	26.2	29.5	30.9
\$ 20,000- \$49,999	22.2	25.5	27.4
Less than \$20,000	15.9	15.0	15.1
	100.0	100.0	100.0

Percentage Rising

Income dropping

Table 3: No. of Counties with high COVID-19 Prevalence By 2016 Presidential Election Result

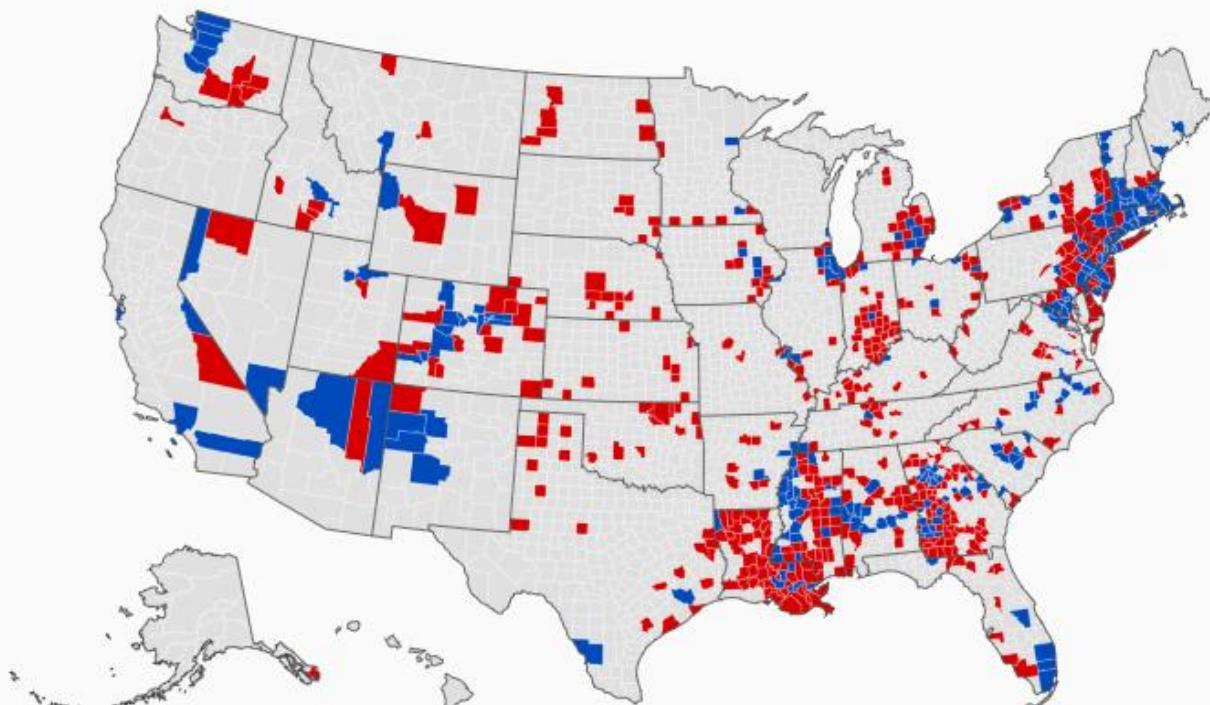
Winning candidate in 2016 Election	High COVID-19 prevalence counties		
	As of March 29	New March 30 to April 19	New April 20 to May 31
Trump	26	440	993
Clinton	33	215	152
Total	59	655	1145

When looking at the *number* of counties in which either Trump or Clinton won the popular vote, it is clear that Trump's advantage takes off for counties newly identified with high COVID-19 prevalence during the April 20 to May 31 time frame.

Among these counties, Trump won more than six times as many as Clinton (993 to 152). This is a much greater advantage than he held among new high-prevalence counties during the March 30 to April 19 period (440 to 215). Among counties identified as high-prevalence before March 29, Clinton won 33 and Trump won 26.

Map 2: Winning 2016 Candidate in New High Prevalence Counties Through 19Apr

Winning 2016 candidate in county
● Trump ● Clinton ● Not high-prevalence county



Source: William H. Frey analysis of New York Times data for confirmed COVID-19 cases and 2019 Census population estimates

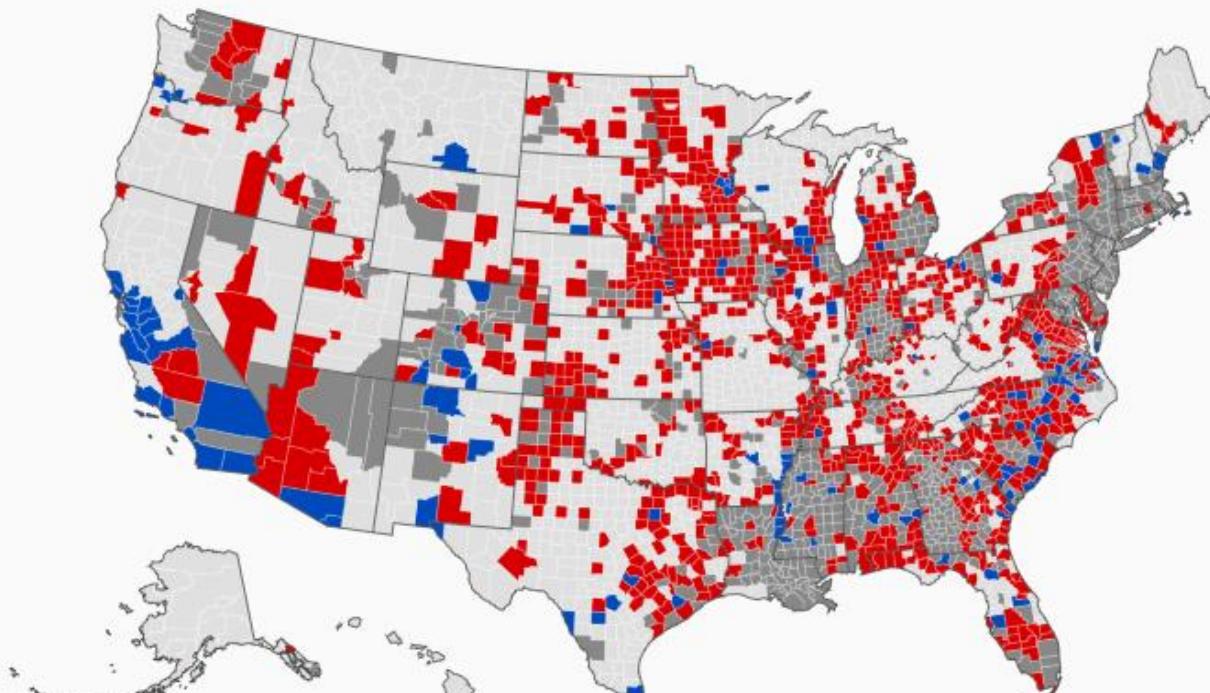
Note: High-prevalence counties showed rates of COVID-19 cases per 100,000 equal to or exceeding 100 for date shown

The stronger showing for Clinton in high-prevalence counties identified before mid-April (shown in Map 2) can be attributed to the concentration of ***“blue” coastal and large metropolitan counties*** in the Northeast and Midwest, but also parts of the South and West.

Major Clinton voting counties in the Boston-Washington, D.C. corridor—and other metro areas such as Chicago, Detroit, Atlanta, Los Angeles, and San Francisco—countered the suburban and smaller areas in these regions, which tended to favor Trump.

Map 2: Winning 2016 Candidate in New High Prevalence Counties Through 31May

Winning 2016 candidate in county
● Trump ● Clinton ● High-prevalence before April 20 ● Not high-prevalence county



The newer counties displayed in Map 3 show large swaths of Trump voters in a plethora of smaller and rural counties, particularly in Midwest and Southern states such as Iowa, Indiana, Ohio, Nebraska, Texas, and Georgia.

Notably, many of these Trump-won areas are smaller counties in the swing states of Michigan, Pennsylvania, Wisconsin, North Carolina, and Florida.

Among the 895 smaller metropolitan and nonmetropolitan counties shown in Map 3, Trump won nearly nine out of 10 in 2016.

Following future COVID-19 shifts

- Another way to look at the shifts is to examine states where ***at least half*** of the population lives in high-prevalence counties.
 - As of April 19, 20 states had reached this status, 14 of which voted for Clinton in 2016. But between April 20 and May 24, 25 additional states had more than half of their population living in high-prevalence counties. Of these, 20 voted for Trump in 2016, including Arizona, Florida, Texas, North Carolina, and Wisconsin.
- Continued tracking of counties with a high COVID-19 prevalence rate reveals ***a distinct transition of the pandemic's spread from urbanized, racially diverse, and Democratic-leaning parts of the country to broader areas of the nation, especially those with a substantial Republican base.***
- The implications of these shifts involve more than politics, as larger parts of the country reopen for business and recreation and subsequently face the health risks of the coronavirus.
- Hopefully, monitoring of the pandemic's spread can inform the way local officials, governors, and national leaders of both political parties address their local conditions—and potentially tamp down the recent politicization of the crisis.

Sources From Blue to Red

- <https://www.nytimes.com/article/coronavirus-county-data-us.html>
- <https://www.census.gov/programs-surveys/popest.html>

Feeling confused about face masks? *You should be!*

- The face mask fiasco is a microcosm of the three big problems underlying everything about the coronavirus response to date:
 - **inadequate data**;
 - **conflicting messages** from experts and people in authority; (i.e. US Surgeon General vs. CDC) (more on this next slide)
 - and the **tension between needs of the individual vs the community**.

3 Key Problems of Mixed Messages

- The first was that most researchers were looking at the wrong question – how well a mask protects the wearer from infection and not how well a mask prevents an infected person from spreading the virus. Masks function very differently as personal protective equipment (PPE) versus source control.
- The second problem was that most medical researchers are used to judging interventions on the basis of randomized controlled trials. These are the foundation of evidence based medicine. However, it is impossible and unethical to test mask-wearing, hand-washing or social distancing during a pandemic.
- The third problem is that there is a shortage of medical masks around the world. Many policymakers were concerned that recommending face coverings for the public would lead to people hoarding medical masks.
- Hence perceived protection vs. sourcing and shortages caused the mixed messages....

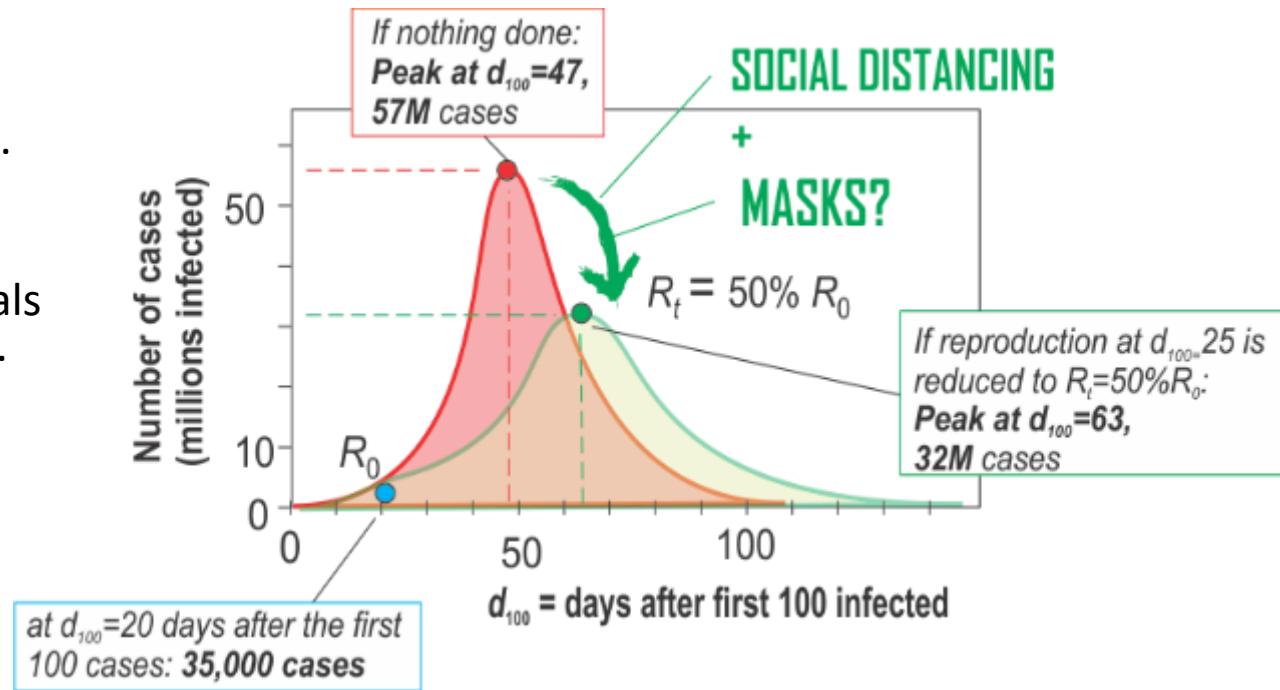
“Flattening the Curve” – Masks Help

Effect of mitigating interventions that would decrease the initial reproduction rate R_0 by 50% when implemented at day 25.

Red curve is the course of numbers of infected individuals (“case”) without intervention.

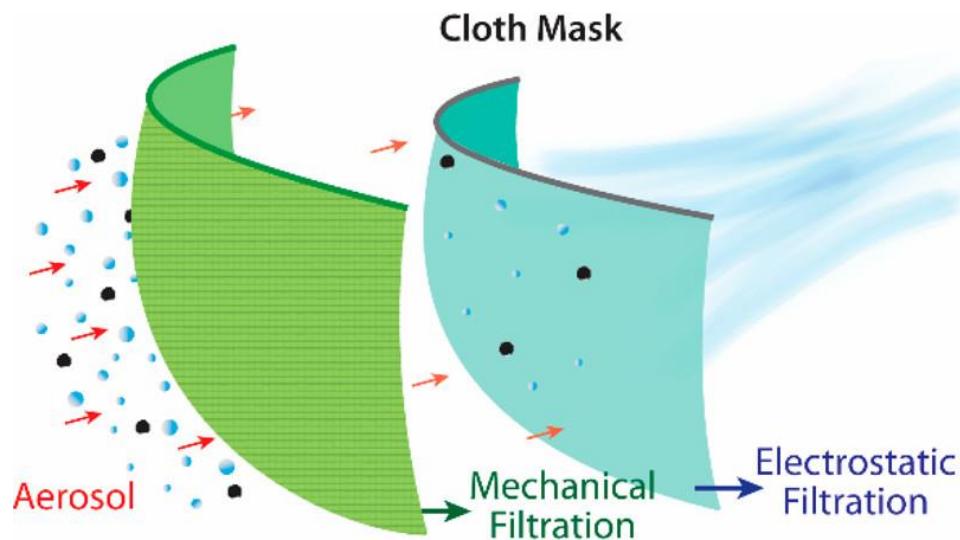
Green curve reflects the changed (“flattened”) curve after intervention.

Day 0 (March 3, 2020) is the time at which 100 cases of infections were confirmed ($d_{100} = 0$).



<https://medium.com/@Cancerwarrior/covid-19-why-we-should-all-wear-masks-there-is-new-scientific-rationale-280e08ceee71>

Research Seems to Show Combination Masks Are Even Better



The filtration efficiencies for various fabrics when a single layer was used ranged from 5 to 80% and 5 to 95% for particle sizes of <300 nm and >300 nm, respectively, the efficiencies improved when multiple layers were used and when using a specific combination of different fabrics.

Filtration efficiencies of the hybrids (such as cotton–silk, cotton–chiffon, cotton–flannel) was >80% (for particles <300 nm) and >90% (for particles >300 nm).

https://pubs.acs.org/doi/10.1021/acsnano.0c03252?fbclid=IwAR1zFUMgyZmn4uqVXnhclIRObzi-PalM_A0Orf5yjegm7iSdYryfgFFqtE

BLUF - Wearing a Mask Can Help

Modeling the Effectiveness of Respiratory Protective Devices in Reducing Influenza Outbreak.
Yan J^{1,2}, Guha S², Hartharan P², Myers M².
Risk Anal. 2019 Mar;39(3):647-661.

¹ Depts of Chem & Biomol Engineering, Univ of Maryland, College Park, MD
² Div of Applied Mechanics, Office of Science & Engineering Lab, Center for Devices & Radiological Health, FDA, Silver Spring, MD, USA

Model Parameters (Assumptions)

- Breathing rate: 10L/min (14.4 m³/day)^a
- Bimodal droplet size distribution, with bins centered on values of 0.5 and 5 µm
- For sensitivity (prediction) analyses, 3 and 4 size bins were used—0.5, 2.0, and 5 µm; 0.3, 0.7, 2.5, and 5 µm—in addition to no. of respiratory droplet size per bin^b
- Size dependence parameters:
 - gravitational settling rate, respirable droplet production rate by both protected and unprotected cases, inhaled droplet deposition probability, number of pathogens per droplet and transmission rate per inhaled droplet, and the transmission rate for the RPD.
- Deposition probability q : derived using the ICRP's Lung Deposition Model^c
- Probability p of infection by inhaled pathogen^d
- Contact rate c (times/day)^e
- No. of pathogens per droplet/droplet size/no. of coughs generated by infectees^b

^a California Protection Agency, 1994

^b Nicas et. al., 2005 *J Occup Environ Hyg*, 2(3), 143–154.

^c Diaz & Smaldone, 2010, *Am J Infect Control*, 38(7), 501–508;
Guha et. al., 2014, *Aerosol Sci Technol*, 48(12), 1226–1235.

^d Li et. al., 2009, *Am J Epidemiol*, 170(2), 257–265.

^e Mossong et al., 2010, *PLoS Medicine*, 5(3), e74.

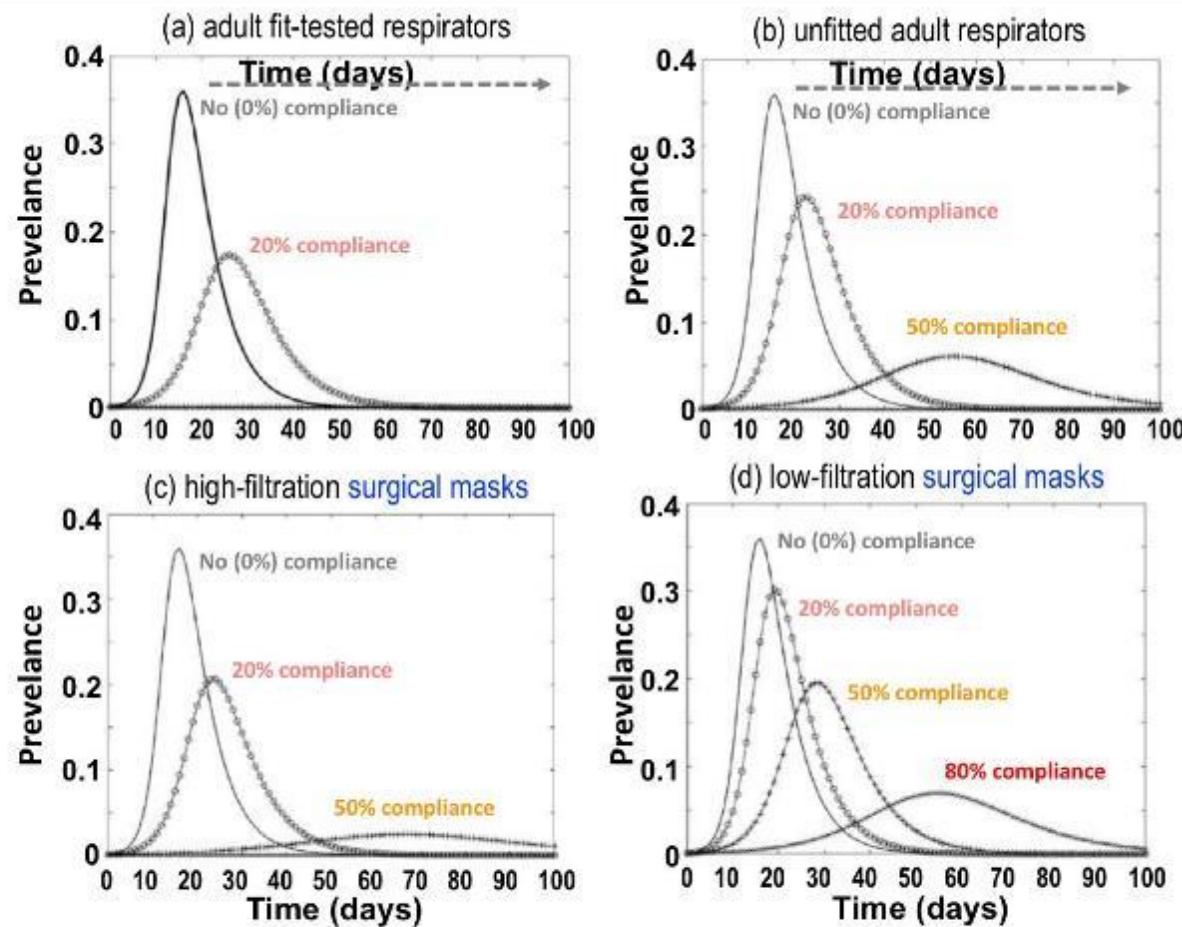
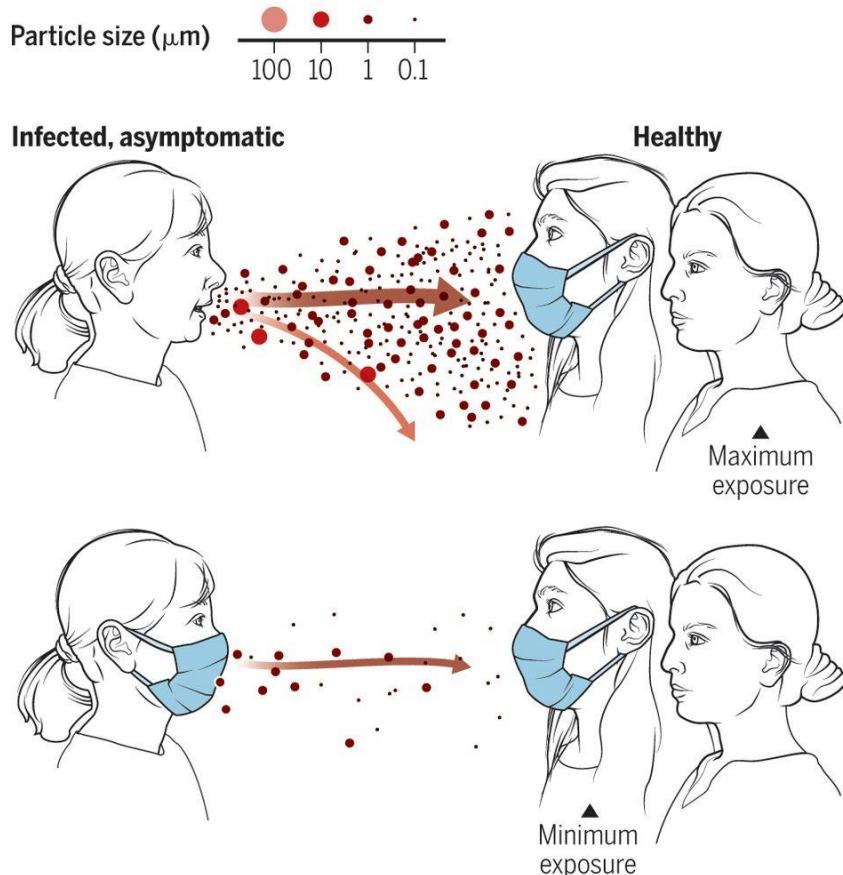


Fig. 1. Infection prevalence for (a) adult fit-tested respirators, (b) unfitted adult respirators, (c) high-filtration surgical masks, and (d) low-filtration surgical masks. Compliance rates are: 0% (curve with highest peak), 20% (second highest peak), 50% (third highest peak), and 80% (lowest peak). Modeled on closed community of 1,000 initially susceptible individuals with a single symptomatic introduction. 40

Masks reduce airborne transmission.

Masks reduce airborne transmission

Infectious aerosol particles can be released during breathing and speaking by asymptomatic infected individuals. No masking maximizes exposure, whereas universal masking results in the least exposure.

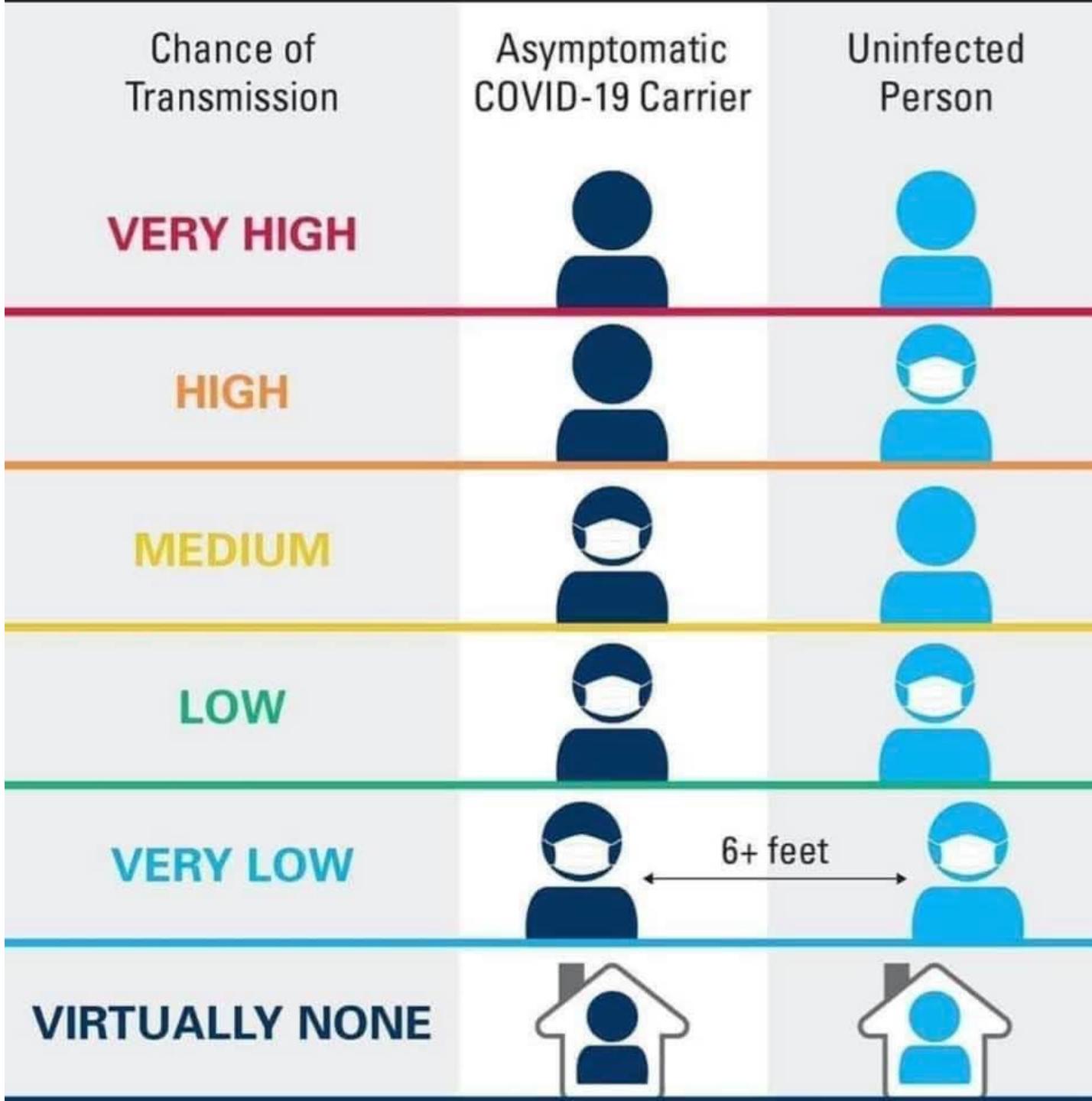


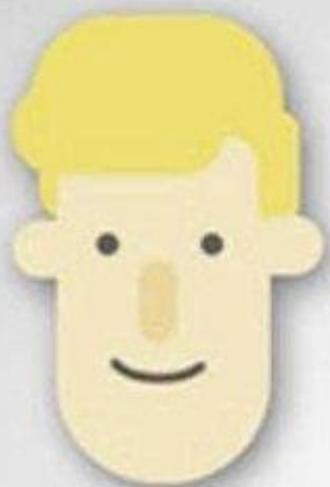
GRAPHIC: V. ALTOUNIAN/SCIENCE

<https://science.sciencemag.org/content/early/2020/05/27/science.abc6197>

Kimberly A. Prather et al. Science 2020;science.abc6197

Science
AAAS





COVID-19 CARRIER



COVID-19 CARRIER

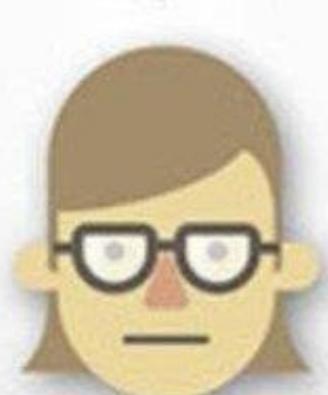


COVID-19 CARRIER



CONTAGION PROBABILITY

70%



CONTAGION PROBABILITY

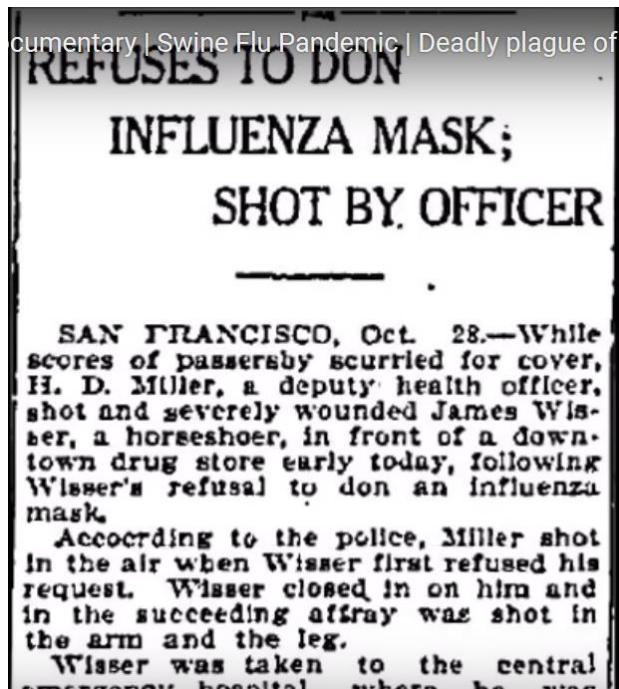
5%



CONTAGION PROBABILITY

1.5%

Wearing Masks Unmanly? Don't Be Stupid



On October 27, 1918, a special officer for the board of health named Henry D. Miller shot and severely wounded James Wisser in front of a downtown drug store at Powell and Market street, following Wisser's refusal to don an influenza mask.

According to the police, Miller shot in the air when Wisser first refused his request. Wisser closed in on him and in the succeeding affray, Miller shot him in the leg and right hand.

Wisser was taken to the central emergency hospital, where he was placed under arrest for failure to comply with Miller's order.
<https://www.theatlantic.com/ideas/archive/2020/03/how-fragmented-country-fights-pandemic/608284/>

<https://www.history.com/news/1918-spanish-flu-mask-wearing-resistance>

Again Research Shows to Wear a Mask

WHO and CDC have largely ignored the importance of the airborne transmission route (1, 20). The current mitigation measures, such as social distancing, quarantine, and isolation implemented in the United States, are insufficient by themselves in protecting the public. Our analysis reveals that the difference with and without mandated face covering represents the determinant in shaping the trends of the pandemic worldwide.

We conclude that wearing of face masks in public corresponds to the most effective means to prevent interhuman transmission, and this inexpensive practice, in conjunction with extensive testing, quarantine, and contact tracking poses the most probable fighting opportunity to stop the COVID-19 pandemic, prior to the development of a vaccine.

Identifying airborne transmission as the dominant route for the spread of COVID-19

Renyi Zhang^{a,b,1}, Yixin Li^b, Annie L. Zhang^c, Yuan Wang^d, and Mario J. Molina^{a,1}

^aDepartment of Atmospheric Sciences, Texas A&M University, College Station, TX 77843; ^bDepartment of Chemistry, Texas A&M University, College Station, TX 77843; ^cDepartment of Chemistry, College of Natural Sciences, The University of Texas at Austin, Austin, TX 78712; ^dDivision of Geological and Planetary Sciences, California Institute of Technology, Pasadena, CA 91125; and ^eDepartment of Chemistry and Biochemistry, University of California San Diego, La Jolla, CA 92093

Contributed by Mario J. Molina, May 16, 2020 (sent for review May 14, 2020; reviewed by Manish Shrivastava and Tong Zhu)

Various mitigation measures have been implemented to fight the coronavirus disease 2019 (COVID-19) pandemic, including widely adopted social distancing and mandated face covering. However, assessing the effectiveness of those intervention practices hinges on the understanding of virus transmission, which remains uncertain. Here we show that airborne transmission is highly virulent and represents the dominant route to spread the disease. By analyzing the trend and mitigation measures in Wuhan, China, Italy, and New York City, from January 23 to May 9, 2020, we illustrate that the impacts of mitigation measures are discernible from the trends of the pandemic. Our analysis reveals that the difference with and without mandated face covering represents the determinant in shaping the pandemic trends in the three epicenters. This protective measure alone significantly reduced the number of infections, that is, by over 78,000 in Italy from April 6 to May 9 and over 66,000 in New York City from April 17 to May 9. Other mitigation measures, such as social distancing implemented in the United States, are insufficient by themselves in protecting the public. We conclude that wearing of face masks in public corresponds to the most effective

occur over an extended distance and time. Inhaled virus-bearing aerosols deposit directly along the human respiratory tract.

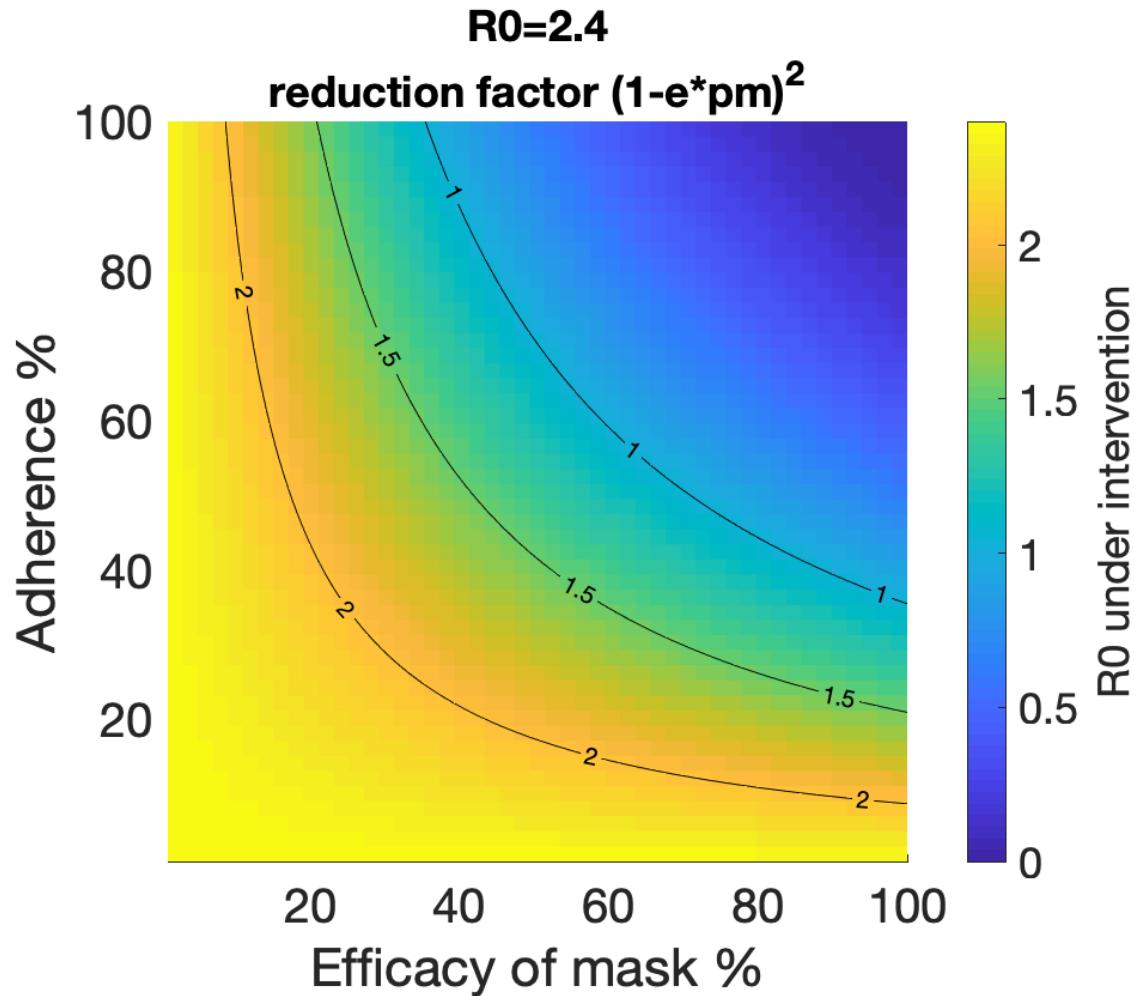
Previous experimental and observational studies on interhuman transmission have indicated a significant role of aerosols in the transmission of many respiratory viruses, including influenza virus, SARS-CoV-1, and Middle East Respiratory Syndrome coronavirus (MERS-CoV) (8–11). For example, airborne coronavirus MERS-CoV exhibited strong capability of surviving, with about 64% of microorganisms remaining infectious 60 min after atomization at 25 °C and 79% relative humidity (RH) (9). On the other hand, rapid virus decay occurred, with only 5% survival over a 60-min procedure at 38 °C and 24% RH, indicative of inactivation. Recent experimental studies have examined the stability of SARS-CoV-2, showing that the virus remains infectious in aerosols for hours (12) and on surfaces up to days (12, 13).

Several parameters likely influence the microorganism survival and delivery in air, including temperature, humidity, microbial resistance to external physical and biological stresses, and solar

https://www.pnas.org/content/pnas/early/2020/06/10/2009637117.full.pdf?fbclid=IwAR1iLBZGCB9109YoBeX5Eq3KfFZdaolsKwuh6P1f_Y7vwIUKBL-00Ozfkg4

Check for updates

Masks Help



Do The Math – Masks Help And May Be Sufficient

Bilateral Masks Solve the Pandemic !

Let us say (to simplify) that masks reduce both transmission and reception to p . What effect on the R_0 ? Simply the naive approach is to say $R_{0M} = \sum_{i=1}^n p = p R_0$. If masks reduce the transmission to $\frac{1}{4}$ one would think it would then drop from, say 5, to $1 \frac{1}{4}$ Yuuge, but there is better.

But one should count both sides. Under our simplification, with $p=\frac{1}{4}$ we get $R_{0M} = \sum_{i=1}^n p^2 = p^2 R_0$. The drop in R becomes 93.75%! You divide R by 16!

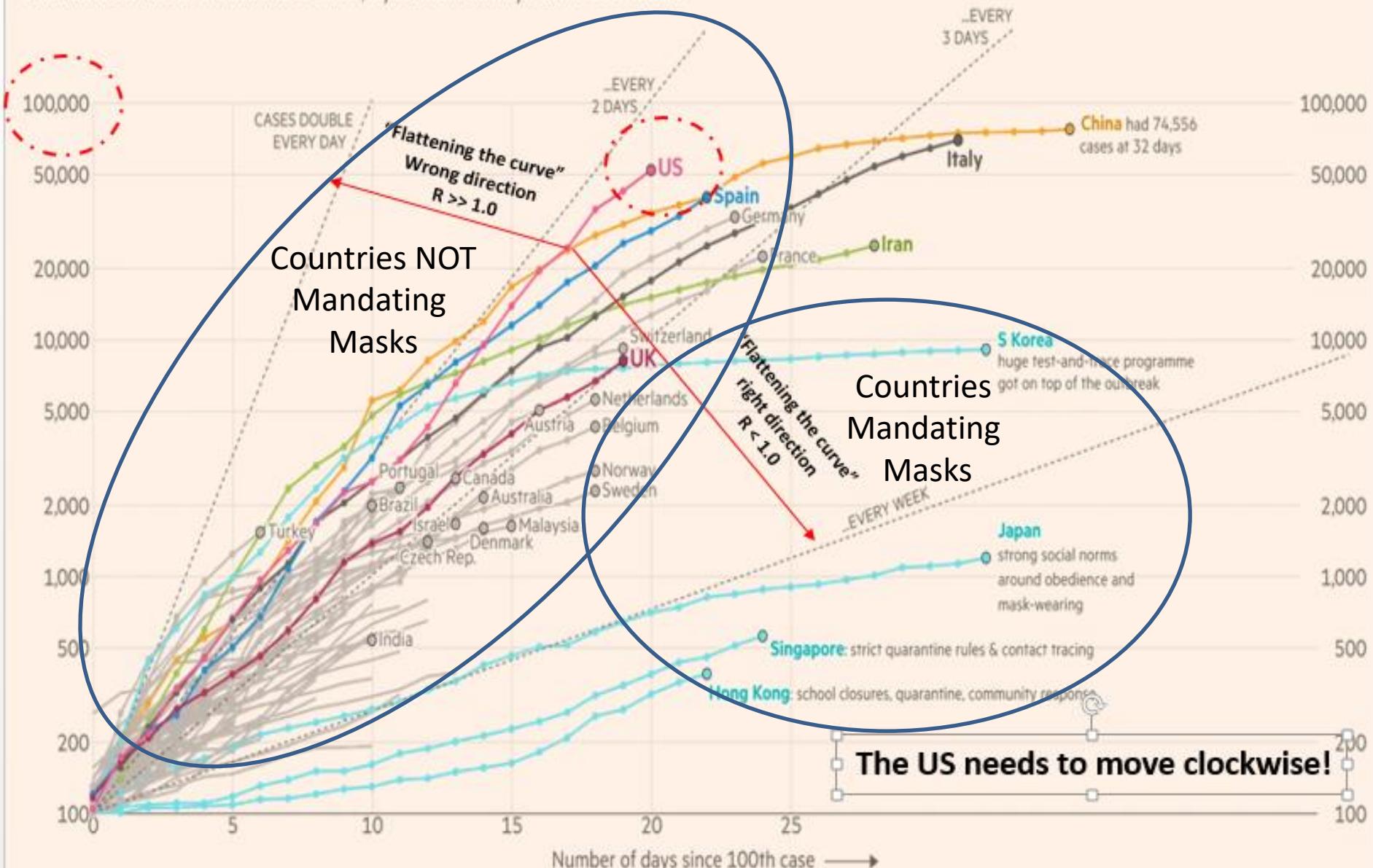
Even with masks working at 50% we wet a 75% drop in R .

Now consider that masks have the nonlinear effect of reducing the transmission by more than their filtering because of the convexity of the probability of transmission to droplets. So a filtering of 50% may reduce the probability to .1!

Country by country: how coronavirus case trajectories compare

BLUF – “R” and Masks in 1 graph

Cumulative number of confirmed cases, by number of days since 100th case

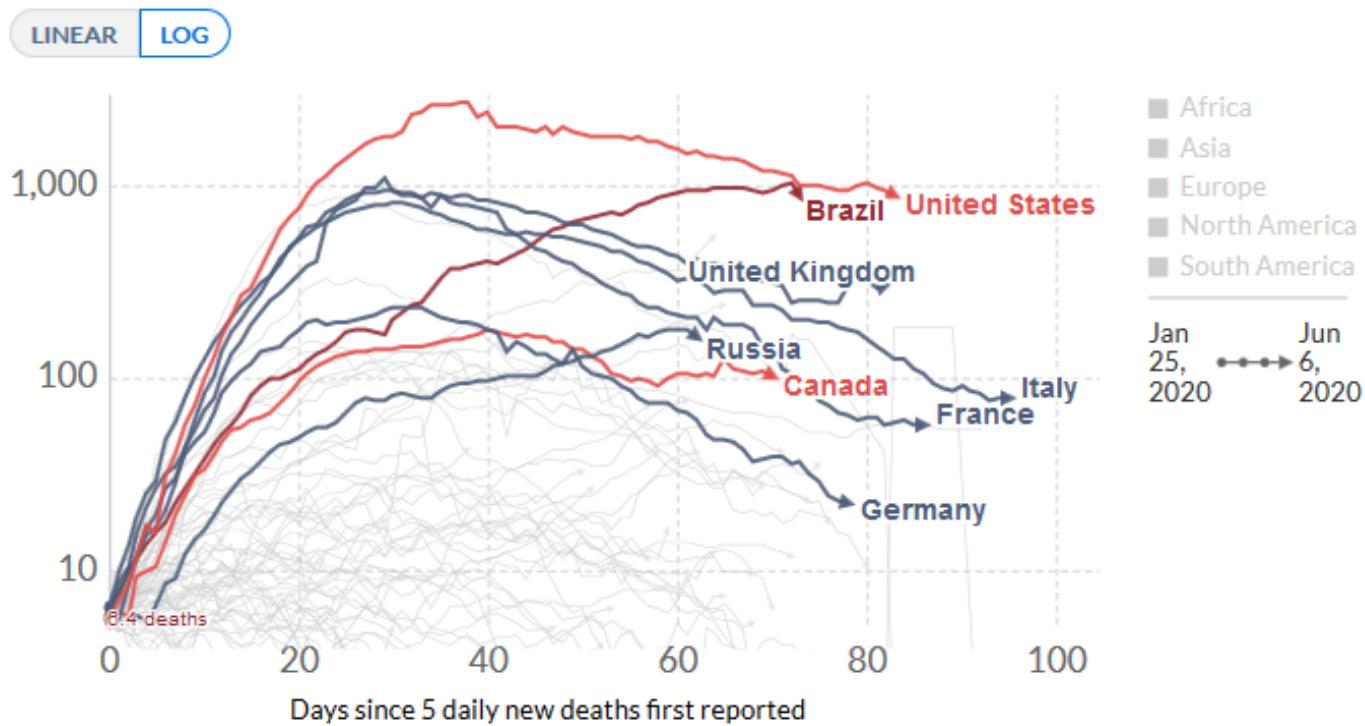


US Case Rates Compared to Other Countries

Daily new confirmed COVID-19 deaths

Our World
in Data

Shown is the rolling 7-day average. Limited testing and challenges in the attribution of the cause of death means that the number of confirmed deaths may not be an accurate count of the true number of deaths from COVID-19.



Source: European CDC – Situation Update Worldwide - Data last updated 6th Jun, 04:45 (GMT-05:00), CC BY European CDC – Situation Update Worldwide

► Jan 25, 2020

Jun 6, 2020

Value of Social Distancing

- This is where you can see the massive impact of policies like those of Singapore or South Korea:
- If people are massively tested, they can be identified even before they have symptoms. Quarantined, they can't spread anything.
- If people are trained to identify their symptoms earlier, they reduce the number of days in blue, and hence their overall contagiousness
- If people are isolated as soon as they have symptoms, the contagions from the orange phase disappear.
- If people are educated about personal distance, mask-wearing, washing hands or disinfecting spaces, they spread less virus throughout the entire period.
- Only when all these fail do we need heavier social distancing measures.

PROXIMITY

FAMILIARITY

	Known	Unknown
Close	Family, Friends, Colleagues you have F2F contact with regularly <i>(those you share dwelling, work and table space with)</i>	Strangers you have F2F contact with regularly <i>(taxi/bus driver, fellow shopper, delivery person, retail clerk, etc.)</i>
Distant	Family, Friends, Colleagues who live/work in distant places from you	Strangers in distant locations who you have no contact with or awareness of

There are four combinations of Familiarity and Proximity that describe how each of us come in contact with the rest of the world.

PROXIMITY

FAMILIARITY

	Known	Unknown
Close	Family, Friends, Colleagues you have F2F contact with regularly <i>(those you share dwelling, work and table space with)</i>	Strangers you have F2F contact with regularly <i>(taxi/bus driver, fellow shopper, delivery person, retail clerk, etc.)</i>
Distant	Fam., Friends, Colleagues who live/work in distant places from you	Strangers in distant locations who you have no contact with or awareness of

You can eliminate two boxes in the matrix that we really do not need to worry about with the spread of a disease around us. Those far away can not infect us, even if we choose to contact them via some electronic media. The key is face-to-face (F2F) interaction. Both friends and strangers can pass the virus if they are sick and close by.

Physical distance stops/slows the spread.

Six examples of how social, cultural or religious gatherings contributed towards the spread of the virus

France Mulhouse

Evangelical pray-in attended by 2,000-2,500 Christian worshippers

Germany Heinsberg

At least seven people pick up the virus at a carnival party

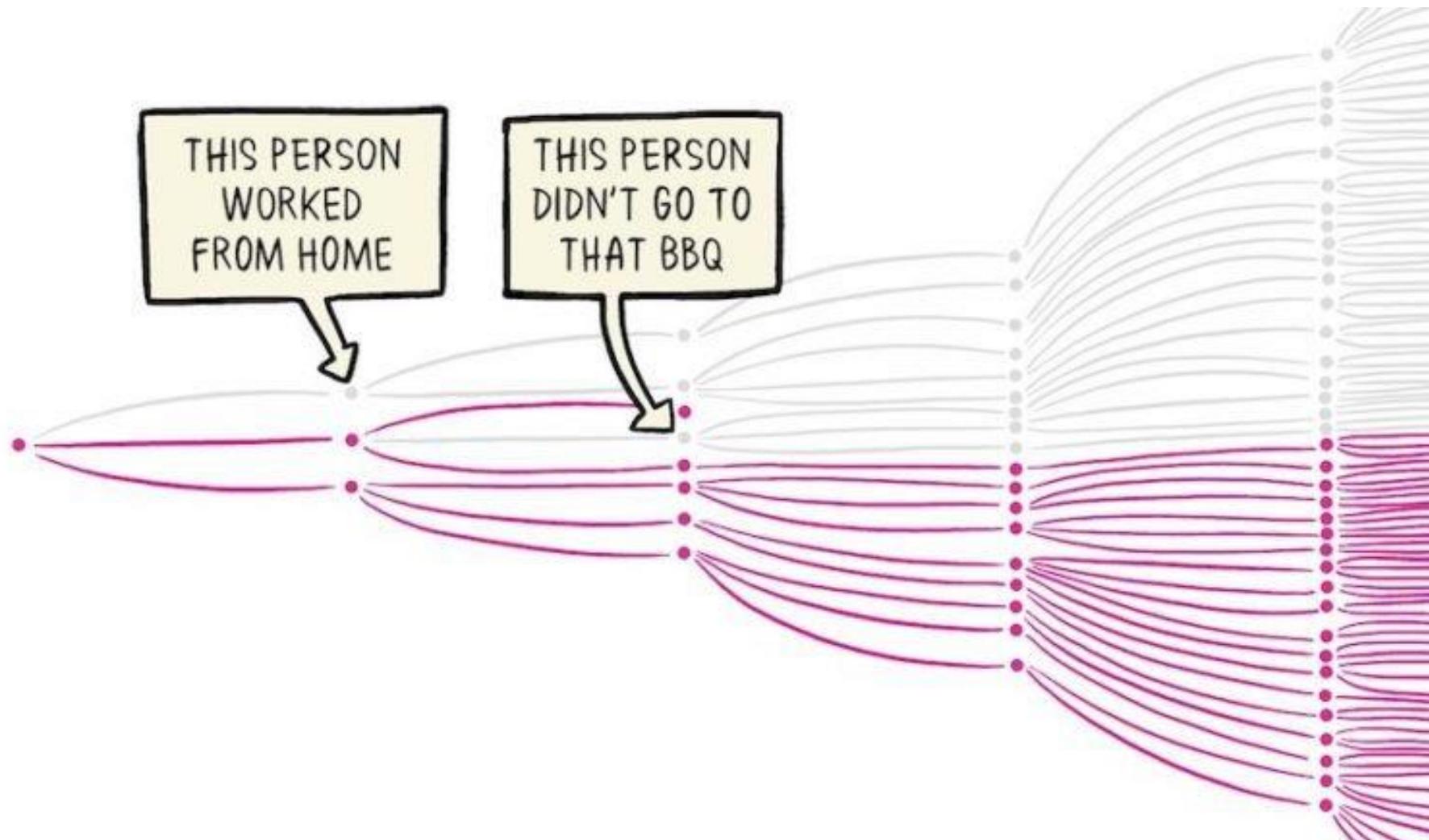
Vietnam

Vietnamese jet setter/Instagram influencer accused of bringing the virus back on a plane from Europe



https://www.theguardian.com/world/2020/apr/09/the-cluster-effect-how-social-gatherings-were-rocket-fuel-for-coronavirus?utm_term=Autofeed&CMP=twt_b-gdnnews&utm_medium=Social&utm_source=Twitter#Echobox=1586410123

Social Distancing for Dummies



Quarantine Day 14...



Social Distancing for Dummies II



**Where are
we going Pooh?**

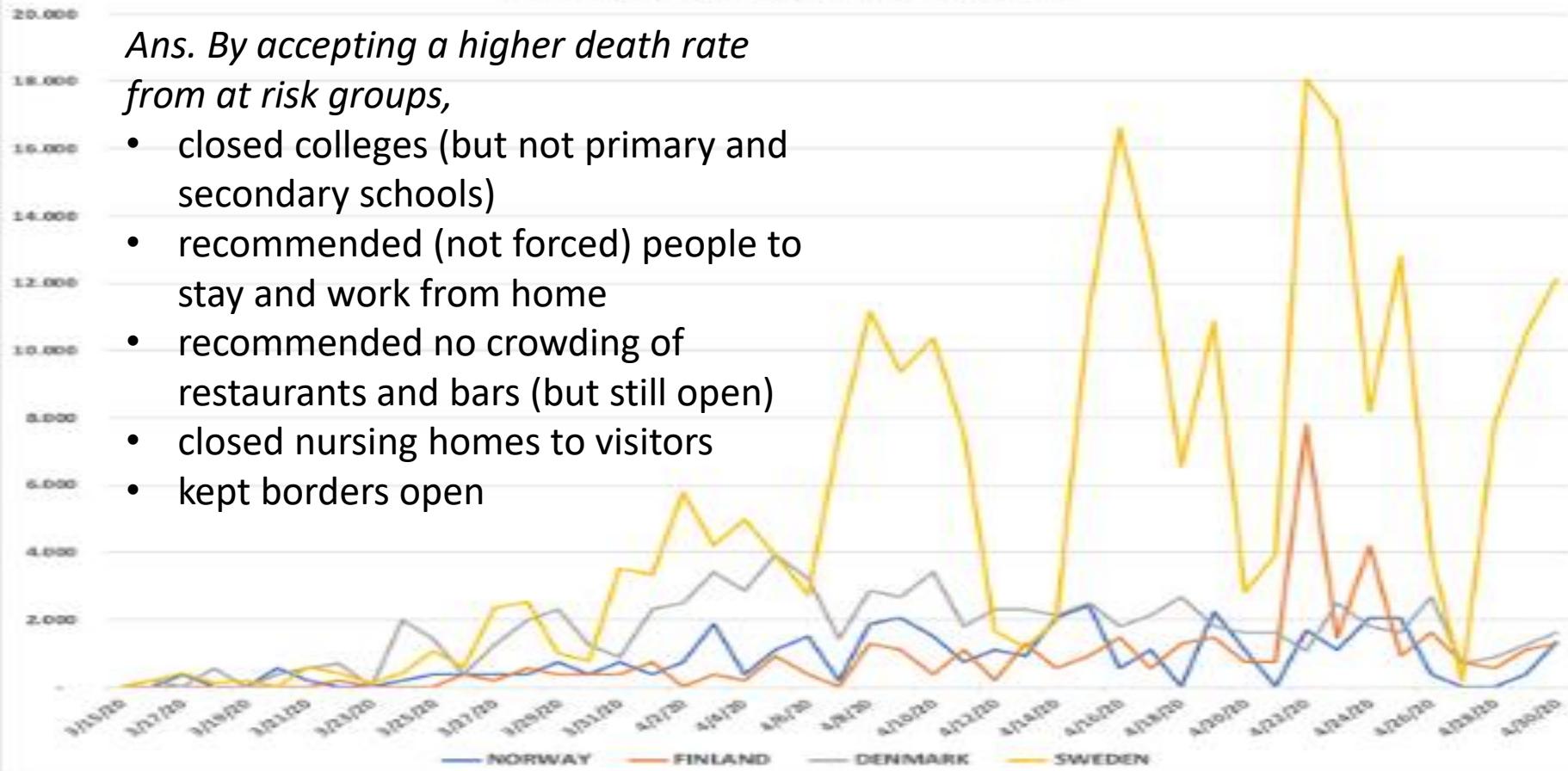


**Home Piglet. We're
going home, because that's
the best thing to do right now.**

6457

If Coronavirus is so deadly, why was Sweden able to treat it by basically doing nothing different?

DEATHS PER DAY PER MILLION POPULATION

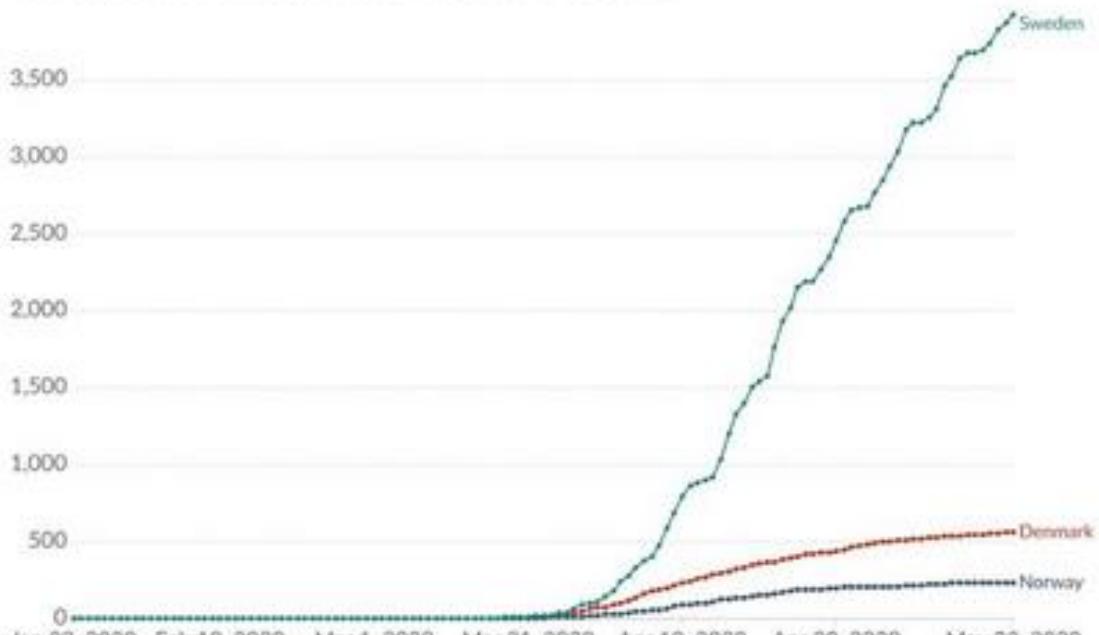


If-Coronavirus-is-so-deadly-why-was-Sweden-able-to-treat-it-by-basically-doing-nothing-different

Sweden Admits It Was Wrong

Total confirmed COVID-19 deaths

Limited testing and challenges in the attribution of the cause of death means that the number of confirmed deaths may not be an accurate count of the true number of deaths from COVID-19.



The epidemiologist who led Sweden's controversial COVID-19 response, which did not involve a strict lockdown, now says that the country should have done more to stop the spread of the virus, according to news reports.

A comparison of total confirmed Covid deaths in Nordic countries.

EUROPEAN CDC

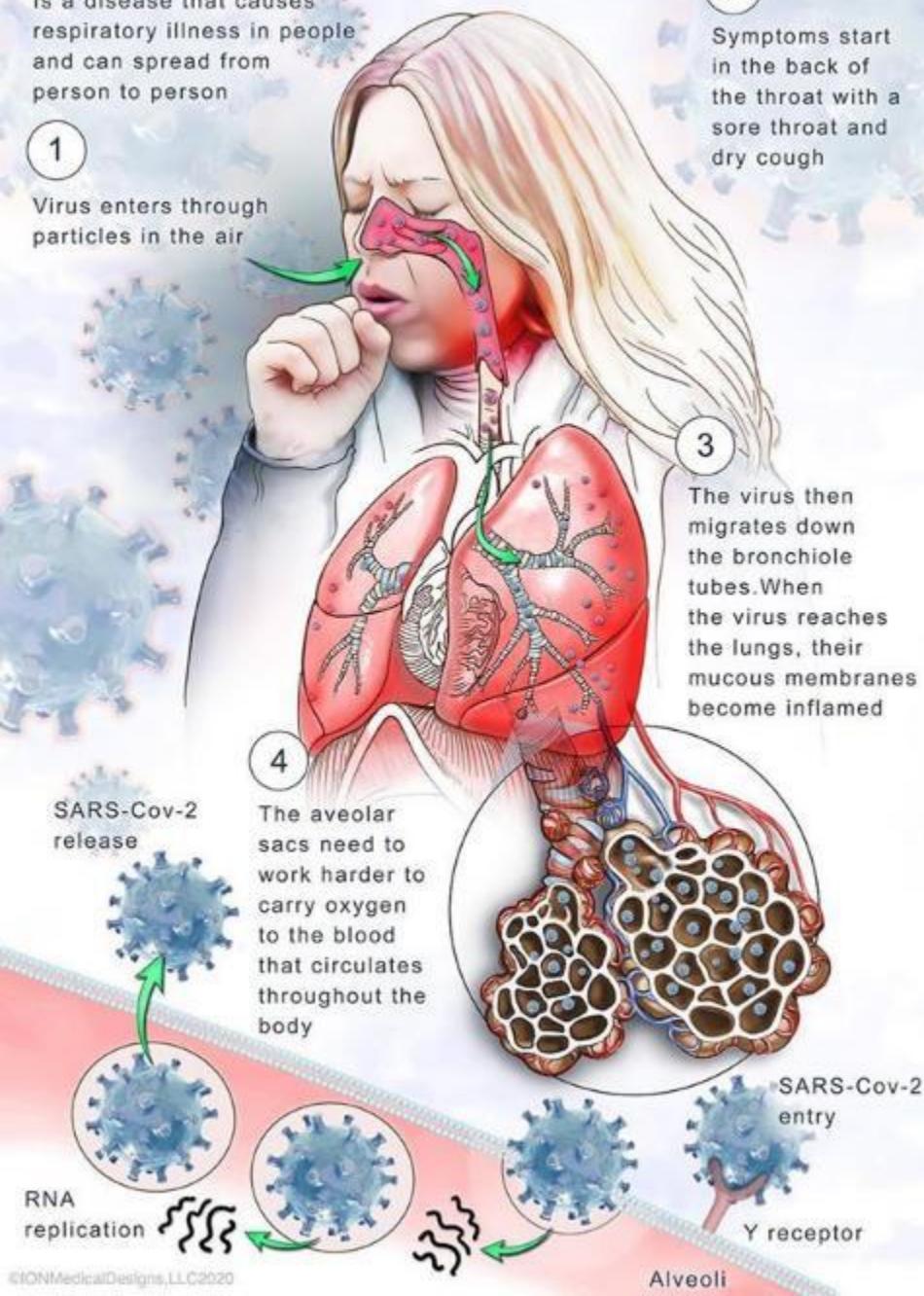
<https://www.forbes.com/sites/williamhaseltine/2020/06/04/a-warning-from-sweden/#48d8c8a94c56>

COVID-19

Is a disease that causes respiratory illness in people and can spread from person to person

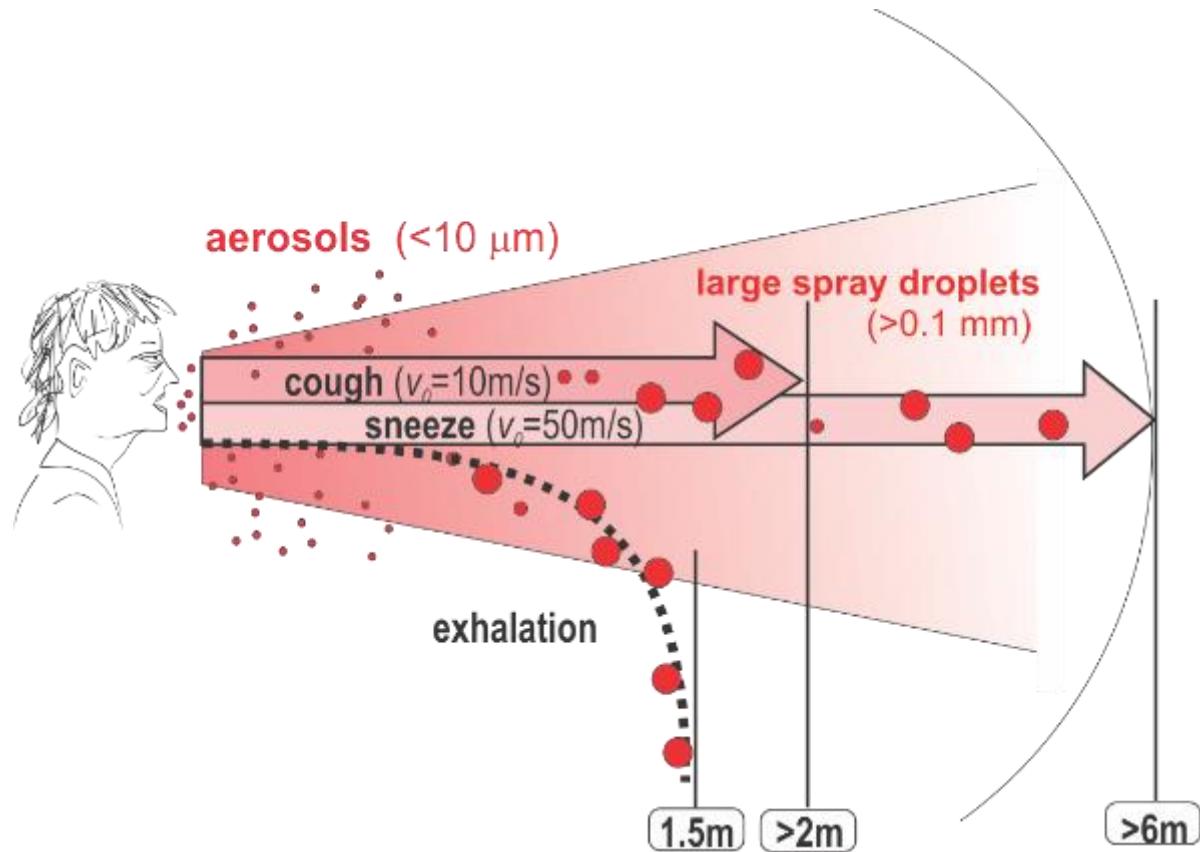
1

Virus enters through particles in the air

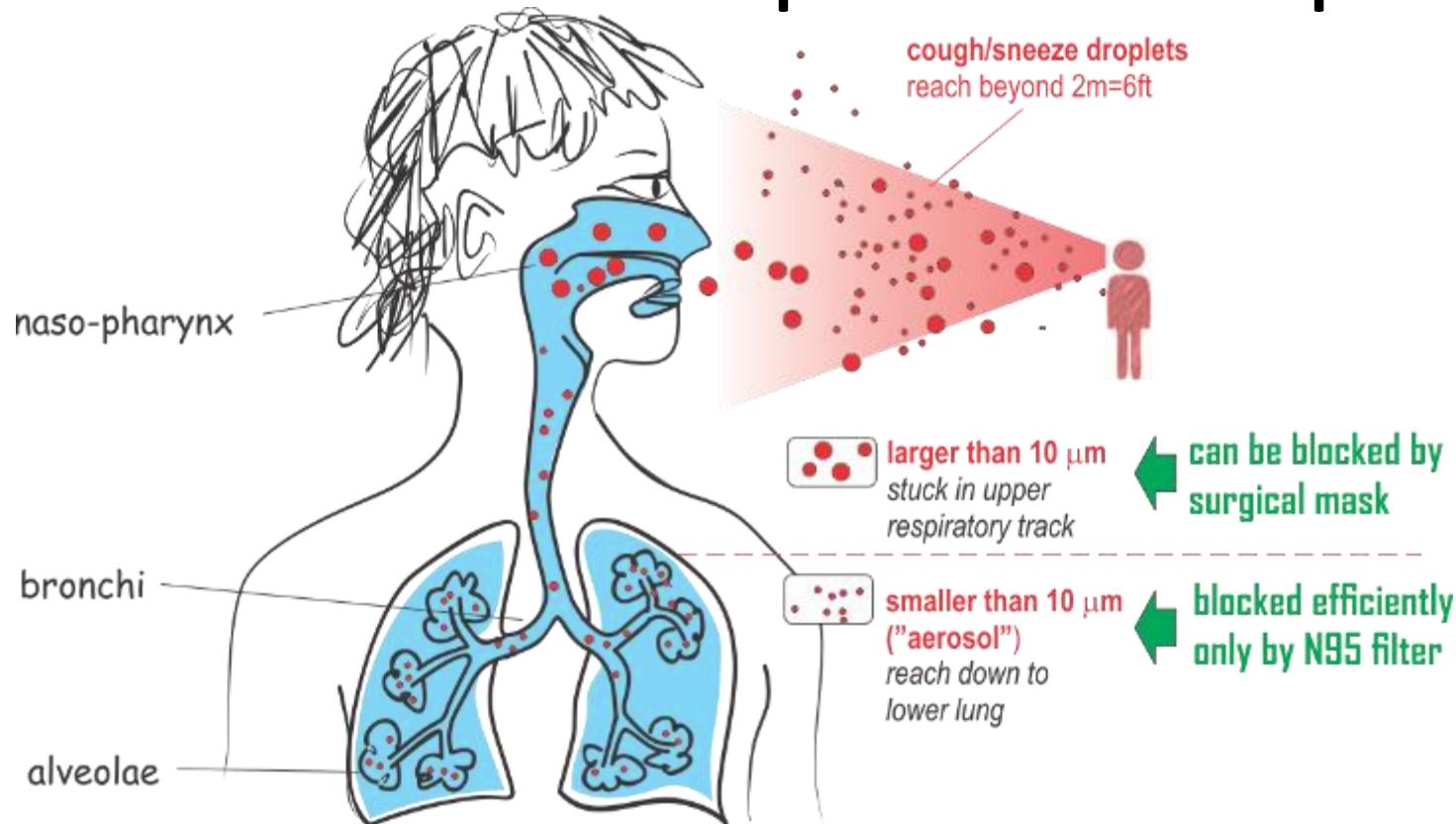


Droplets vs Airborne

Droplet larger than aerosols, when exhaled (at velocity of $<1\text{m/s}$), evaporate or fall to the ground less than 1.5 m away. When expelled at high velocity through coughing or sneezing, especially larger droplets (> 0.1 micrometers), can be carried by the jet more than 2m or 6m, respectively, away.



Where Can Droplets End Up?

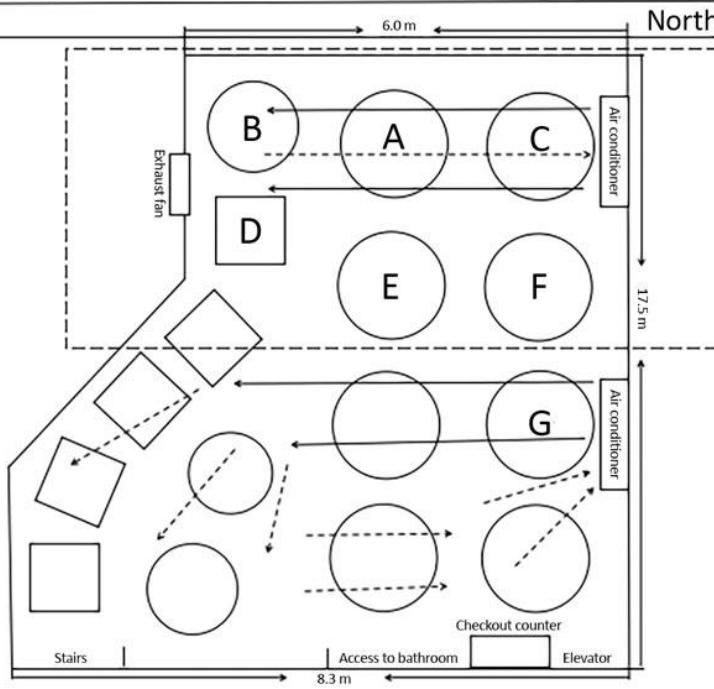


Anatomy of airways and where droplets can end up, depending to their size and what droplets are blocked by what masks.

<https://medium.com/@Cancerwarrior/covid-19-why-we-should-all-wear-masks-there-is-new-scientific-rationale-280e08ceee71>

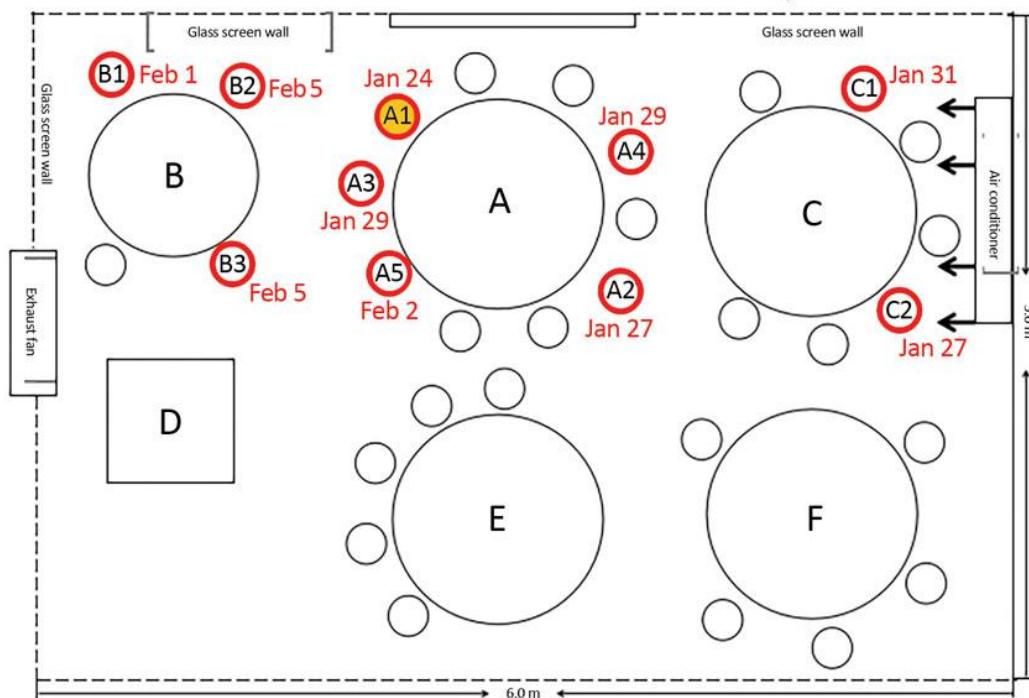
South

North



Example of Droplet Transmission

During Jan 26–Feb10, 2020, an outbreak of 2019 novel coronavirus disease in an air-conditioned restaurant in Guangzhou, China, involved 10 persons from 3 family clusters.



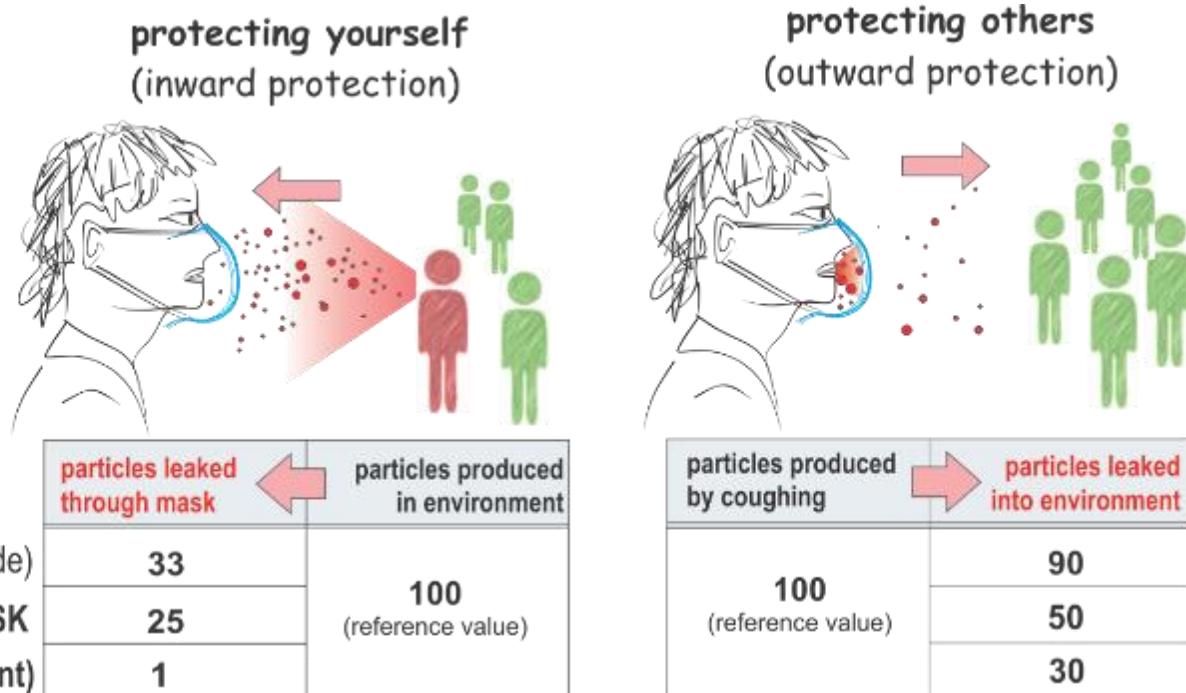
An air-conditioning unit next to Family C blew air in the southward direction across all three tables; some of the air likely bounced off the wall, back in the direction of Family C.

The airflow direction was consistent with droplet transmission.

https://wwwnc.cdc.gov/eid/article/26/7/20-0764_article

Filtering effect for small droplets (aerosols) by various masks

Measurement was performed with a Portacount counter that registers particles in the air with sizes in the range between 0.02 and 1 micrometer at the end of a 3-hour wearing period with no physical activity.



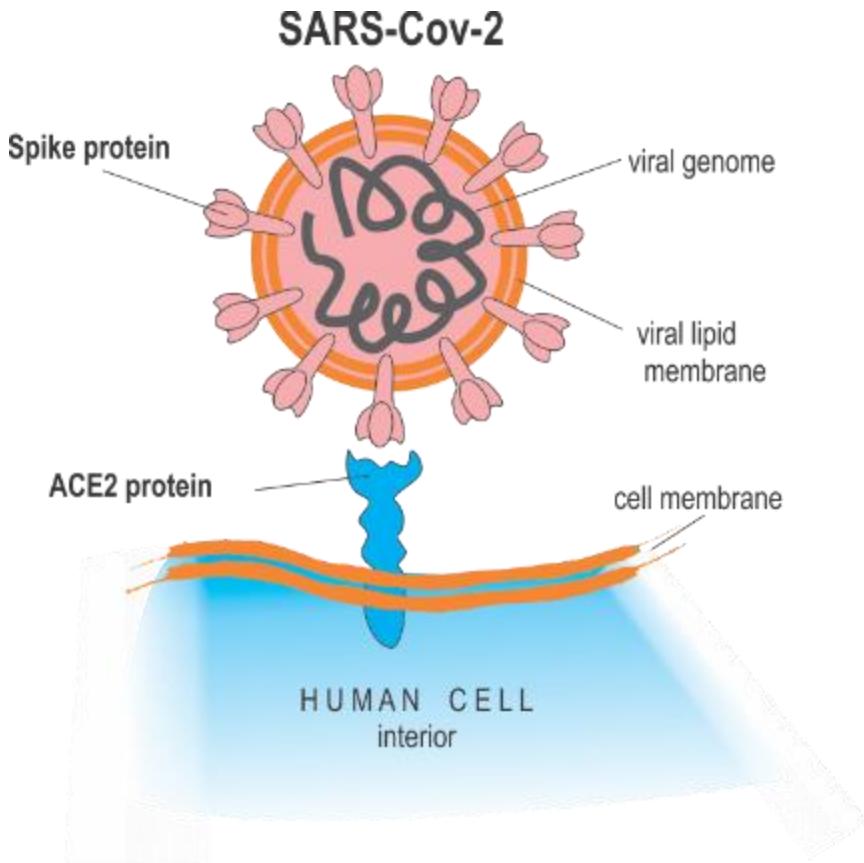
ACE2 Expression in the Lung

ACE2 expression in the lung is very low: it is limited to a few molecules per cell in the alveolar cells (AT2 cells) deep in the lung.

A just published paper by the Human Cell Atlas (HCA) consortium reports that ACE2 is highly expressed in some type of (secretory) **cells of the inner nose**.

Some reports initially indicated the risk for hypertension is caused by use of ACE inhibitors for BP maintenance. Best advice is to still take BP meds as directed by an MD.

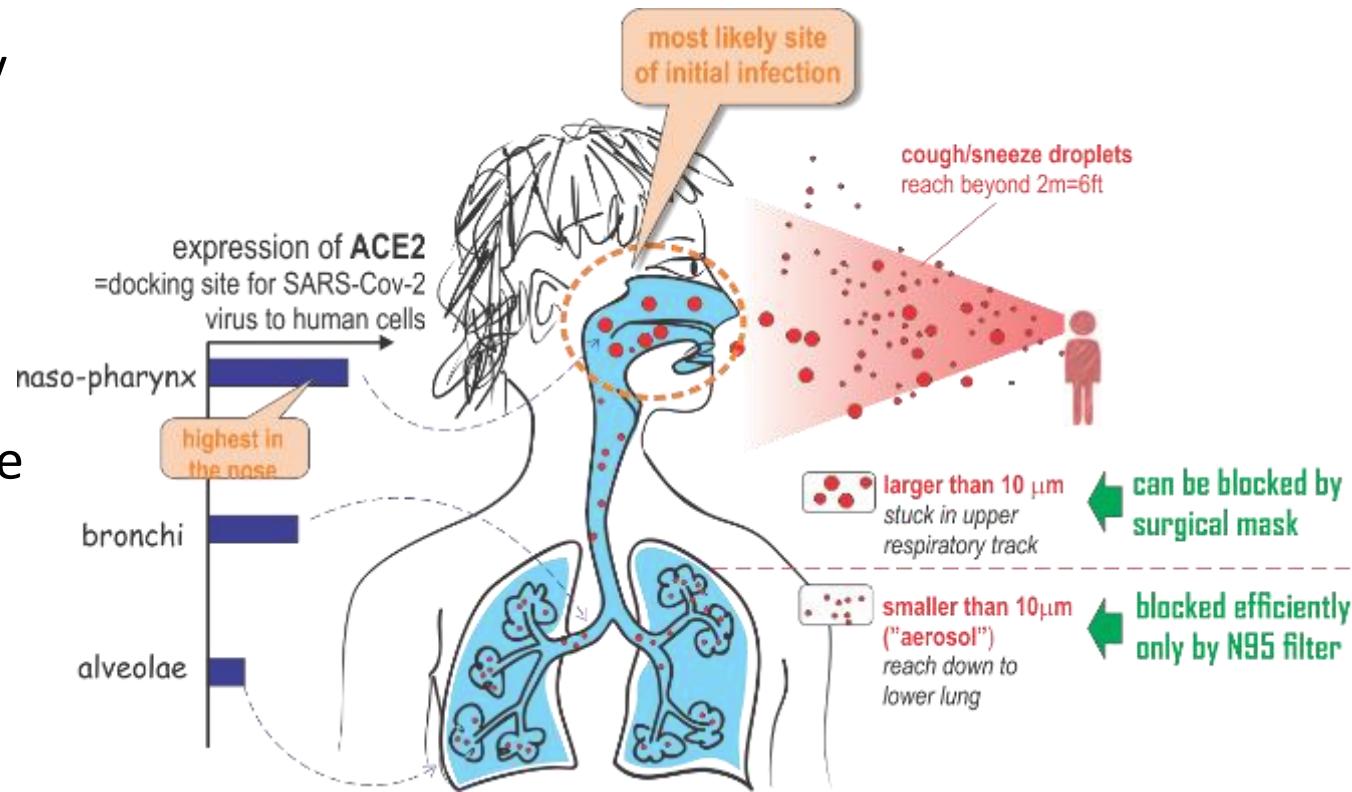
More on this later!



<https://medium.com/@Cancerwarrior/covid-19-why-we-should-all-wear-masks-there-is-new-scientific-rationale-280e08ceee71>

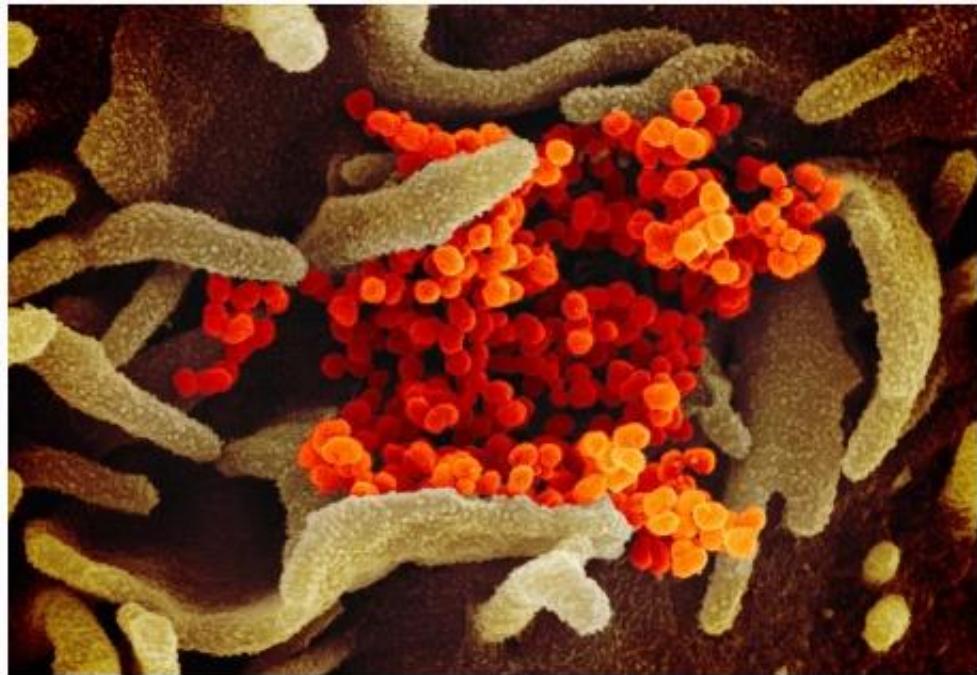
Routes to Lungs

Major route of viral entry is likely via large droplets that land in the nose — where expression of the viral entry receptor, ACE2 is highest. This is the transmission route that could be effectively blocked already by simple masks that provide a physical barrier.

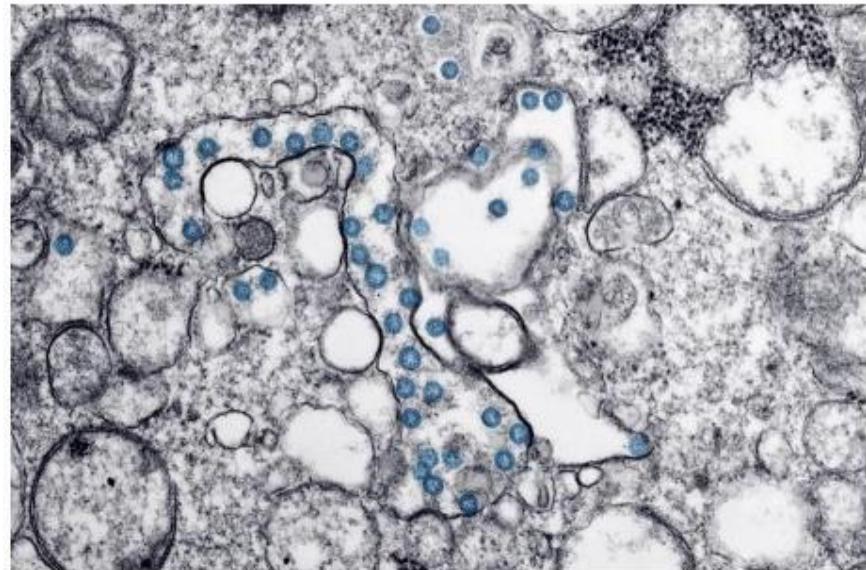


What Does COVID Really Look Like?

These images are not the first electron microscope images of the virus, with these first [coming out in February](#), courtesy of the National Institutes of Health/National Institute of Allergy and Infectious Diseases.



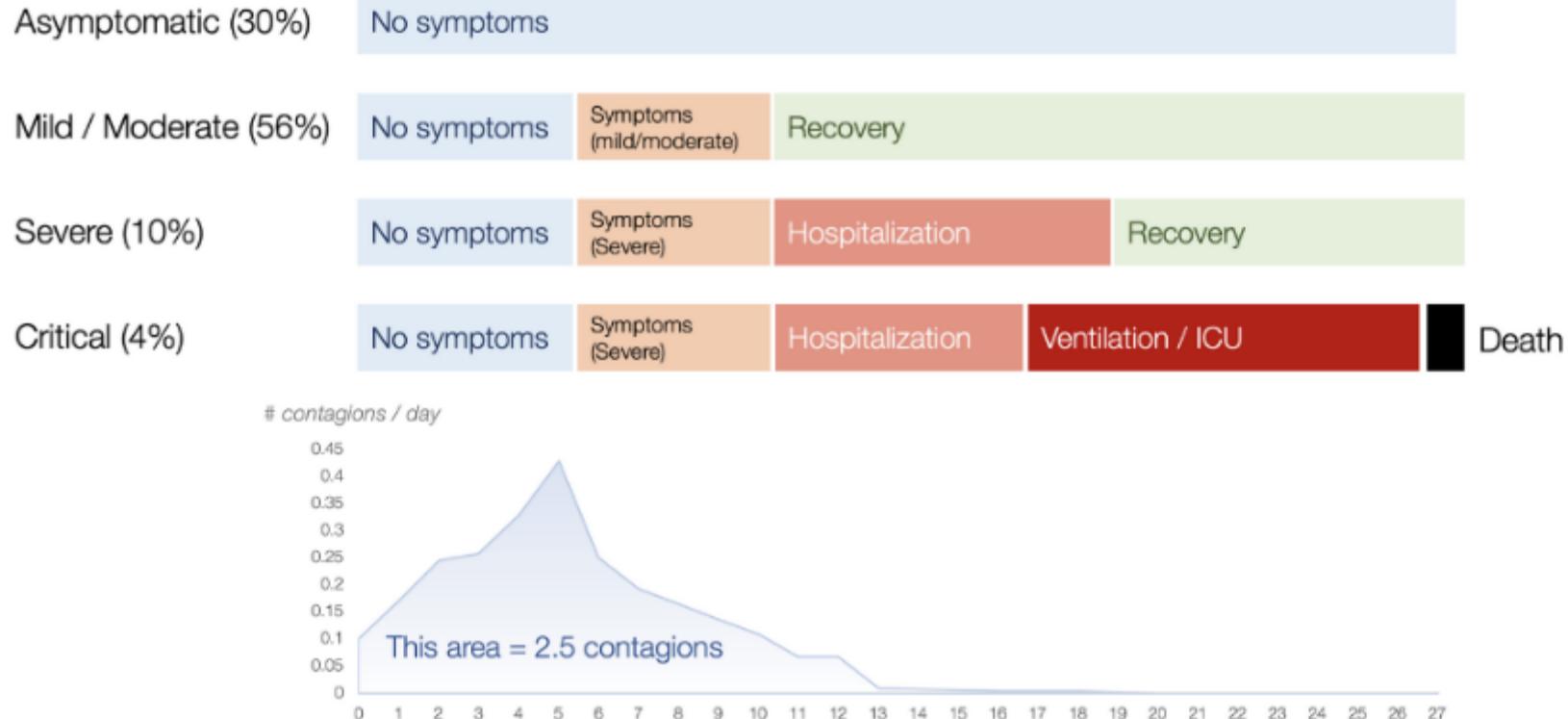
This scanning electron microscope image shows SARS-CoV-2 -also known as 2019-nCoV, the virus that causes COVID-19-isolated from a patient in the U.S., emerging from the surface of cells cultured in the lab. (Photo by: IMAGE POINT FR - LPN/BSIP/Universal Images Group via Getty Images) [-] UNIVERSAL IMAGES GROUP VIA GETTY IMAGES



New images from the CDC show the SARS-CoV2 coronavirus in samples taken from the first American case of COVID-19. Coronavirus particles are artificially colored in blue. [-] CDC/ HANNAH A BULLOCK; AZAIBI TAMIM

<https://www.forbes.com/sites/victoriaforster/2020/04/18/what-does-coronavirus-look-like-cdc-releases-images-from-first-american-covid-19-patient/#7b9fa8ce3577>

Transmission Rate During Virus Stages

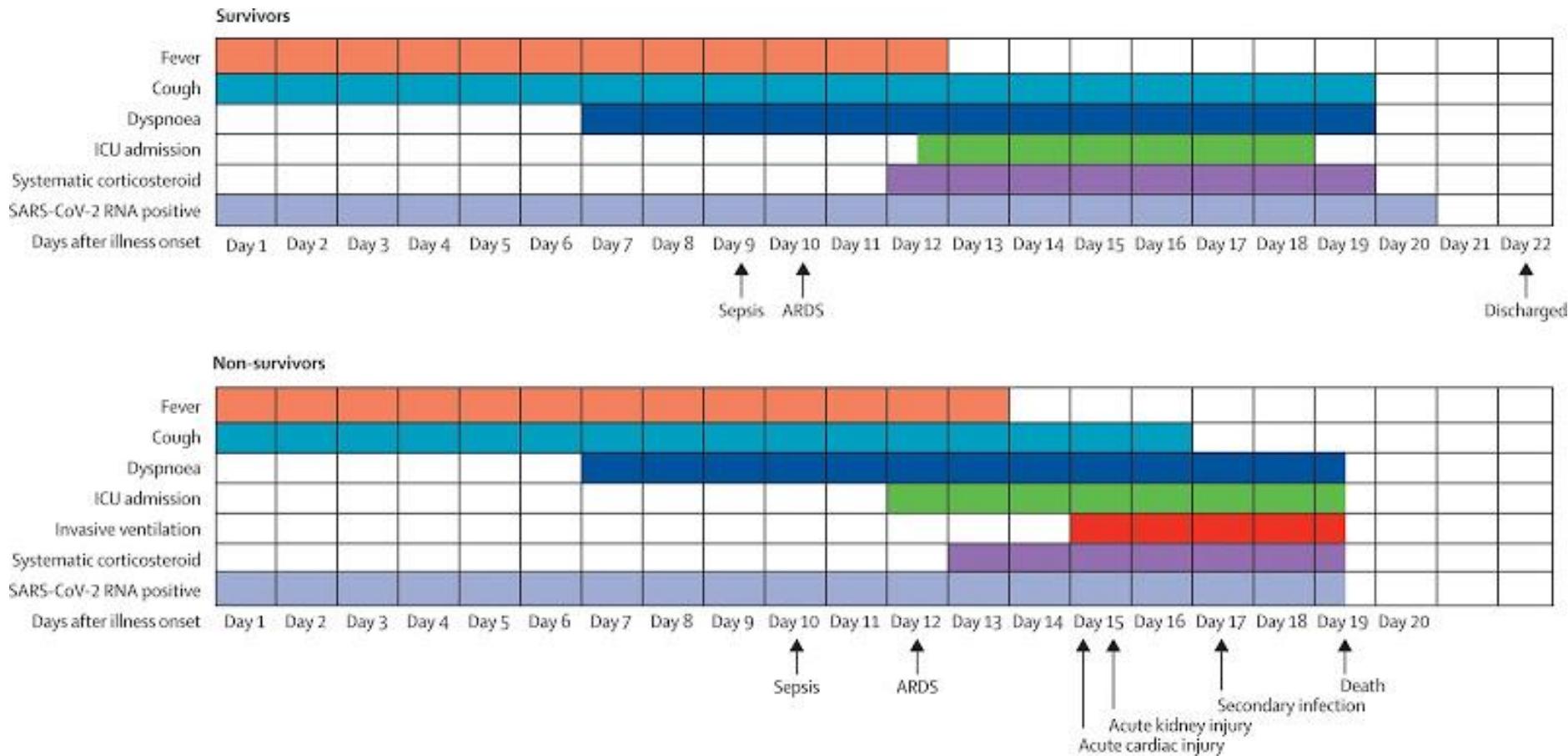


Source: Tomas Pueyo, John Hsu, WHO, Eurosurveillance, Medrxiv, ECDC, The Lancet, Impact of non-pharmaceutical interventions (NPIs) to reduce COVID19 mortality and healthcare demand, The Incubation Period of Coronavirus Disease 2019 (COVID-19) From Publicly Reported Confirmed Cases: Estimation and Application, Mixing patterns between age groups in social networks.

[Detailed data, sources and assumptions here](#)

Visualization of Symptoms of COVID19 Over Time,

~5-14 Days After Exposure

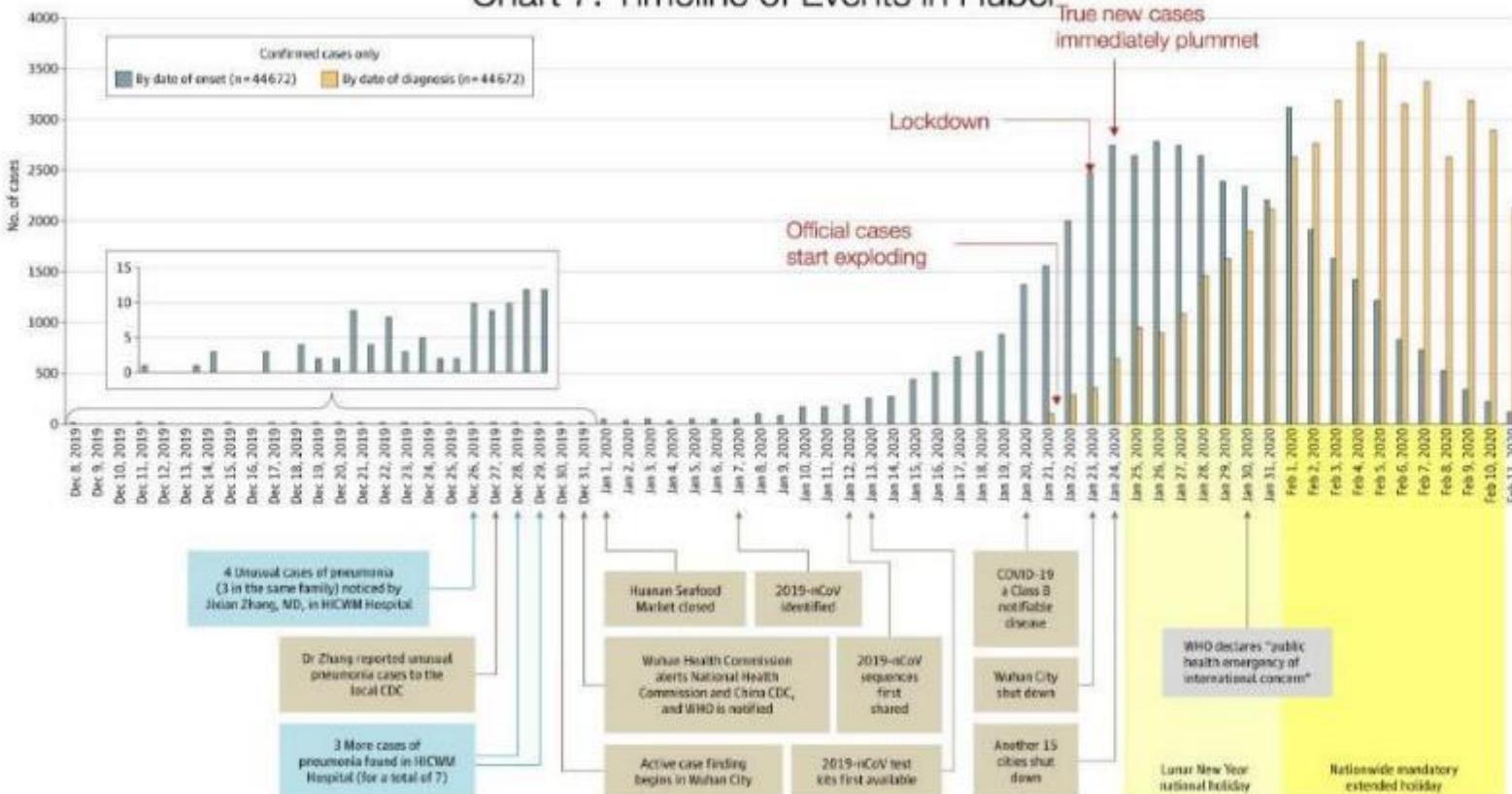


https://docs.google.com/document/u/0/d/1-71FJTml1Q1kjSDLPOEegMERjg_Okk_7UfaRE4r66Mg/mobilebasic

Asymptomatic = More Hidden Cases

China

Chart 7: Timeline of Events in Hubei



If you stack up the orange bars until 1/22, you get 444 cases. Now add up all the grey bars. They add up to ~12,000 cases. So when Wuhan thought it had 444 cases, it had 27 times more.

The same math applied to the US known 1,700 cases means we likely already have 40,000+!

Source: Tomas Pueyo analysis over chart from the *Journal of the American Medical Association*, based on raw case data from the Chinese Center for Disease Control and Prevention

What does no one tell you about coronavirus?

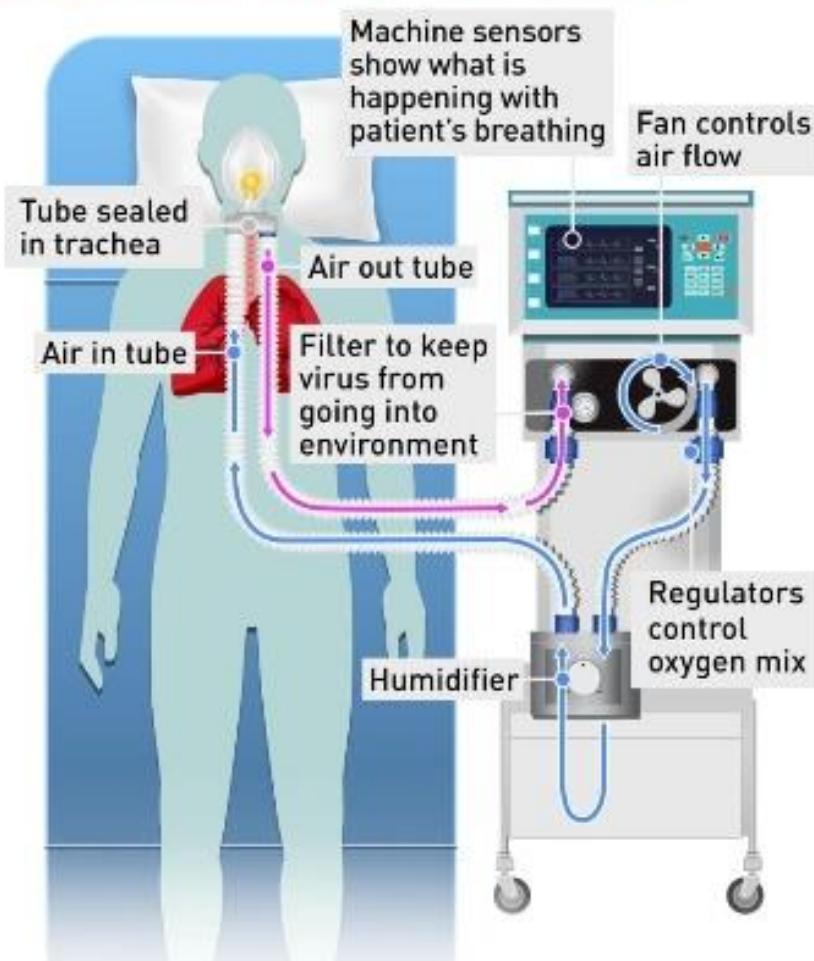
- **Viral load matters.** Infection is not like flipping a switch. Your body will fight even an unknown virus, but not as effectively. If you get just a few virions, you will be able to deactivate them and avoid infection. If you come in contact with more, you may get light symptoms but eventually fight off the infection and get better. Get a high viral load though, and the virus might overwhelm even a young organism in a good shape. This is why you hear about Li Wenliang and other young doctors dying. This means that even if steps you take are not 100% effective in preventing infection, they still might save your life, and lives of others. Which brings me to my next point:

What does no one tell you about coronavirus?

- **Infection prevention measures add up nonlinearly.** Just as the spread of the virus grows exponentially with more interactions, it falls exponentially as the virus gets less opportunities to spread. Which means that if everyone reduces their exposure to the virus by 30%, the rate of infection will be slowed by much more than 30% and potentially by 80–90%. Do not think that your efforts are futile if you don't wear a N-95 mask or you cannot eliminate all social interaction. The virus is not the only side in this battle that can weaponize power laws, so do not lose hope.

How Does a Ventilator Work?

Ventilator function



Tough choices ahead. Countries debating who gets a ventilator and who doesn't include:

- Canada
- UK
- USA
- Italy
- Many others

<https://shreddedfigure.com/health/what-is-a-ventilator-and-who-gets-one-if-covid-19-turns-catastrophic-in-canada/>

Ventilator? I'd Rather Not...

From a nurse friend. Just in case you wondered



For people who don't understand what it means to be on a ventilator:

Ventilation for Covid-19 is a painful intubation that goes down your throat and stays there until you live or you die. Patients can't talk or eat or do anything natural - the machine keeps you alive. Discomfort and pain they feel from this means that medical experts must administer sedatives and pain meds to ensure pipe tolerance as long as the machine is needed.

After 20 days from this treatment, a young patient loses 40 % muscle mass and gets trauma in the mouth or vocal cords, as well as possible lung or heart complications. It is for this reason that old or already weak people can't stand treatment and die. They put a tube in your stomach...either through your nose or skin for liquid food, a sticky bag around your butt to collect diarrhea, one to collect urine, and an IV for fluids and meds.

A team of nurses, CNA, and MA move your limbs every two hours and you lie on a carpet circulating ice cold liquid to help reduce your 106° degree temp. All of this while your loved ones cannot even come to visit. You will be alone in a room with your machine.

But some think wearing a mask is uncomfortable
(note: images from educational material on prone positioning.
No HIPPA violation)

BLUF:

- Invasive
- Painful
- 20% infected need hospitalization
- ¼ Won't Wake Up

“Fair allocation of scarce medical resources in the time of COVID-19.”

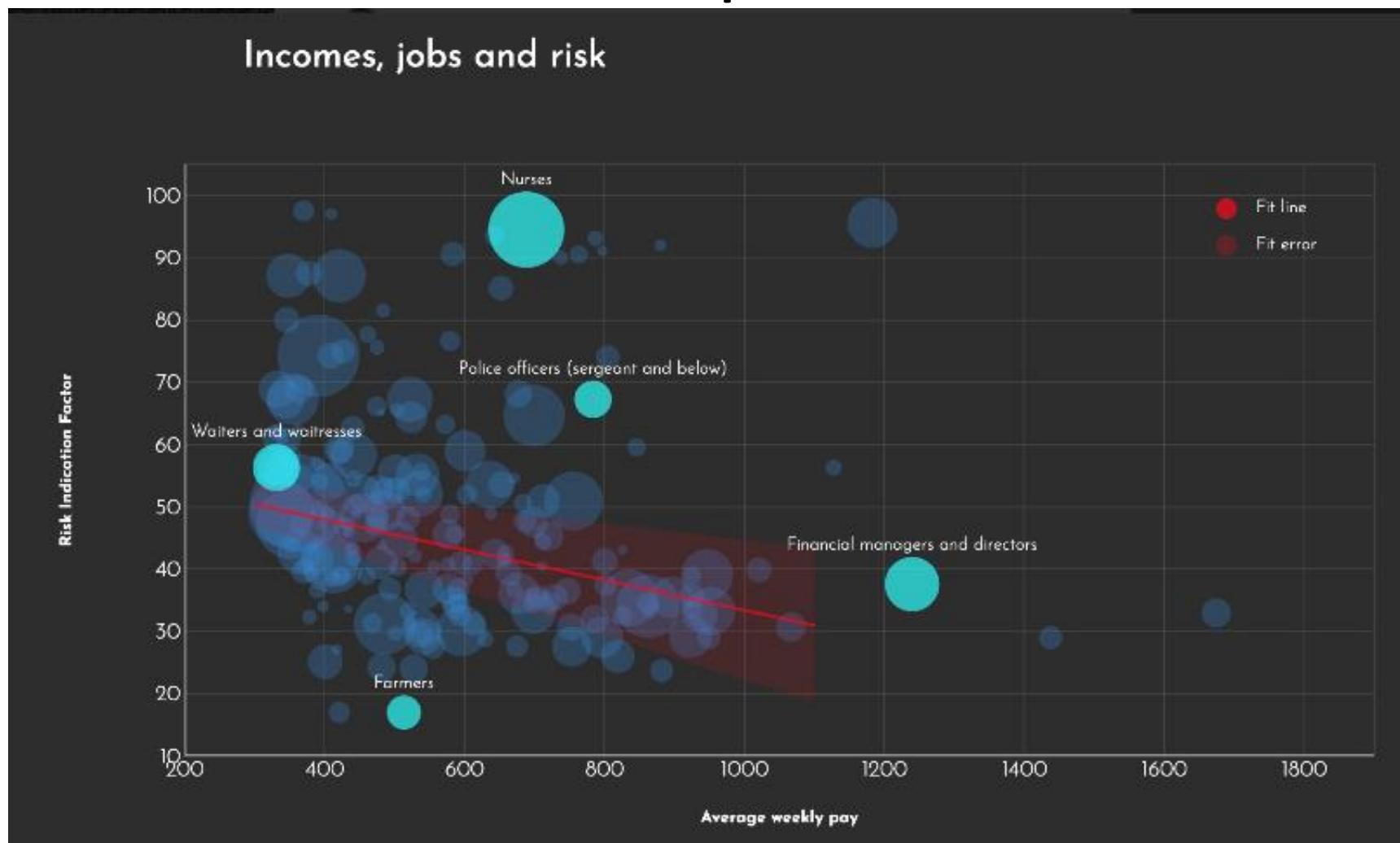
- “Four in 10 might not make it,” Fowler said, based on early North America data of COVID-19 patients who have required ventilators. Survivors are often younger, without underlining health conditions.
- Murthy said COVID-19 survival rates after ventilation depend on many variables, such as the severity of lung damage and whether the patient has other illnesses such as heart or kidney failure.
- *Some patients may be removed from a machine to provide care for a patient with a better chance of survival.*

<https://shreddedfigure.com/health/what-is-a-ventilator-and-who-gets-one-if-covid-19-turns-catastrophic-in-canada/>

The Unlucky 20% Needing Hospitalization

- In Italy, 1591 critically ill patients admitted from February 20 to March 18, 2020,
- 99% (1287 of 1300 patients) required respiratory support, including endotracheal intubation in 88% and noninvasive ventilation in 11%;
- *ICU mortality was 26%.*

Odds of Infection Are NOT Equal For All Occupations

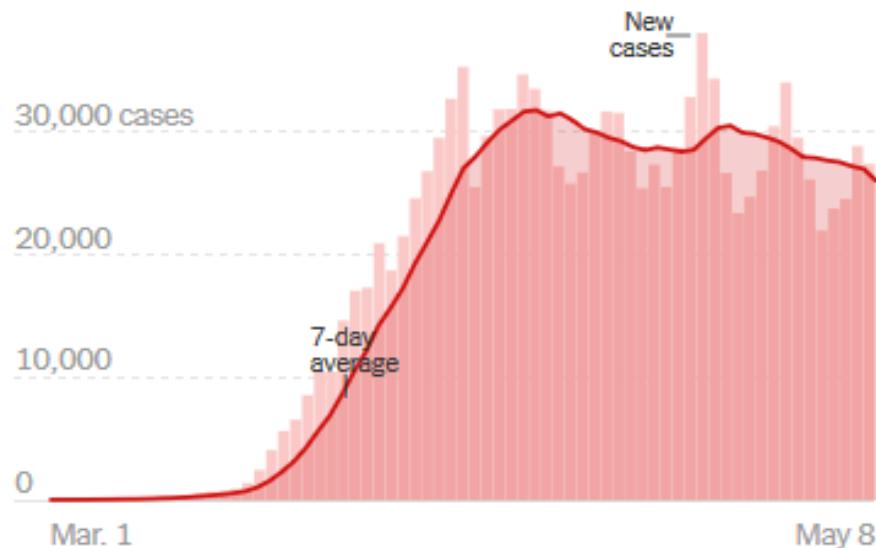


National Total Numbers

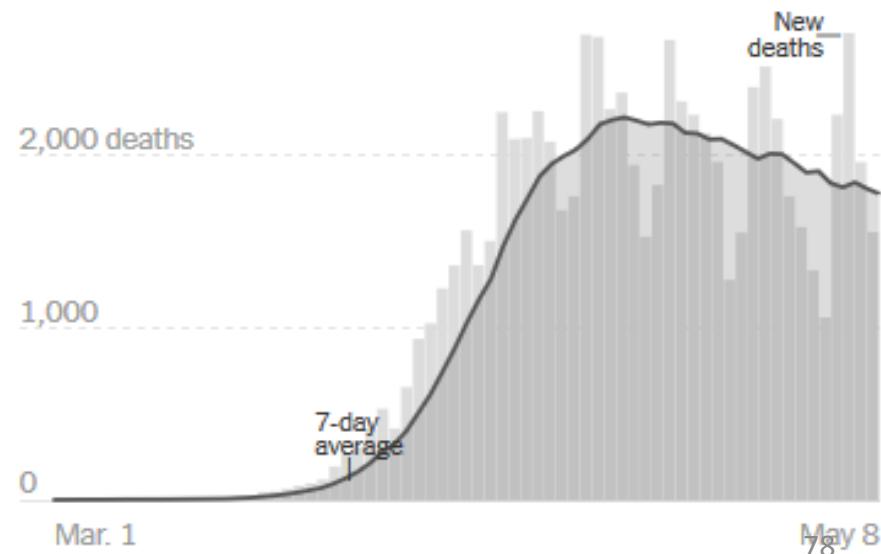
1. The Big Picture: New Cases and Deaths

The simplest way to track the progress of an outbreak is by seeing how many new cases and deaths are reported in a given area each day. For the United States as a whole, these counts appear to have peaked or are starting to flatten:

New cases per day
United States



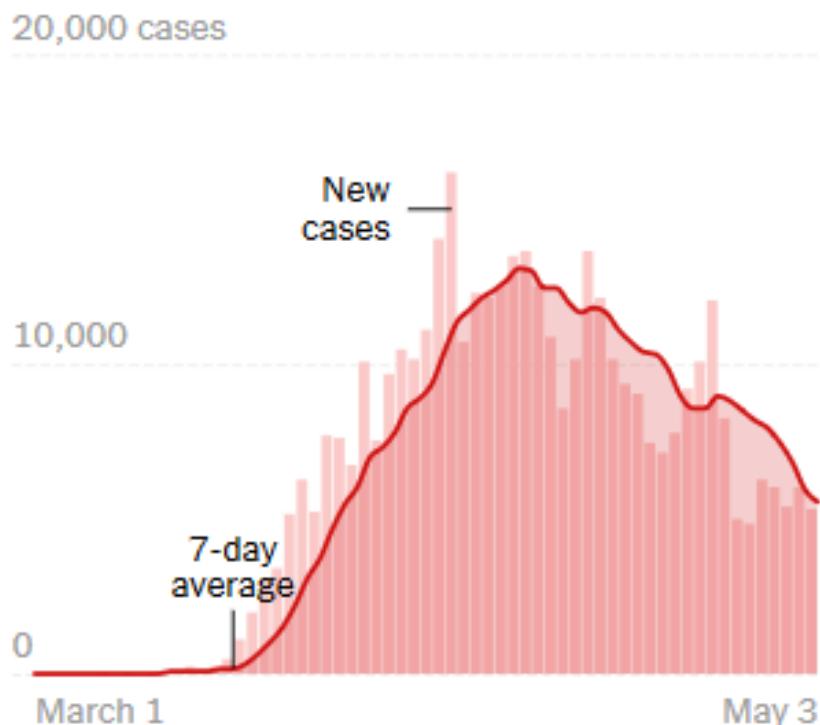
New deaths per day
United States



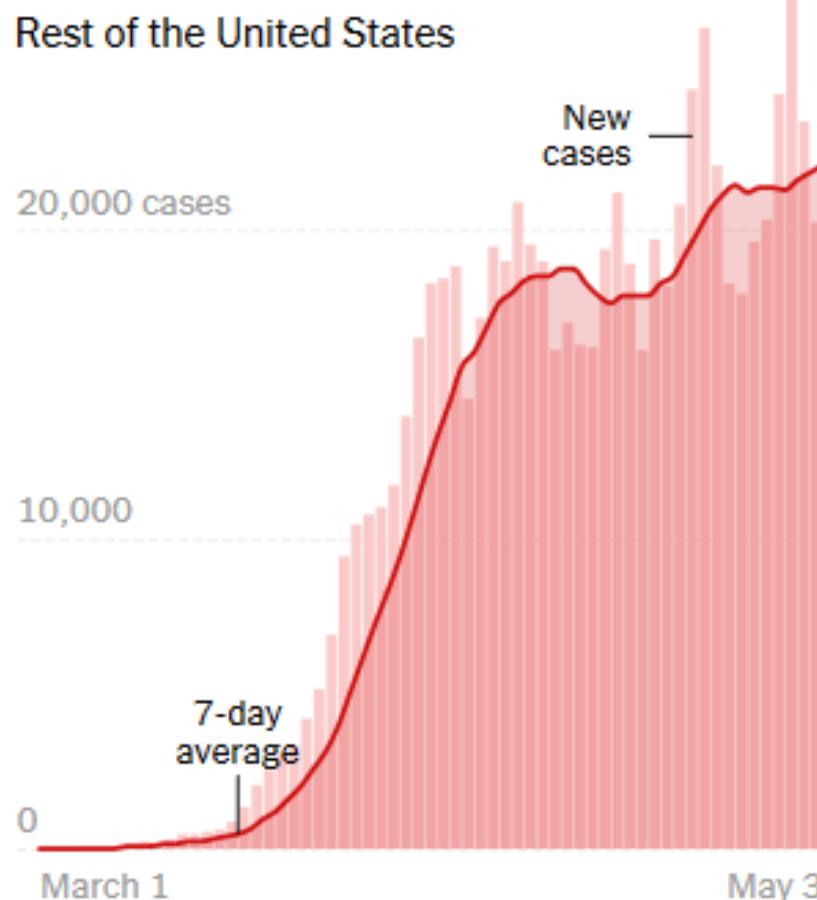
New Reported Cases by Day

As the New York metro area has seen a recent decline in new cases, the number of cases in the rest of the United States has steadily increased.

New York metro area



Rest of the United States



Source: [New York Times database](#) of reports from state and local health agencies and hospitals. • The New York City metropolitan area is defined by the U.S. Census Bureau and includes nearby cities and suburbs in Westchester, Long Island and northern New Jersey.

How Many People “Typically” Die Each Year?

Are “Extra Ones” Caused by COVID?



Time, and further analysis, will be required to determine a more accurate COVID-19 death count.

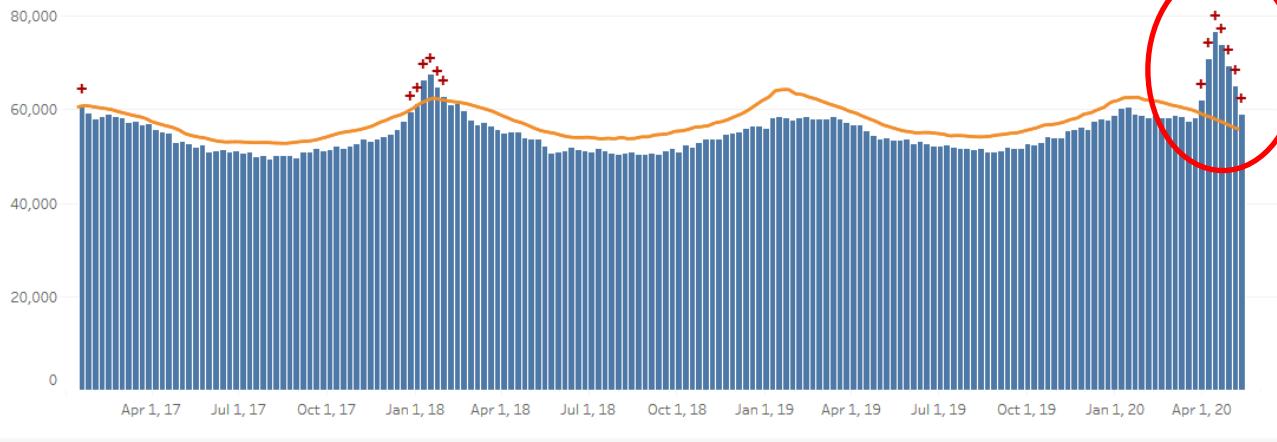
<https://www.visualcapitalist.com/how-many-people-die-each-day/>

Overcounting? Probably Not....

Nationwide “Out of Norms” for 28Mar-9May

+ indicates observed count above threshold
g Predicted number of deaths from all causes
- threshold for excess deaths

Weekly number of deaths (from all causes)

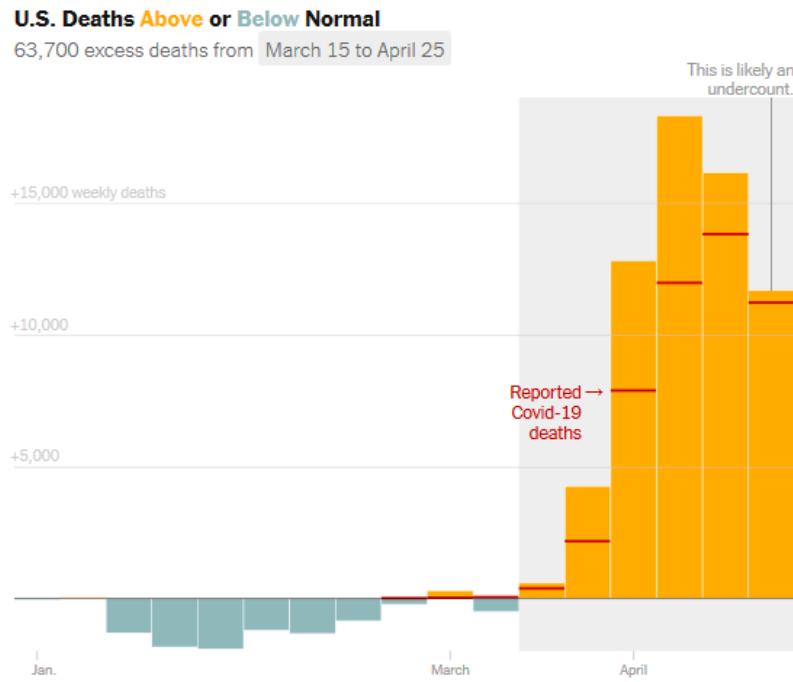


Or almost 70,000 more than what should be expected.

Week Ending	Extra Deaths
28Mar	Approx 2500
4Apr	Approx 12200
11Apr	Approx 18500
18Apr	Approx 16300
25Apr	Approx 12500
2May	Approx 9000
9May	Approx 3000

Overcounting? Probably Not...

15Mar to 15Apr



Nationwide, nearly 64000 more people died between 15Mar and 15Apr. The number is 10,000 more than reported COVID deaths.

The analysis examines deaths from all causes, beginning in mid-March when the virus took hold in the country, and examines every state with reliable data. The death count so far is not uniform around the nation.

(Two different sources and timeframes from last slide)

<https://www.nytimes.com/interactive/2020/05/05/us/coronavirus-death-toll-us.html>

Who Are the Most Vulnerable?

COVID Community Vulnerability Map

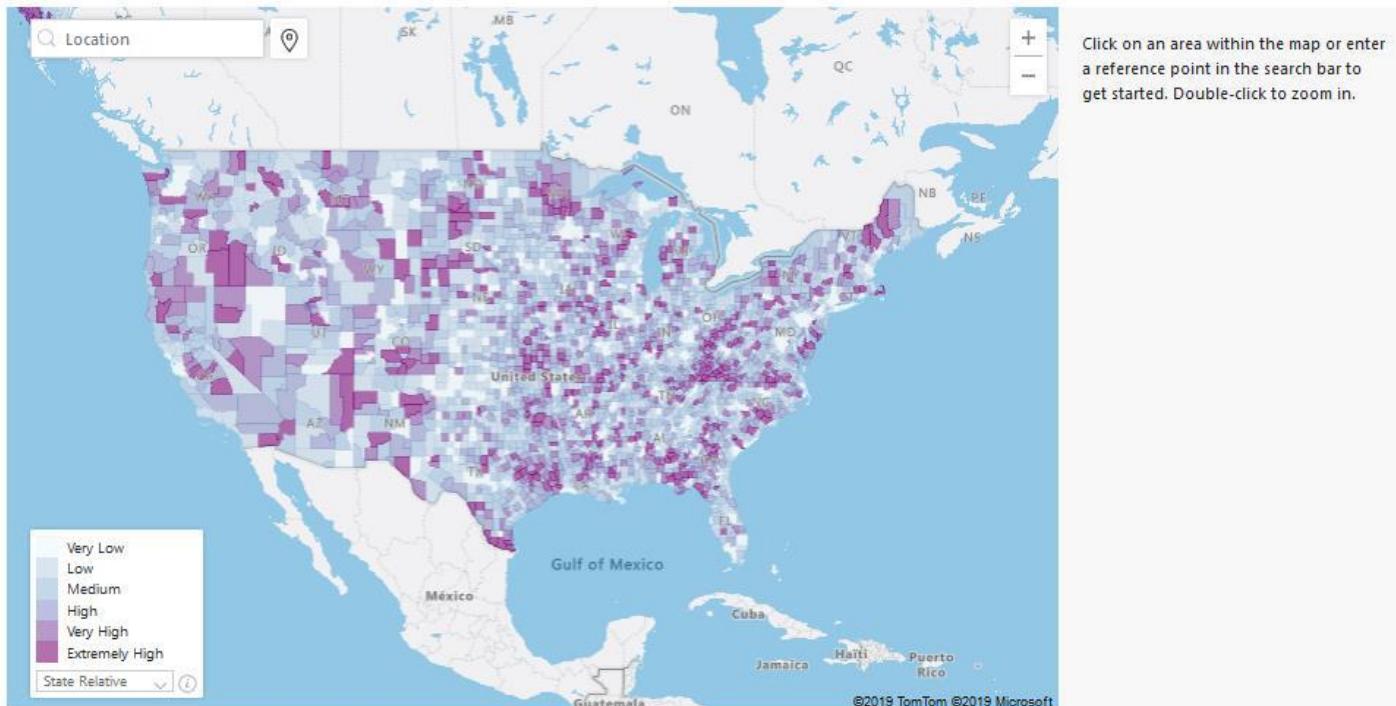
Identification of the populations at risk for severe outcomes once infected to inform resource planning, interventions, outreach and other community initiatives

This map allows you to search and drill down into communities to view populations most vulnerable for severe outcomes if infected with a COVID-like virus and the socioeconomic factors driving that risk.

How to use this map:

Select a geographic location or enter a reference point in the search bar to drill down to census block level information.

Brought to you in partnership with Azure Maps



The information provided is the result of the internal analysis of 30 million de-identified patient records from within the Jvion AI CORE. Results were modeled on respiratory viruses with features and symptoms similar to COVID. Data for reported cases is updated daily from [The New York Times](#).

The Elderly Are One Vulnerable Group

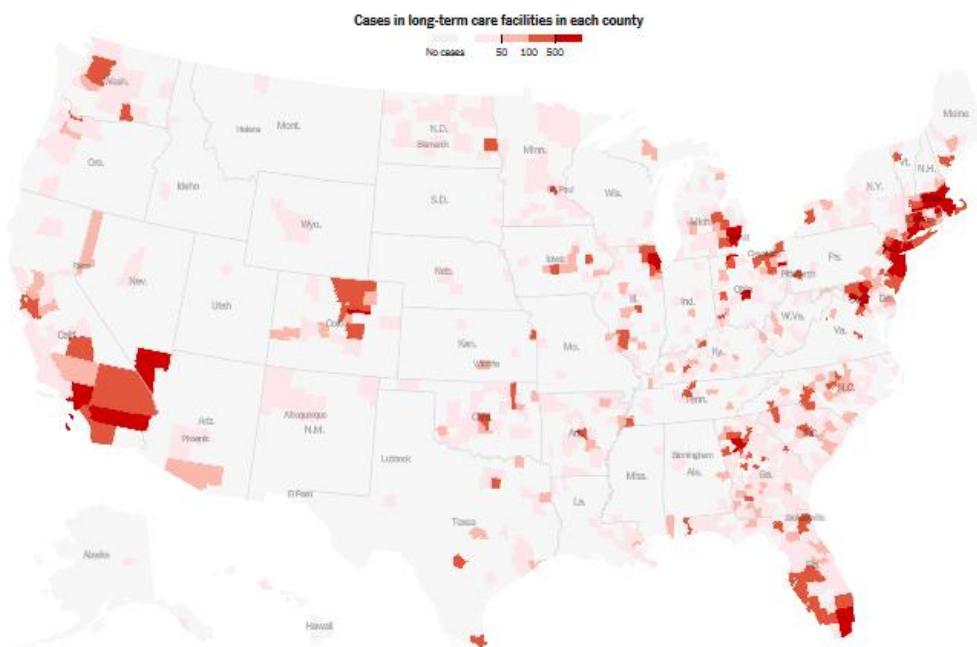
The New York Times

Covid-19 deaths in long-term care facilities
33%
All other Covid-19 deaths in the U.S.

One-Third of All U.S. Coronavirus Deaths Are Nursing Home Residents or Workers

By Karen Yourish, K.K. Rebecca Lai, Danielle Ivory and Mitch Smith May 9, 2020

At least 25,600 residents and workers have died from the coronavirus at nursing homes and other long-term care facilities for older adults in the United States, according to a New York Times database. The virus so far has infected more than 143,000 at some 7,500 facilities.



<https://www.nytimes.com/interactive/2020/05/09/us/coronavirus-cases-nursing-homes-us.html?fbclid=IwAR11rD0qkxFe8hJZ5W0Mh2WsOpnZ0wXBposaC43r2qku0jGzzi3yFiiXOnU>

Enter a ZIPCODE

COVID Community Vulnerability Map

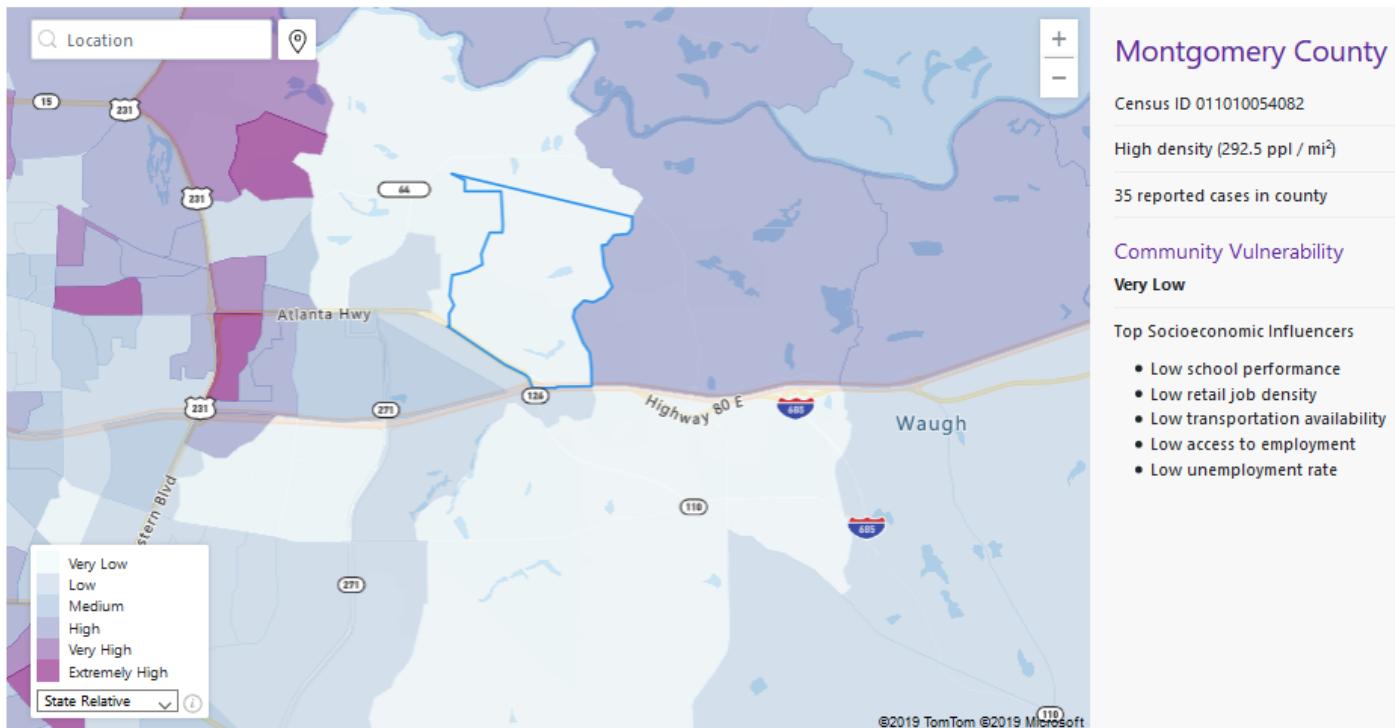
Identification of the populations at risk for severe outcomes once infected to inform resource planning, interventions, outreach and other community initiatives

This map allows you to search and drill down into communities to view populations most vulnerable for severe outcomes if infected with a COVID-like virus and the socioeconomic factors driving that risk.

How to use this map:

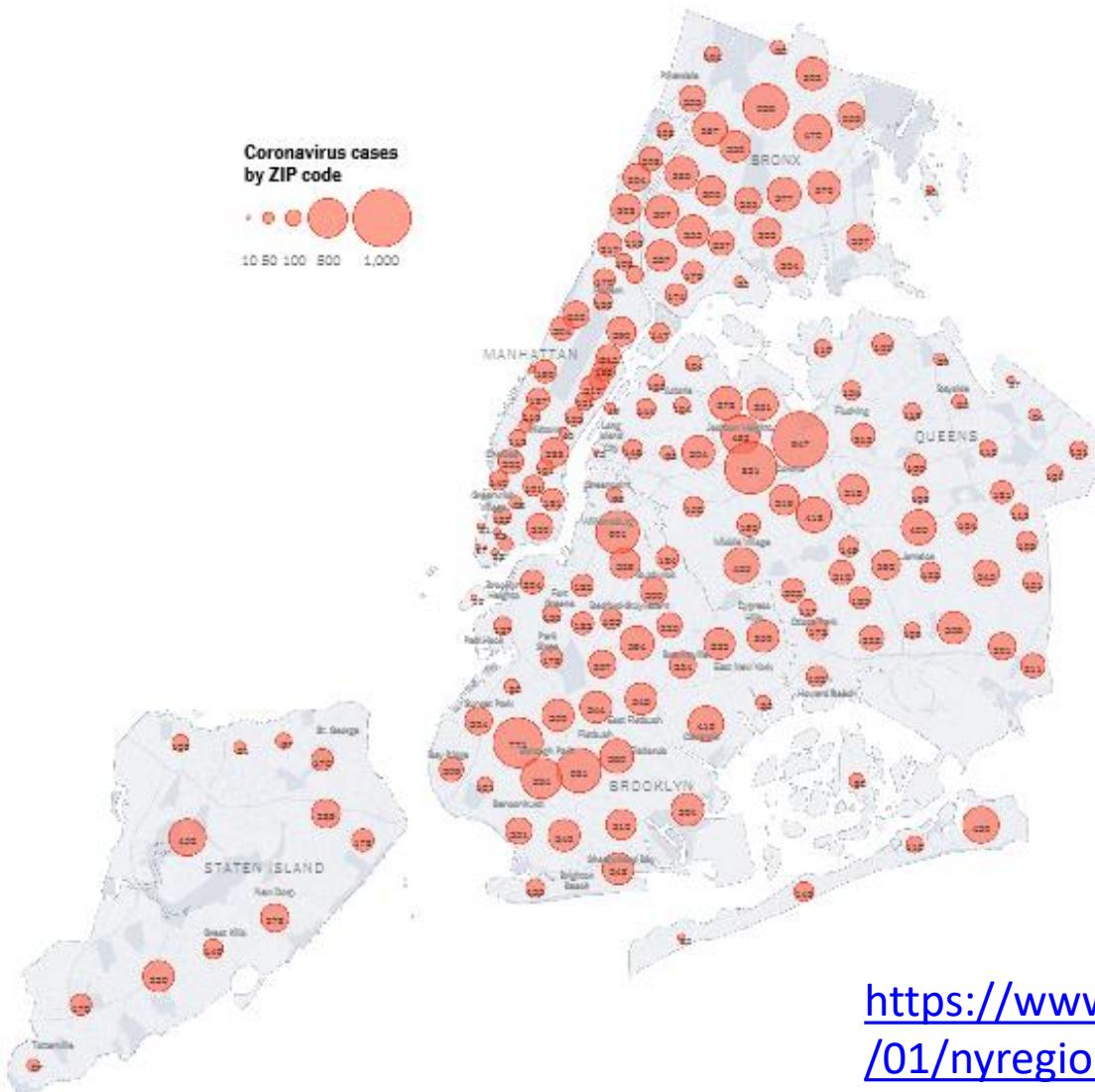
Select a geographic location or enter a reference point in the search bar to drill down to census block level information.

Brought to you in partnership with Azure Maps



The information provided is the result of the internal analysis of 30 million de-identified patient records from within the Jvion AI CORE. Results were modeled on respiratory viruses with features and symptoms similar to COVID. Data for reported cases is updated daily from [The New York Times](#).

Service Personnel Now Are Called “Essential Workers”



The coronavirus has ravaged all of New York City, closing schools, emptying streets and turning stadiums into makeshift hospitals. And data made public by city health officials on Wednesday suggests it is hitting low-income neighborhoods the hardest. During the first month of the outbreak in the city — the epicenter of America’s coronavirus crisis — many of the neighborhoods with the most confirmed virus cases were in areas with the lowest median incomes, the data shows. The biggest hot spots included communities in the South Bronx and western Queens.

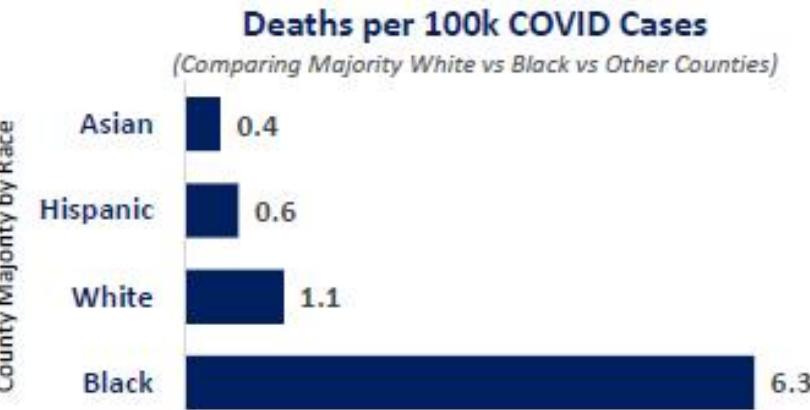
<https://www.nytimes.com/interactive/2020/04/01/nyregion/nyc-coronavirus-cases-map.html>

COVID INEQUALITIES MAY WIDEN SOCIAL DIVISIONS

States vs States



Among Races



Rich vs Poor

Income →	\$75k+	<\$30k
Remotely working now	39%	3%
Has home broadband	92%	56%
Child access to computer	96%	75%

Among Generations

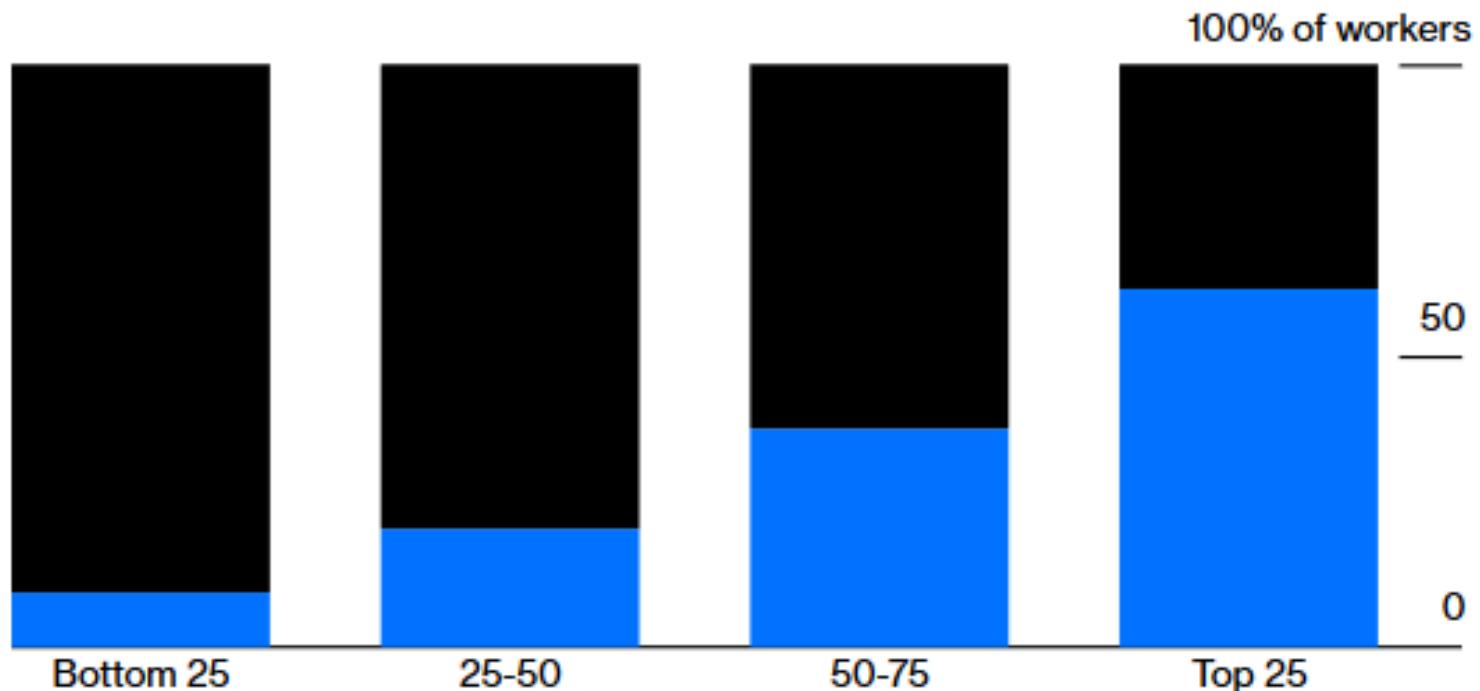


Upper Middle Class Work From Home

Only the Rich Work From Home

The less you earn, the less self-isolation is an option.

■ Actual or potential home workers ■ Workers who can't stay at home

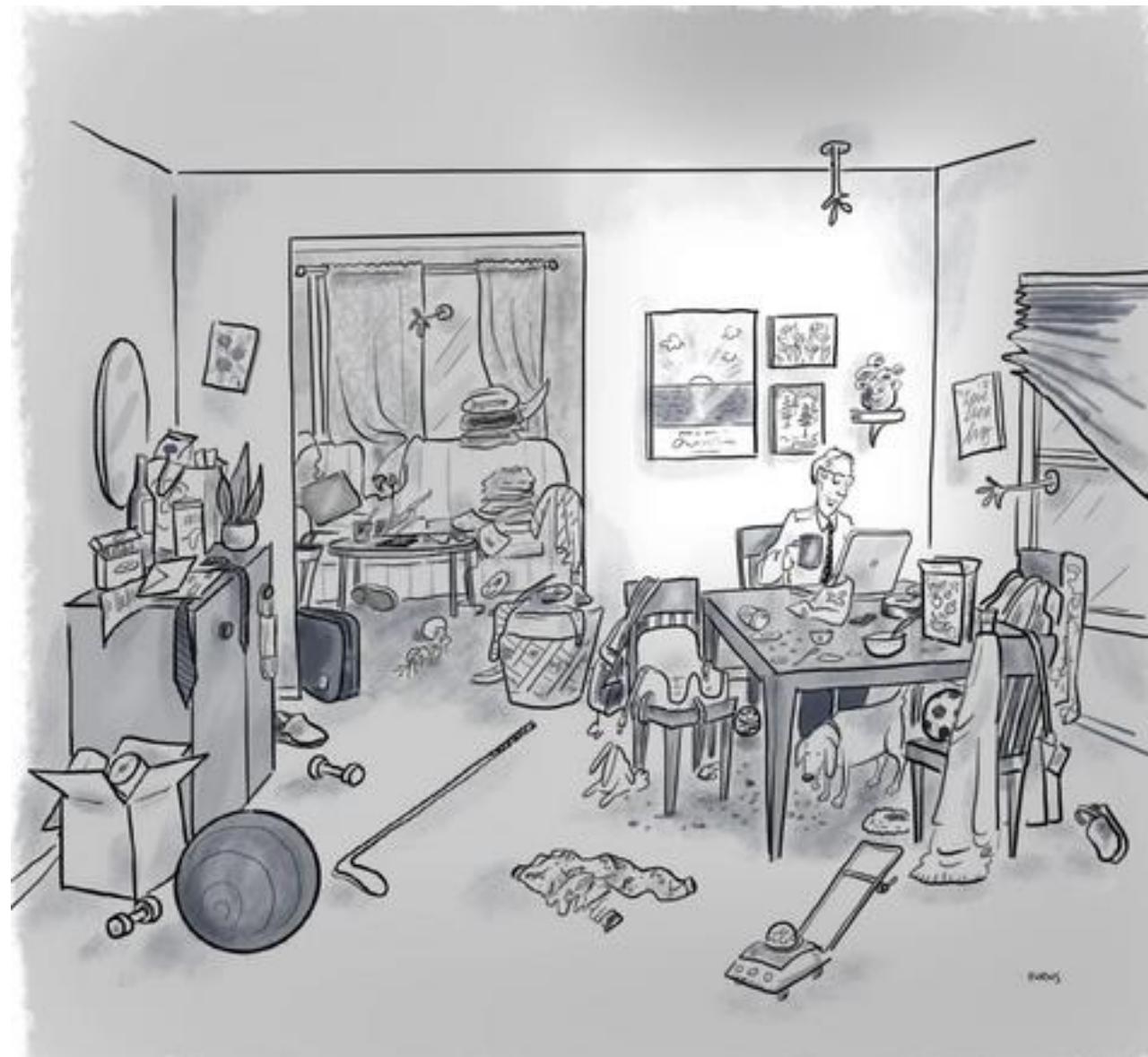


Source: U.S. Bureau of Labor Statistics

Income percentile

https://www.bloomberg.com/opinion/articles/2020-04-11/coronavirus-this-pandemic-will-lead-to-social-revolutions?sref=iF3fCXi9&utm_medium=social&utm_content=view&utm_campaign=socialflow-organic&cmpid%3D=socialflow-twitter-view&utm_source=twitter

Upper Middle Class Work From Home



What Did China Know and When?

China Pushes for Quiet Burials Amid Questioning Over Death Toll

Officials are trying to curb expressions of grief and control the narrative amid skepticism about the true size of the epidemic's toll.



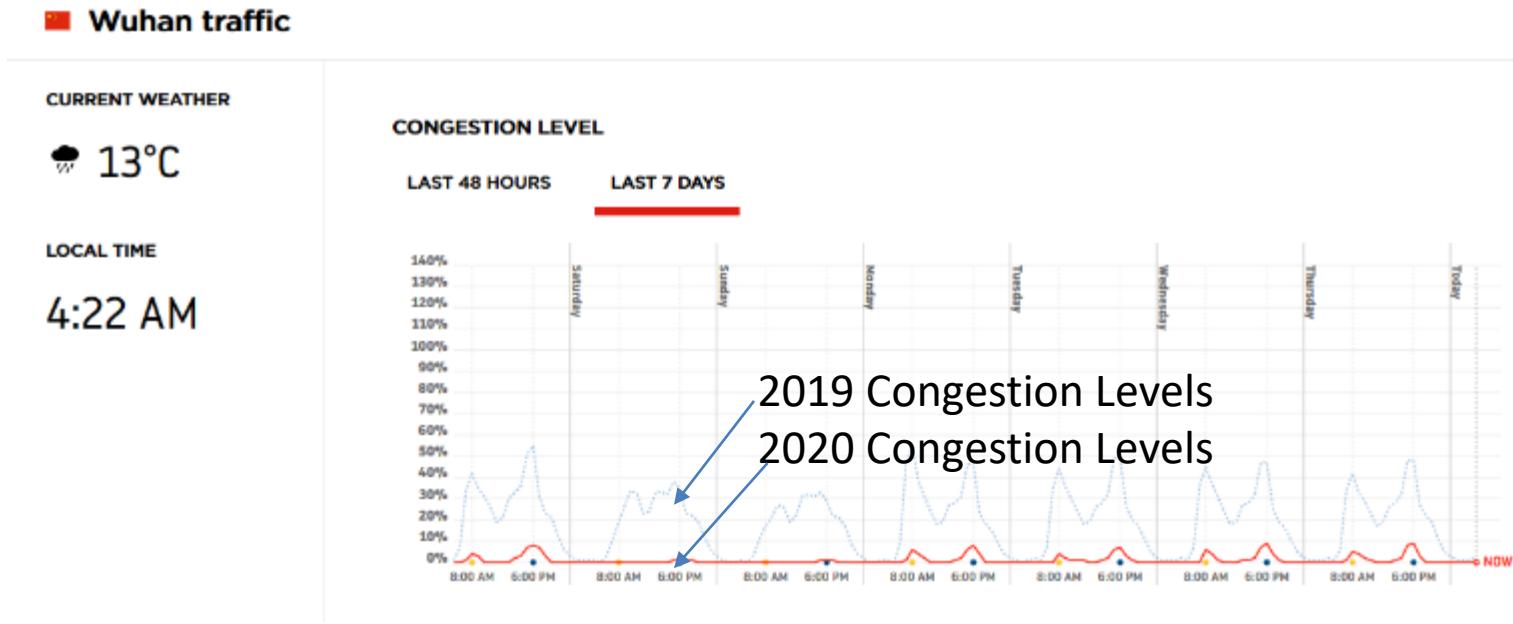
<https://www.nytimes.com/2020/04/03/world/asia/coronavirus-china-grief-deaths.html?referringSource=articleShare>

Wuhan Traffic Patterns

China Reports of No New Cases In a Week or so, but...

Is Wuhan Still on Lockdown? No, but...

Wuhan Traffic Patterns 27Mar-2Apr



“The US intelligence community has reportedly concluded that China intentionally misrepresented its coronavirus numbers”

Reuters reported on Sunday that almost a week had passed since a coronavirus case was reported in Wuhan, as new cases flatten across China. But some Wuhan residents have said they think government officials have not accurately counted the deaths.

https://www.tomtom.com/en_gb/traffic-index/wuhan-traffic/

https://news.yahoo.com/us-intelligence-community-reportedly-concluded-173955673.html?tsrc=daily_mail&uh_test=1_02 91

Wuhan Traffic Patterns 31May-6Jun

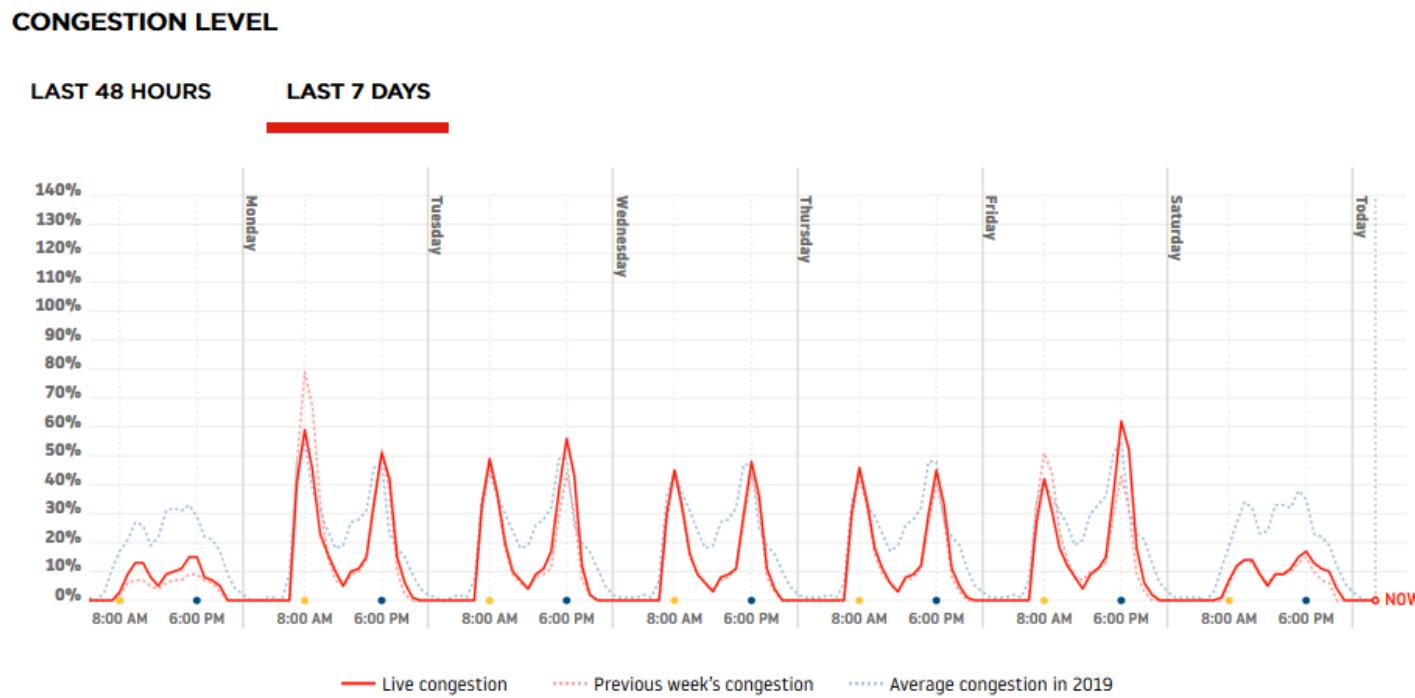
Wuhan traffic

CURRENT WEATHER



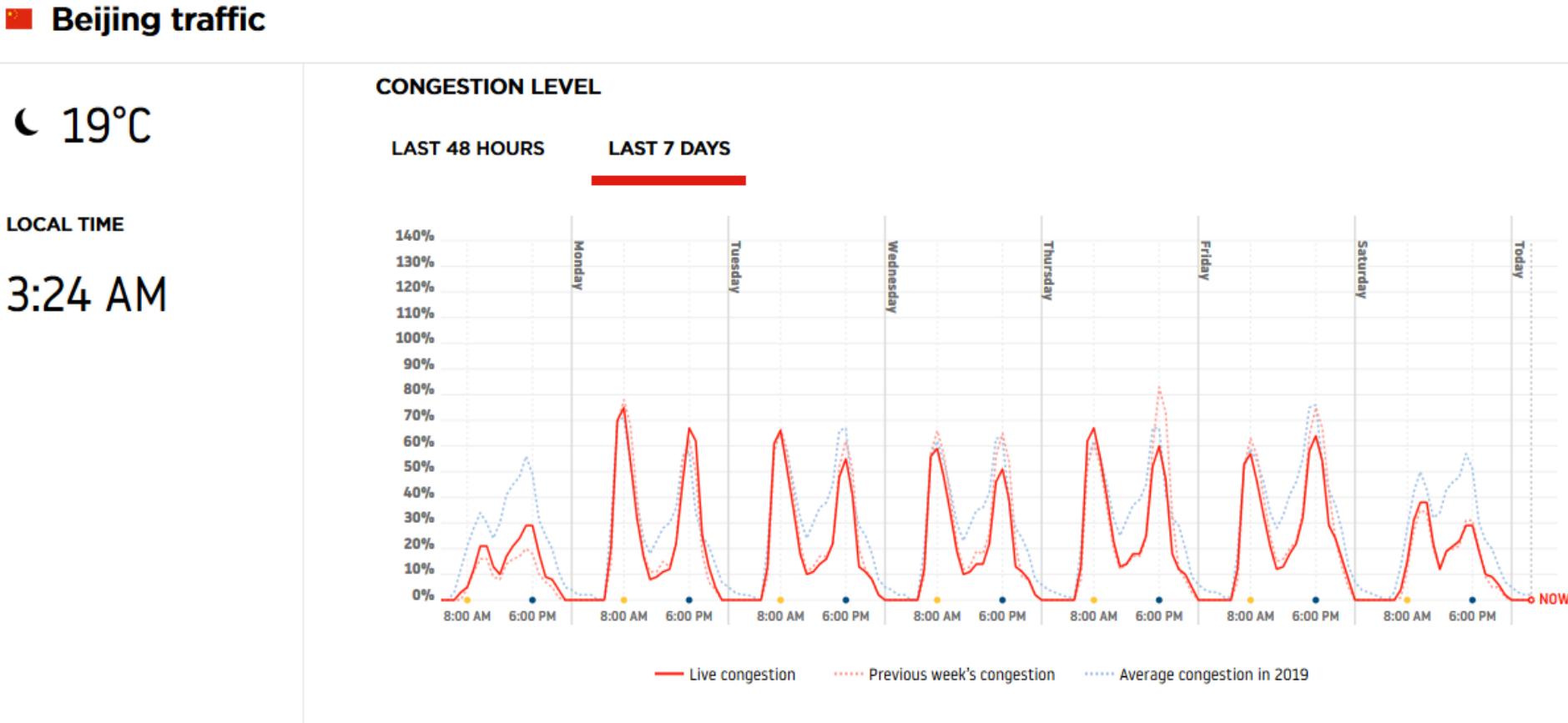
LOCAL TIME

3:20 AM



So it would appear that Wuhan traffic is normal during the week but lighter on weekends...

Beijing Traffic Patterns 31May-6Jun



https://www.tomtom.com/en_gb/traffic-index/beijing-traffic/

Beijing Traffic Is Down 13Jun2020

Going Towards Lockdown

Beijing traffic

CURRENT WEATHER

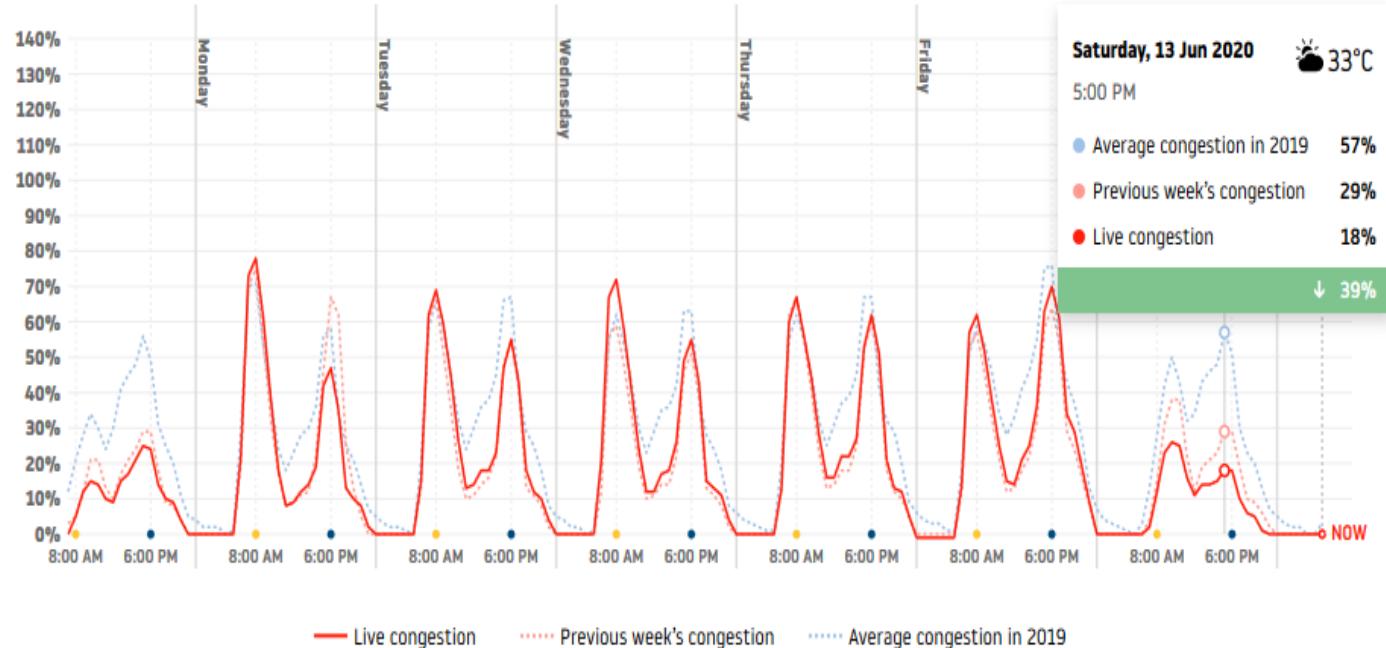
23°C

LOCAL TIME

6:30 AM

HOURLY CONGESTION LEVEL

Last 48 hours Last 7 days



https://www.tomtom.com/en_gb/traffic-index/beijing-traffic/

Beijing Traffic Is Down 22Jun2020

Going Towards Lockdown

Beijing traffic

CURRENT WEATHER

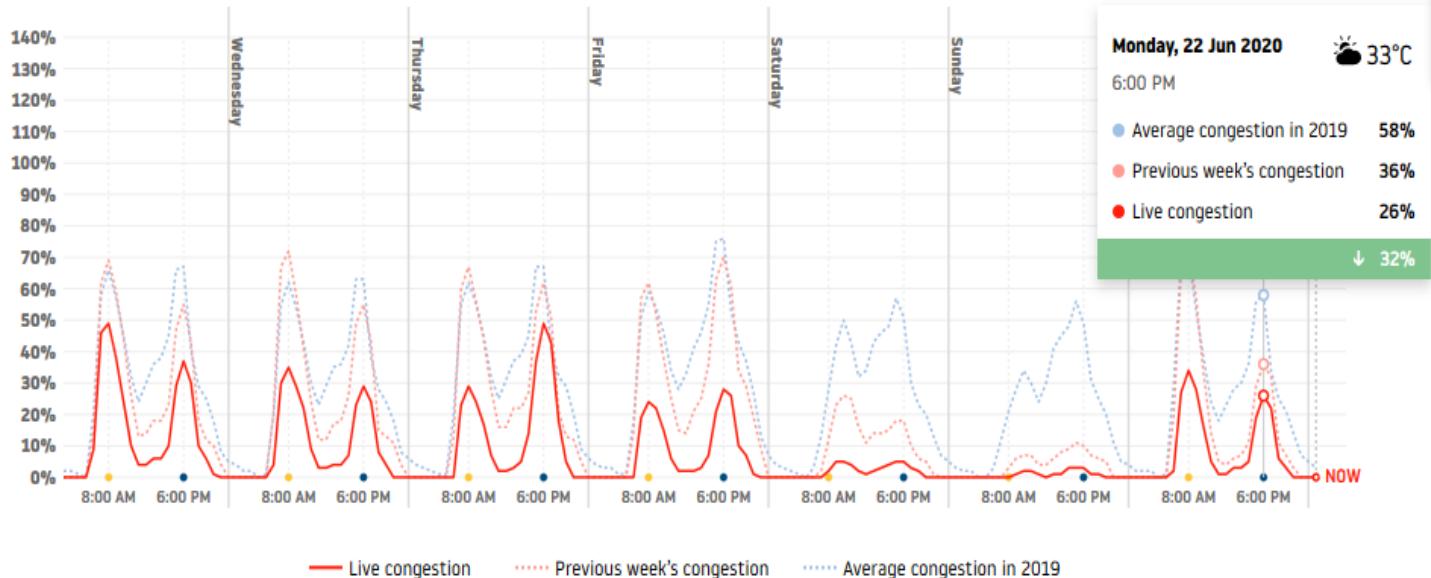
26°C

LOCAL TIME

1:48 AM

HOURLY CONGESTION LEVEL

Last 48 hours Last 7 days



https://www.tomtom.com/en_gb/traffic-index/beijing-traffic/

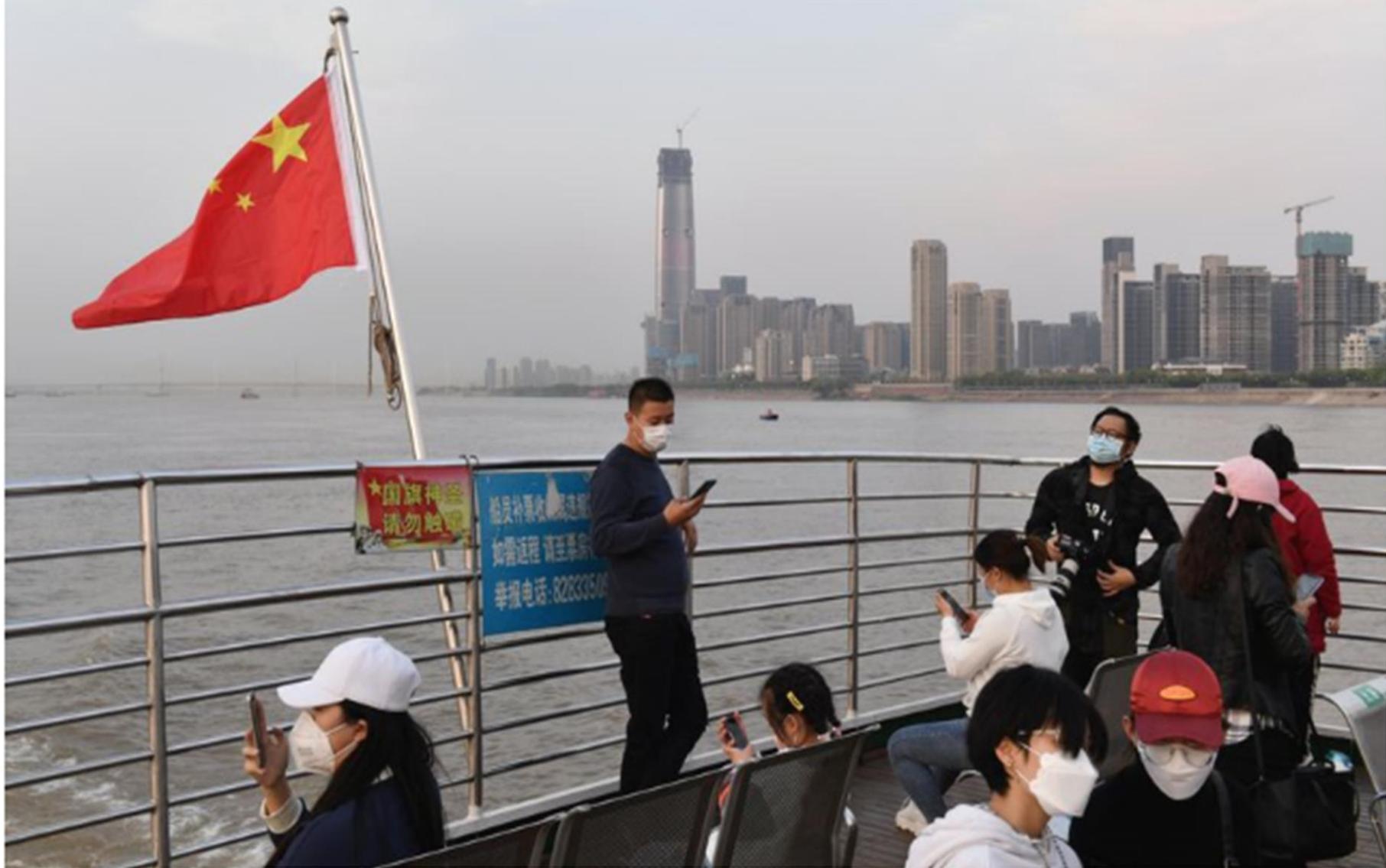
Chinese “Social Distancing”



Commuters wear protective masks as they line up for a bus in Beijing April 7.

PHOTO: KEVIN FRAYER/GETTY IMAGES

<https://www.wsj.com/articles/your-coronavirus-crib-sheet-11586536835>



Passengers wearing face masks ride a ferry on Yangtze River after travel restrictions to leave Wuhan were lifted April 8

PHOTO: STRINGER/REUTERS

SARS outbreak 2002-2003

Nov 16: First case
First known case^a of atypical pneumonia in Foshan City, Guangdong Province, China

Feb 11: Reported to WHO
China reports an outbreak of acute respiratory symptoms in Guangdong to WHO

China
300 cases
5 deaths

Mar 12: WHO global alert
WHO issues a global alert on "cases of severe respiratory illness [that] may spread to hospital staff"

Apr 2: >2000 cumulative cases worldwide

Apr 16: New virus identified
WHO scientists identify the pathogen as a novel coronavirus

Apr 28: >5000 cumulative cases worldwide

May 28: >8000 cumulative cases worldwide

Jul 5: Final status
WHO declares worldwide containment

China 5327 cases 349 deaths	Outside China 2769 cases 425 deaths
--	--

COVID-19 outbreak 2019-2020

Dec 8: First case
Onset of symptoms in first known case^a of pneumonia with unknown etiology in Wuhan City, Hubei Province, China

Dec 31: Reported to WHO
China reports a cluster of cases of pneumonia with unknown etiology in Wuhan to WHO

China
27 cases
0 deaths

Jan 7: New virus identified
Chinese scientists identify the pathogen as a novel coronavirus

Jan 30: WHO global alert
WHO declares a "public health emergency of international concern"

China
7736 confirmed cases
170 deaths

Outside China
82 confirmed cases
0 deaths

Feb 20: Current status
China
74 675 confirmed cases
2121 deaths

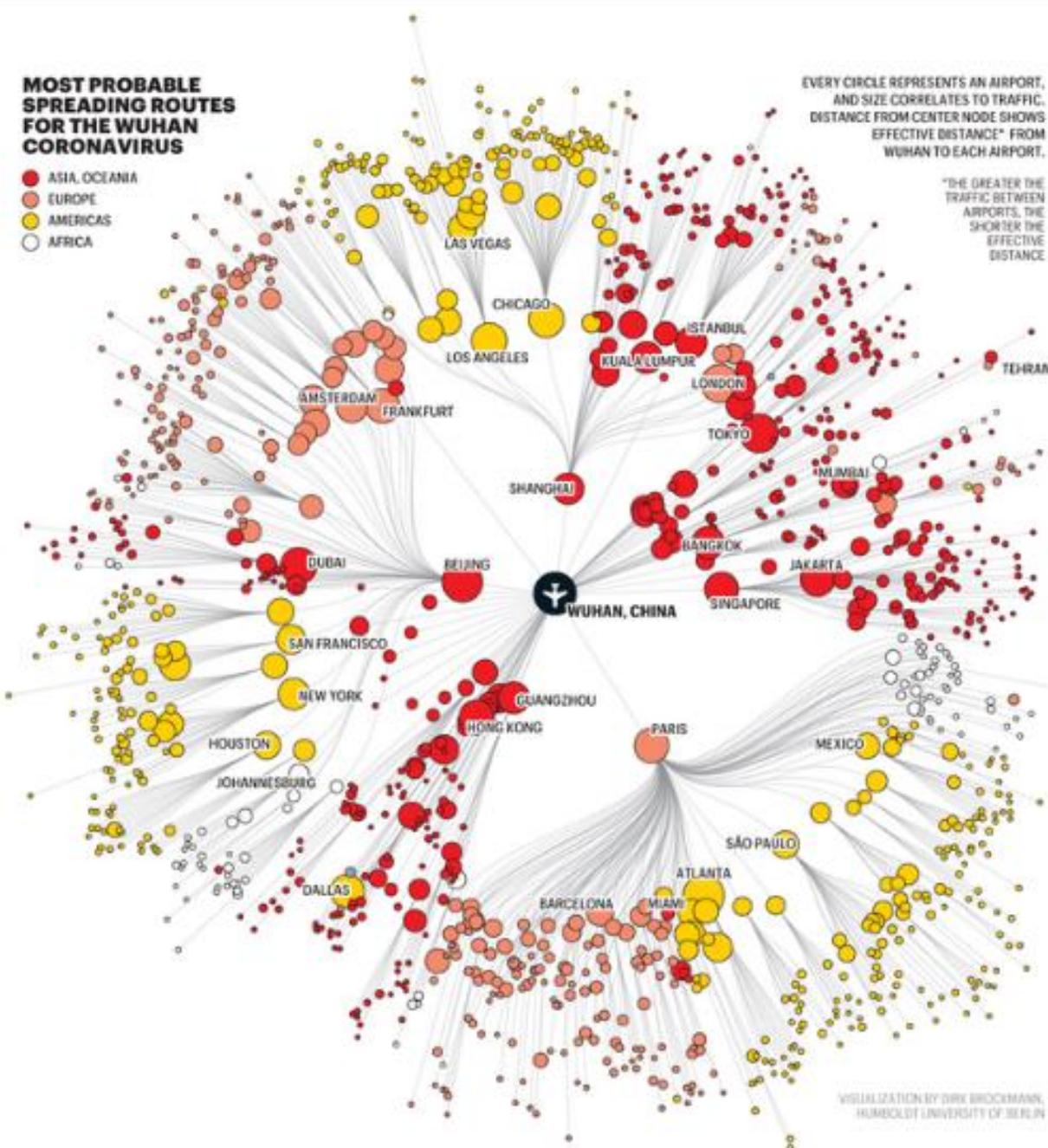
Outside China
1073 confirmed cases
8 deaths

Timeline Comparing the Severe Acute Respiratory Syndrome (SARS) and Coronavirus Disease 2019 (COVID-19) Outbreaks. The timeline of events for the SARS outbreak (left) from first case to final worldwide containment. The timeline of events for the COVID-19 outbreak (right) from the onset of symptoms for the first case on December 8, 2019, to status on February 20, 2020. Over the course of the first 2 months, more than 70 000 cases have been confirmed and many more are suspected. WHO indicates World Health Organization.

^aIdentified later retrospectively.

**MOST PROBABLE
SPREADING ROUTES
FOR THE WUHAN
CORONAVIRUS**

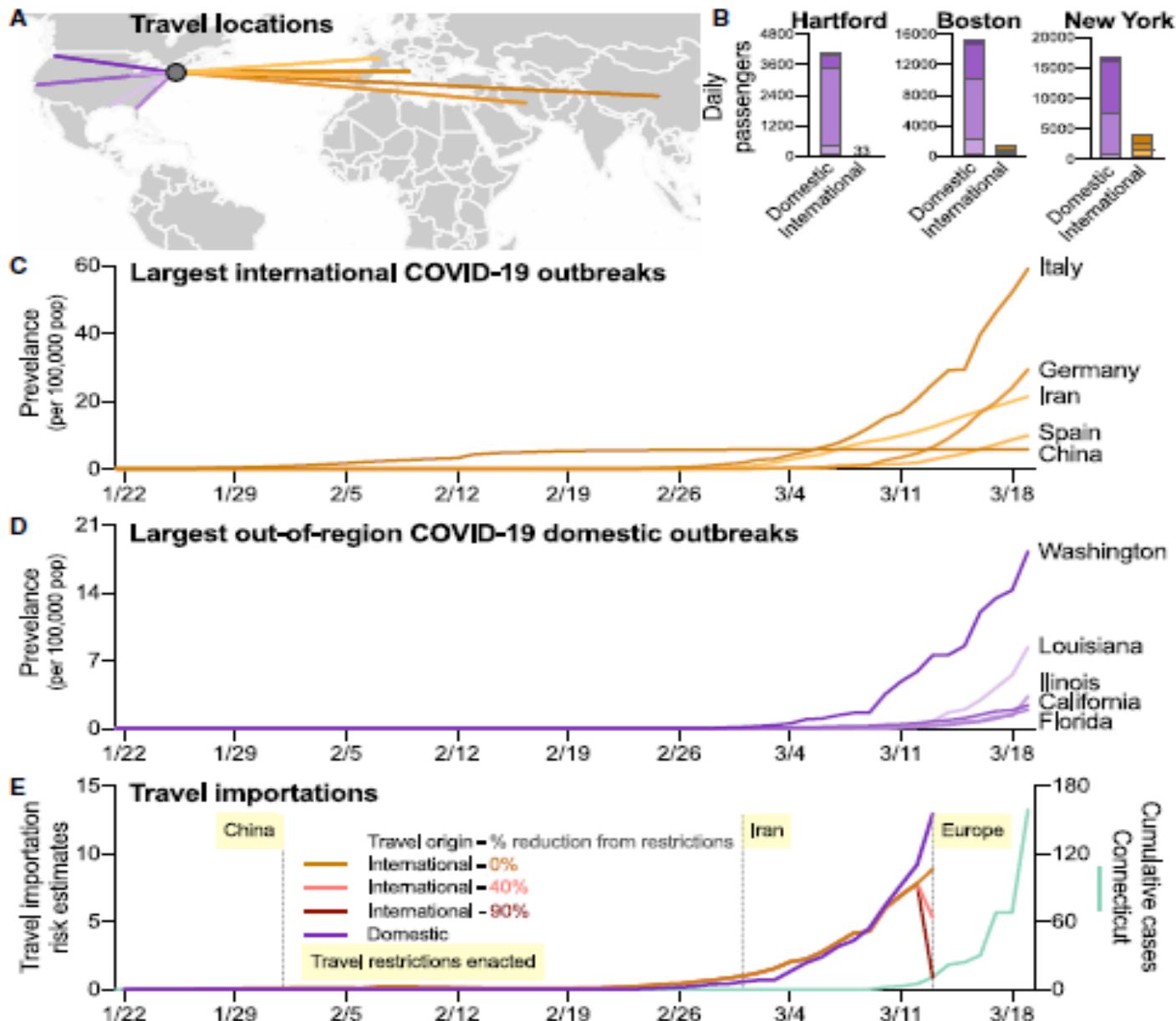
- ASIA, OCEANIA
- EUROPE
- AMERICAS
- AFRICA



How did it spread so far and so fast?

One possible theory is by airplane connections worldwide.

This shows how air connections are made from Wuhan to other airports internationally.



See notes on next slide.

Domestic Outbreaks and Travel Are a Rising Source of SARS-CoV-2 Importation Risk

- (A) To compare the relative risks of SARS-CoV-2 importations from domestic and international sources, we selected five international (China, Italy, Iran, Spain, and Germany) and out-of-region states (Washington, California, Florida, Illinois, and Louisiana) with the highest number of reported COVID-19 cases as of March 19, 2020.
- (B) We selected three international airports in the region that are commonly used by Connecticut residents: Hartford (BDL), Boston (BOS), and New York (JFK). We used data from January to March 2019 to estimate relative differences in daily air passenger volumes from the selected origins to the airport destinations. These daily estimates were then combined by either international or domestic travel.
- (C and D) The cumulative number of daily COVID-19 cases were divided by 100,000 population to calculate normalized disease prevalence for each international location (China, Italy, Iran, Spain, and Germany) (C). The cumulative number of daily COVID-19 cases were divided by 100,000 population to calculate normalized disease prevalence for each international location (Washington, California, Florida, Illinois, and Louisiana) (D).
- (E) We calculated importation risk by modeling the number of daily prevalent COVID-19 cases in each potential importation source and then estimating the number of infected travelers using the daily air travel volume from each location. The data, criteria, and analyses used to create this figure can be found in Data S3.

PRC Data is Suspect – But Needed Critically (NYTimes 2Apr)

C.I.A. Hunts for Authentic Virus Totals in China, Dismissing Government Tallys

Intelligence officials have told the White House for weeks that China has vastly understated the spread of the coronavirus and the damage the pandemic has done.



China has reported about six coronavirus cases per 100,000 people, well below the rates in Italy, Spain, the United States and elsewhere. CHINATOPIX, via Associated Press

 By Julian E. Barnes

April 2, 2020



阅读简体中文版 阅读繁體中文版

WASHINGTON — The C.I.A. has been warning the White House since at least early February that China has vastly understated its coronavirus infections and that its count could not be relied upon as the United States compiles predictive models to fight the virus, according to current and former intelligence officials.

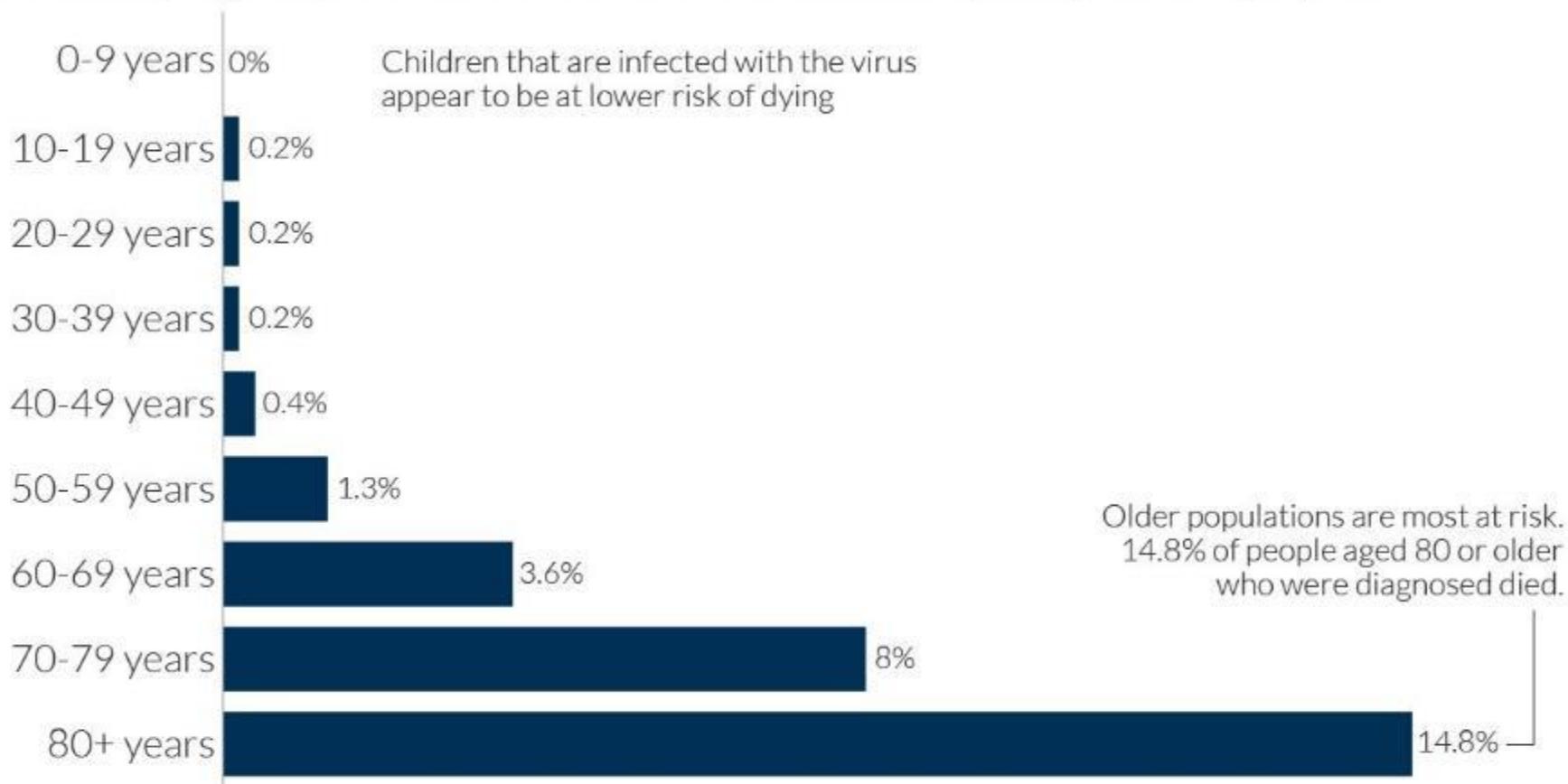
- Obtaining a more accurate count of the Chinese rate of infection and deaths from the virus has worldwide public health implications at a time of grave uncertainty over the virus, its speed of transmission and other fundamental questions.
- For American officials, the totals are critical to getting a better understanding of how Covid-19 will affect the United States in the months to come and of the effectiveness of countermeasures like social distancing, according to American intelligence agencies and White House officials.
- So far, to the frustration of both the White House and the intelligence community, the agencies have been unable to glean more accurate numbers through their collection efforts.

<https://www.nytimes.com/2020/04/02/us/politics/cia>

https://www.nytimes.com/2020/04/02/us/politics/cia-coronavirus-china.html?campaign_id=9&emc=edit_NN_p_20200403&instance_id=17311&nl=morning-briefing®i_id=91189262§ion=topNews&segment_id=23741&te=1&user_id=c03ebd2535967aea636faf6a3c7e5f1d

Coronavirus: early-stage case fatality rates by age-group in China

Case fatality rate (CFR) is calculated by dividing the total number of deaths from a disease by the number of confirmed cases. Data is based on early-stage analysis of the COVID-19 outbreak in China in the period up to February 11, 2020.



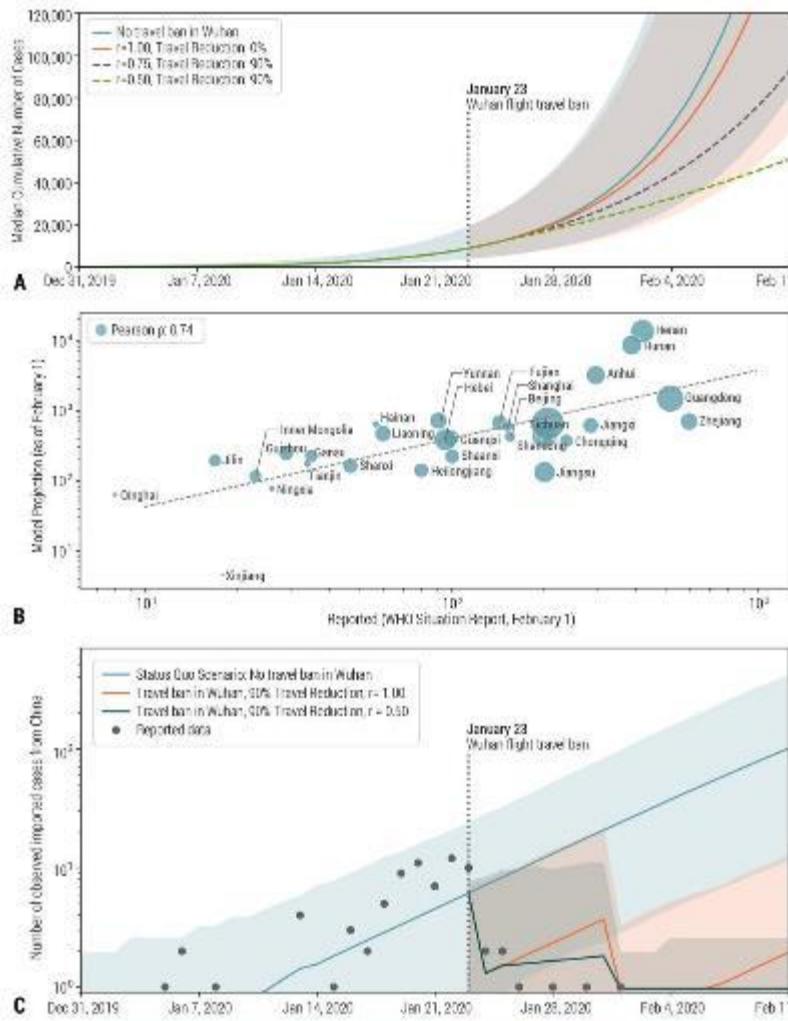
Data source: Novel Coronavirus Pneumonia Emergency Response Epidemiology Team. *Vital surveillances: the epidemiological characteristics of an outbreak of 2019 novel coronavirus diseases (COVID-19)—China, 2020*. China CDC Weekly.

OurWorldinData.org – Research and data to make progress against the world's largest problems.

Licensed under CC-BY by the authors.

<https://ourworldindata.org/coronavirus>

Effect of the Wuhan travel ban on the COVID-19 epidemic.



The model is calibrated based on internationally reported cases, and shows that at the start of the travel ban from Wuhan on 23 January 2020, most Chinese cities had already received many infected travelers.

The travel quarantine of Wuhan delayed the overall epidemic progression by only 3 to 5 days in Mainland China, but has a more marked effect at the international scale, where case importations were reduced by nearly 80% until mid February.

China Provided the Blueprint for the Vaccine

The screenshot shows the CBSN Originals 60 Minutes website. At the top, there's a navigation bar with links for 'EPISODES', 'OVERTIME', 'TOPICS', 'THE TEAM', and 'SUBSCRIBE', along with social media icons for Facebook, Twitter, LinkedIn, YouTube, and Email. A blue banner at the top features the 'cologuard' logo. The main headline reads: 'IN CLINICAL TRIALS AND LABORATORIES, THE HUNT IS ON TO FIND VACCINES AND DRUGS TO TREAT, PREVENT NOVEL CORONAVIRUS'. Below the headline is a subtitle: 'The rapid spread of the COVID-19 virus has prompted medical researchers worldwide to go on the offense and look for vaccines and treatments. Bill Whitaker reports on some of the leading efforts.' On the left, there's a date '2020 MAR 22' and a 'CORRESPONDENT BILL WHITAKER'. Below the date is a large black video thumbnail with a small circular loading icon in the center. To the right of the video thumbnail is a sidebar titled 'RECENT SEGMENTS' containing five items, each with a thumbnail image and a caption:

- *The economic emergency created by coronavirus*
- *Hungary paying citizens to have babies*
- *The race to treat or prevent novel coronavirus*
- *Will driverless trucks soon share our roads?*
- *Inside a U.S. coronavirus containment zone*

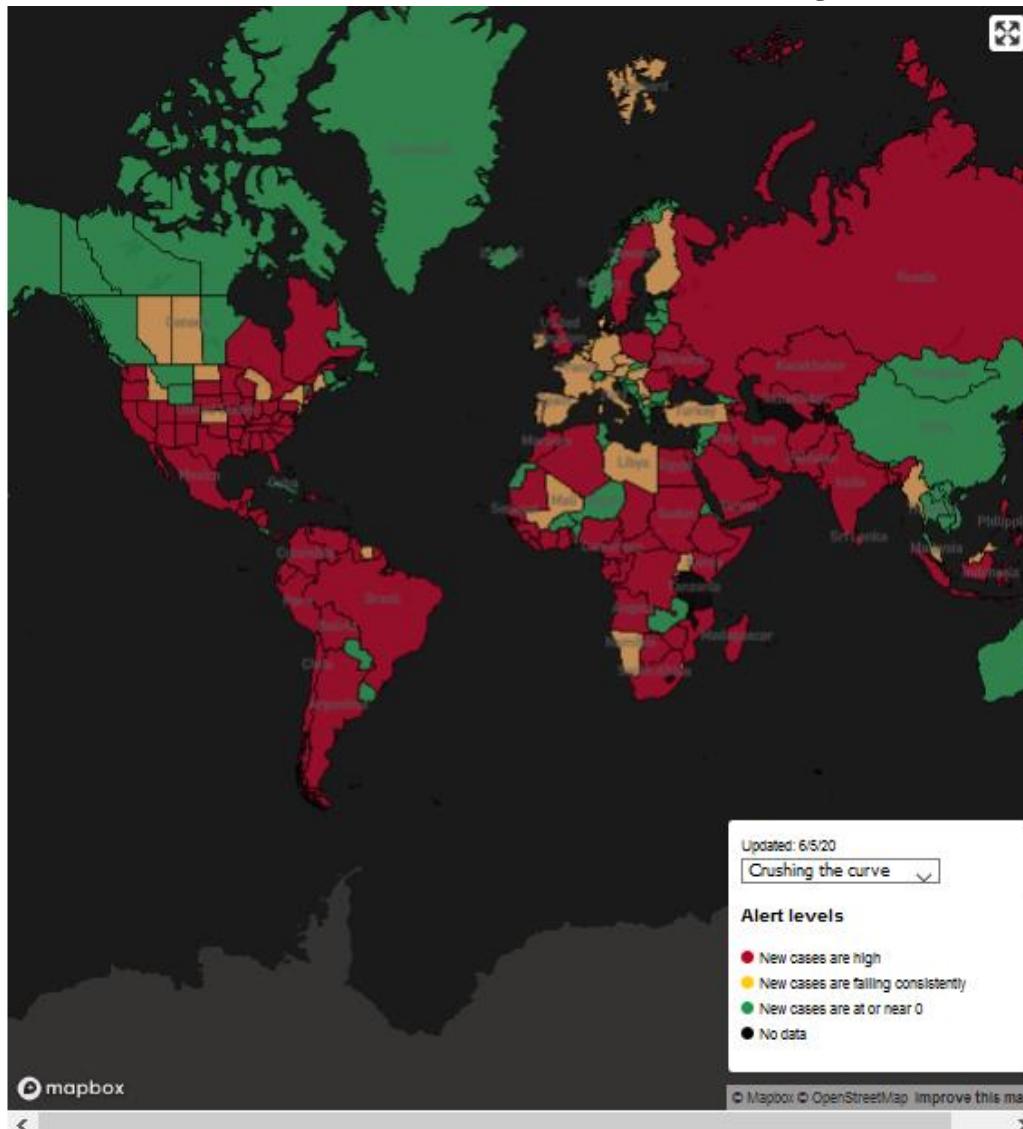
At the bottom of the page, there's a blue banner for 'cologuard' with the text 'the risk of COLORECTAL CANCER'.

<https://www.cbsnews.com/60-minutes/>

Who's to Blame? China? CDC? WHO? Trump?

- There's more than enough blame to go around.
- China has backdated the start in Wuhan to early Nov. They had previously identified 31Dec as the first patient. The Economist also reports a correlation between higher numbers from China aligned with Beijing saying they wanted no under-reporting. 6 weeks lost.
- WHO in 2003 took a month to issue a worldwide alert for SARS. They took a month after China alerted them. They took a month this time as well. I don't know what the process is, but wrt to alerts from China, I'd think WHO would respond faster. 1 month lost.
- Trumps lack of responsiveness and downplaying - well documented and will haunt him in more Dem ads as the election moves forward. 1 month lost.
- Trump is deflecting back to WHO as a means of saving some face.
- The NYTimes is reporting that genome studies reveal that the strain that hit NYC came from China but via Europe as the crow flies, by identifying mutations that have occurred.
- **So. More than enough bungling in many areas of governance.**

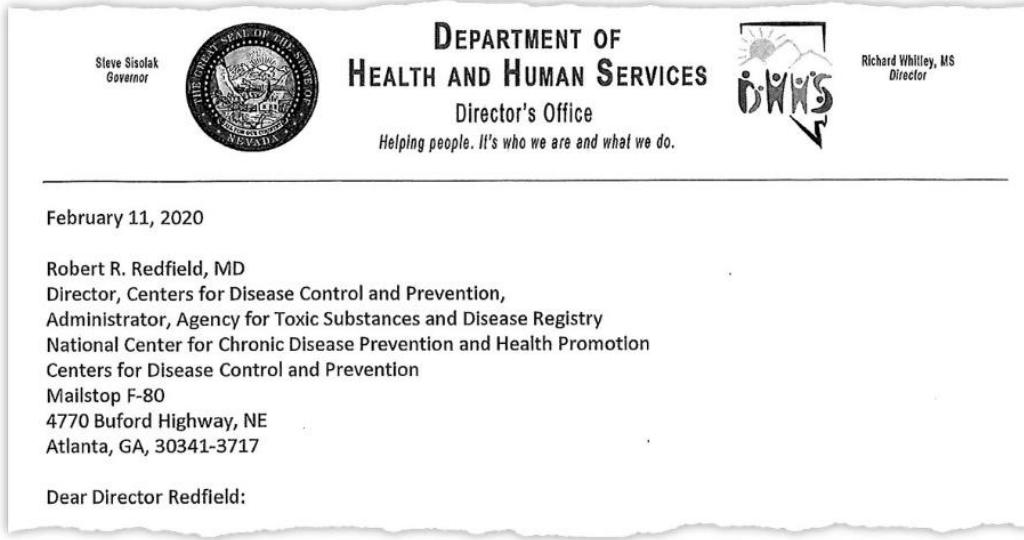
Worldwide Case Analysis Map



Mistakes by the CDC

- It failed to provide timely counts of infections and deaths, hindered by aging technology and a fractured public health reporting system.
- Decades-old notification system delivered information collected at the airports riddled with duplicative records, bad phone numbers and incomplete addresses.
- It hesitated in absorbing the lessons of other countries, including the perils of silent carriers spreading the infection.
- The agency struggled to calibrate its own imperative to be cautious and the need to move fast as the coronavirus ravaged the country, according to a review of thousands of emails and interviews with more than 100 state and federal officials, public health experts, C.D.C. employees and medical workers.

Administration Infighting Exacerbated Bad Comms



A letter sent by Nevada's top health official to the C.D.C. director, expressing concern about communication.

CDC director, Dr. Robert R. Redfield, faced unprecedented challenges from President Trump, who repeatedly wished away the pandemic. His efforts to seize the spotlight from the public health agency reflected the broader patterns of his erratic presidency: public condemnations on Twitter, a tendency to dismiss findings from scientists, inconsistent policy or decision-making and a suspicion that the “deep state” inside the government is working to force him out of office.

“Here is an agency that has been waiting its entire existence for this moment,” said Dr. Peter Lurie, a former associate commissioner at the FDA who for years worked closely with the C.D.C. “And then they flub it.”

<https://www.nytimes.com/2020/06/03/us/cdc-coronavirus.html>

CDC - Fumble After Fumble

- The C.D.C. quickly developed a successful test in January designed to be highly precise, but it was more complicated to use and turned out to be no better than versions produced overseas.
- In manufacturing test kits to send to the states, the C.D.C. contaminated many of them through sloppy lab practices.
- In part because of capacity issues, the agency typically did not recommend testing people without symptoms — even though Chinese doctors were reporting that people could spread the virus without ever feeling ill.
- “If we were able to test early, we would have recognized earlier” the scale of the outbreak, said Dr. Jeffrey Duchin, the chief health officer in King County, Wash. “We would have been able to put prevention measures in place earlier and had fewer cases.”
- The C.D.C. drew criticism after media reports disclosed that in tracking how many Americans had been tested, the agency had breached standard practice by combining data from antibody tests, which can indicate past infections, with diagnostic tests.

National Security is a Complex System

- You don't prepare for these challenges by buying additional aircraft carriers.
- Everything is normal. Then it's not. The world changes. In some cases, it breaks. What you thought was strong becomes brittle. What you thought was stable suddenly dissolves.
- You prepare by hedging: making multiple small investments oriented to prevent, mitigate, and manage the consequences of system failure.
- You buy down future risk and increase the likelihood you can stabilize a collapsing system.
- You stockpile medical equipment.
- You ensure sufficient medical [capacity to scale up](#) and meet a future crisis.
- You build in continuity of the economy and government procedures at the local, state, and federal levels, and test them periodically against a range of possible system collapse events that eclipse a narrow focus on great-power competition and nuclear exchange.

Complex, But Pres Bush Put a Plan in Place in 2005



Interim Pre-pandemic Planning Guidance: Community Strategy for Pandemic Influenza Mitigation in the United States—

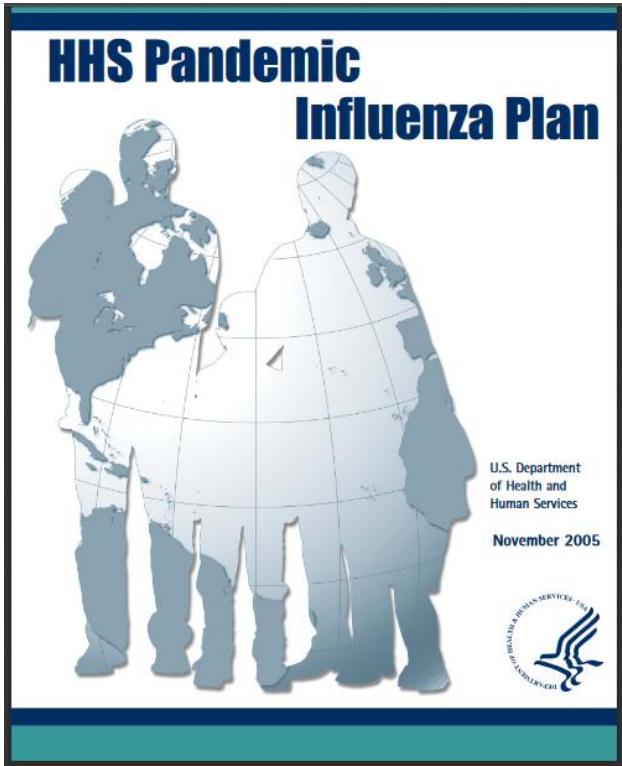
Early, Targeted, Layered Use of Nonpharmaceutical Interventions



https://www.cdc.gov/flu/pandemic-resources/pdf/community_mitigation-sm.pdf



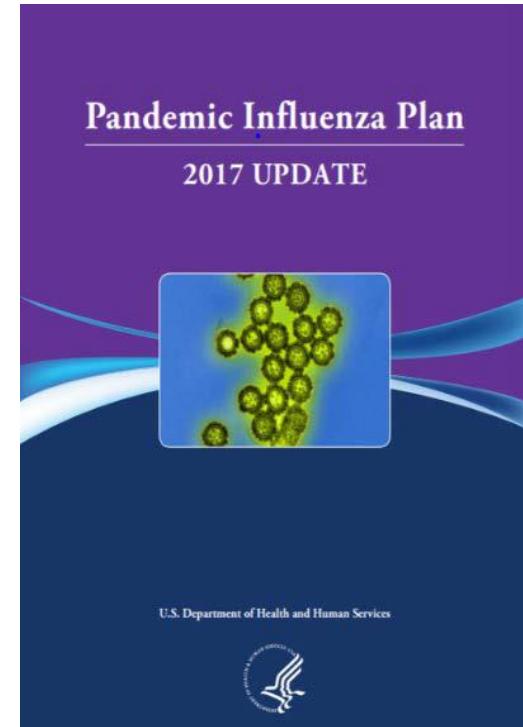
HHS Developed a Plan in 2005 As Well



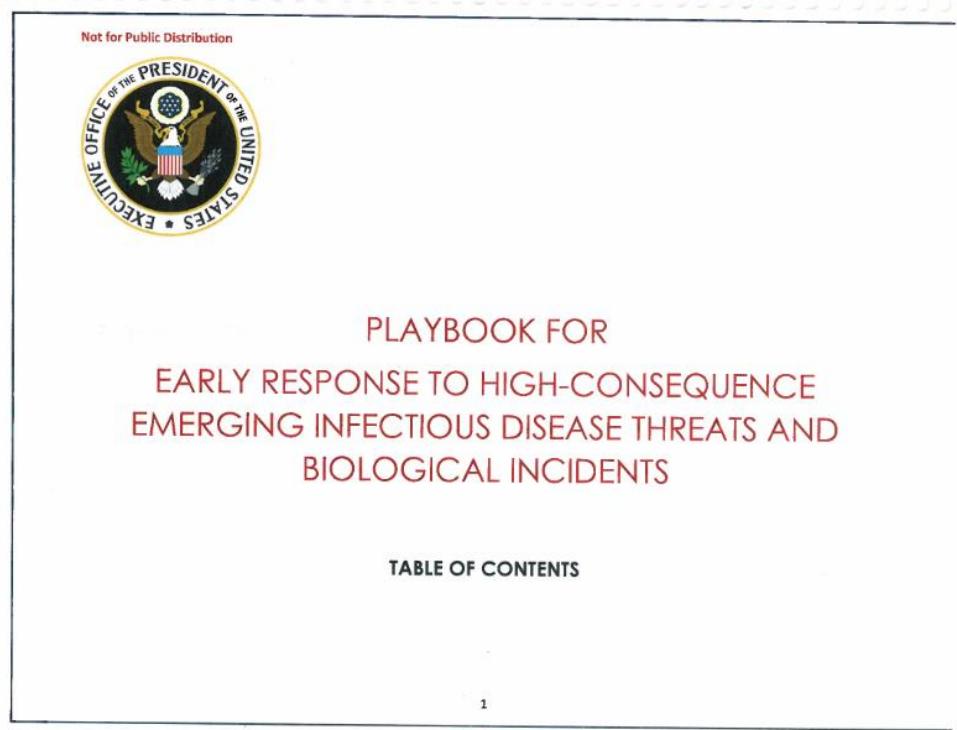
"This HHS Pandemic Influenza Plan (396 pp) provides a blueprint from which to prepare for the challenges that lie ahead of us. Being prepared and responding effectively involves everyone: individuals, communities, businesses, States, Federal agencies, international countries and organizations. Here at home, we can use this Plan to create a seamless preparedness network where we are all working together for the benefit of the American people."

Updated as 2017 HHS Pandemic Influenza Plan

- Surveillance, Epidemiology, and Laboratory Activities
- Community Mitigation Measures
- Medical Countermeasures: Diagnostic Devices, Vaccines, Therapeutics, and Respiratory Devices
- Health Care System Preparedness and Response Activities
- Communications and Public Outreach
- Scientific Infrastructure and Preparedness
- Domestic and International Response Policy, Incident Management and Global Partnerships and Capacity Building



Updated (2016) Playbook Left by Obama



"Is there sufficient personal protective equipment for healthcare workers who are providing medical care?" the playbook instructs its readers, as one early decision that officials should address when facing a potential pandemic."

"If YES: What are the triggers to signal exhaustion of supplies? Are additional supplies available?"

"If NO: Should the Strategic National Stockpile release PPE to states?"

2016 Obama Plan TOC

Not for Public Distribution

CHAPTER I – EXECUTIVE SUMMARY

I.	PLAYBOOK PURPOSE.....	PAGE 04
II.	POLICY COORDINATION AND EXERCISING THE PLAYBOOK.....	PAGE 04
III.	RISK ASSESSMENT DASHBOARD.....	PAGE 05
	A. INTERNATIONAL.....	PAGE 06
	B. DOMESTIC.....	PAGE 07
IV.	SAMPLE PATHOGENS INVOLVED.....	PAGE 08
V.	OTHER KEY CONSIDERATIONS.....	PAGE 11

CHAPTER II – PLAYBOOK; DECISION-MAKING RUBRICS

I.	INTERNATIONAL.....	PAGE 14
II.	DOMESTIC.....	PAGE 31

CHAPTER III – APPENDIX MATERIAL

I.	DECLARATION AND MITIGATION OPTIONS.....	PAGE 42
II.	KEY DEPARTMENTS AND AGENCIES.....	PAGE 46
	A. INTERNATIONAL.....	PAGE 46
	B. DOMESTIC.....	PAGE 52
III.	SAMPLE EXERCISES.....	PAGE 62
IV.	COMMUNICATIONS.....	PAGE 67
V.	CONCEPT OF OPERATIONS FOR DOMESTIC RESPONSE.....	PAGE 68

U.S. CDC Staff in China Was Part of G.W. Bush's Plan

- As of FY2011
 - Funding – Approx. \$19 million per year
 - Staffing – 13 US personnel partnered with 40 local nationals.
- Goal - The U.S. and China build capacity to detect and respond to emerging and re-emerging infectious diseases through these programs.
- China's reaction to the 2009 influenza pandemic demonstrated great improvement in rapid response to prevent, identify, and control influenza.
- The CDC team was housed at U.S. Embassy facilities. No American CDC staffer besides Quick was embedded with China's disease control agency, the sources said.

We Knew Better - Period

Exclusive: U.S. axed CDC expert job in China months before virus outbreak

Posted by Reuters | Mar 24, 2020

By Marisa Taylor

WASHINGTON (Reuters) – Several months before the coronavirus pandemic began, the Trump administration eliminated a key American public health position in Beijing intended to help detect disease outbreaks in China, Reuters has learned.

The American disease expert, a medical epidemiologist embedded in China's disease control agency, left her post in July, according to four sources with knowledge of the issue. The first cases of the new coronavirus may have emerged as early as November, and as cases exploded, the Trump administration in February chastised China for censoring information about the outbreak and keeping U.S. experts from entering the country to help.

"If someone had been there, public health officials and governments across the world could have moved much faster."

Bao-Ping Zhu, a Chinese American who worked there.

WAPO Reports POTUS Was Informed Late Last Year

- Trump says WHO didn't share early information about Covid-19. A new report shows that's not the case.
- Report: Americans At World Health Organization Told Trump Administration About Coronavirus 'Late Last Year'
- Reports abound of Israel and NATO being warned by the US as far back as Nov. This seems to be widely circulated by RT.

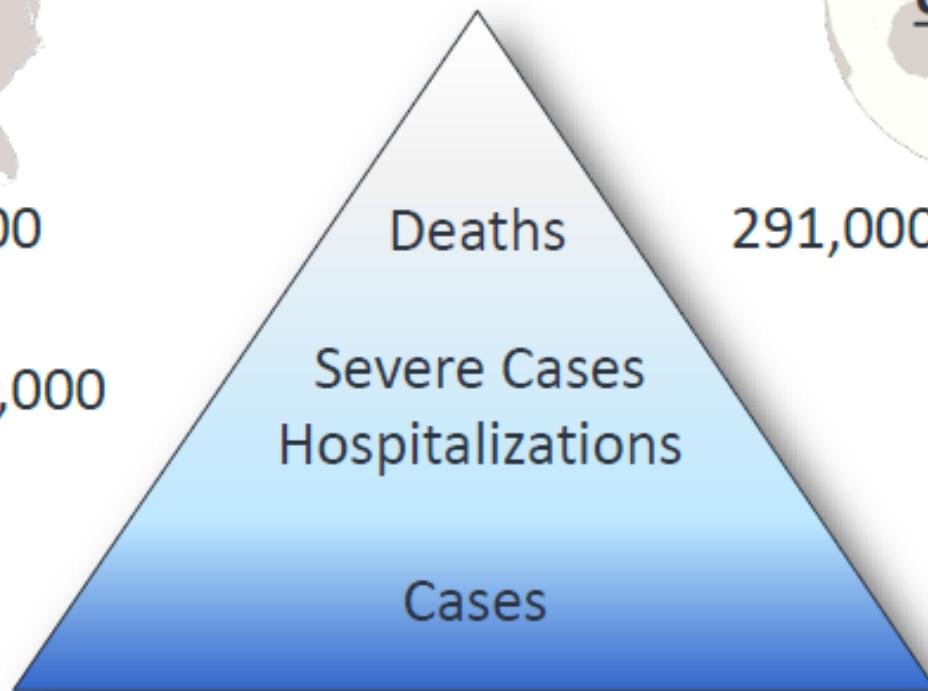


United States

12,000 – 56,000

140,000 – 710,000

9.2M – 35.6M



Global

291,000 – 646,000

3M to 5M

1.0 B

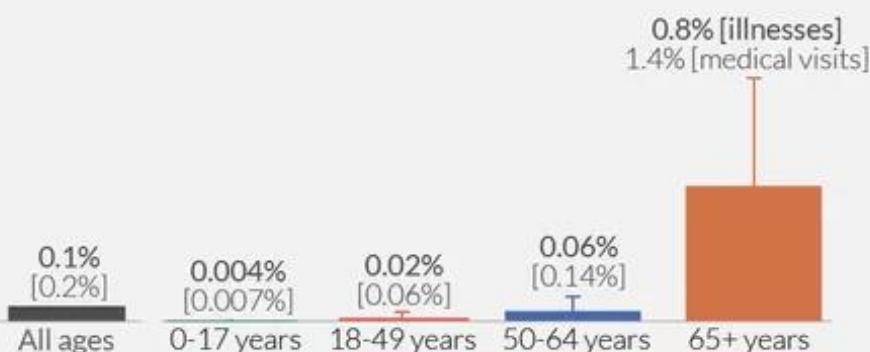
Case fatality rates: COVID-19 vs. US Seasonal Flu

Case fatality rate (CFR) is specific to a location and time. It is calculated by dividing the total number of deaths from a disease by the number of confirmed cases.

Seasonal Flu

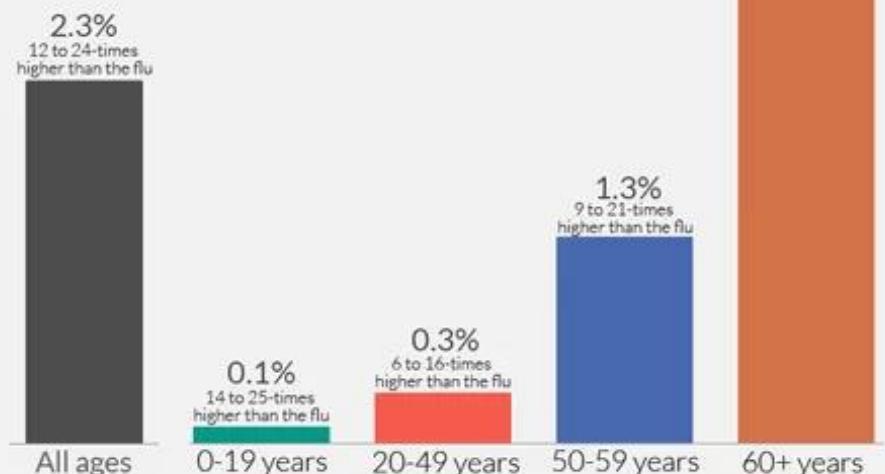
Case fatality rates for the influenza season 2018-19 in the USA.

Symptomatic cases are calculated based on models which aim to account for underreporting – figures based on medical visits are therefore also shown in square brackets, which may be a closer comparison to COVID-19 case fatality rates.



COVID-19

Case fatality rates for the COVID-19 outbreak in China, for the period up to February 11, 2020.



Data: Novel Coronavirus Pneumonia Emergency Response Epidemiology Team. Vital surveillances: the epidemiological characteristics of an outbreak of 2019 novel coronavirus diseases (COVID-19)—China, 2020. China CDC Weekly. US Influenza data is sourced from the US Centers for Disease Control and Prevention (CDC).

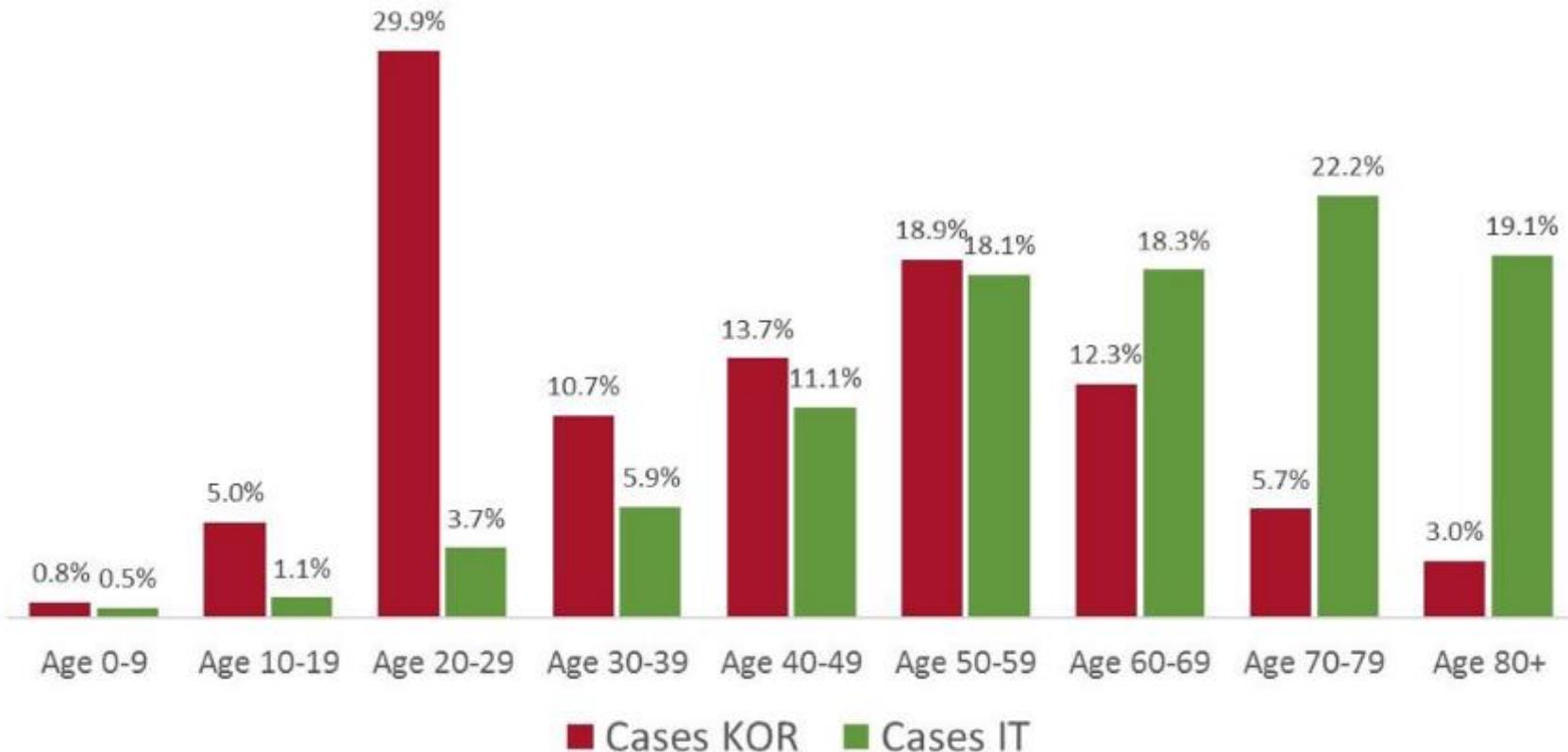
OurWorldInData.org - Research and data to make progress against the world's largest problems.

Licensed under CC-BY by the authors Hannah Ritchie and Max Roser.

Distribution By Age Cohort

South Korea and Italy

Coronavirus cases (%) in South Korea and Italy by age groups

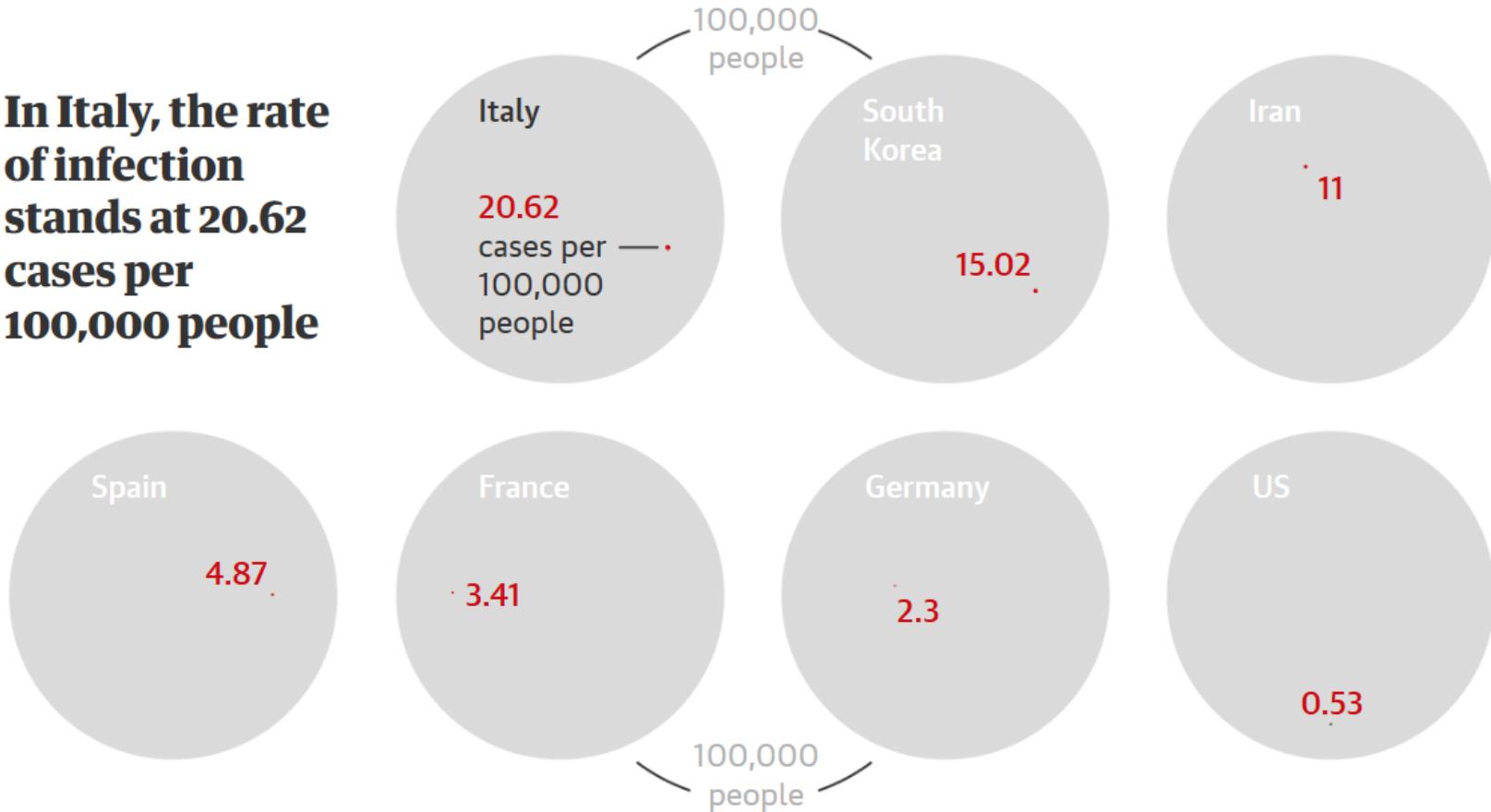


Young people are the carriers if they are asymptomatic!

US Infection Rate Compared

(Hint – it's still going to go way up)

In Italy, the rate of infection stands at 20.62 cases per 100,000 people

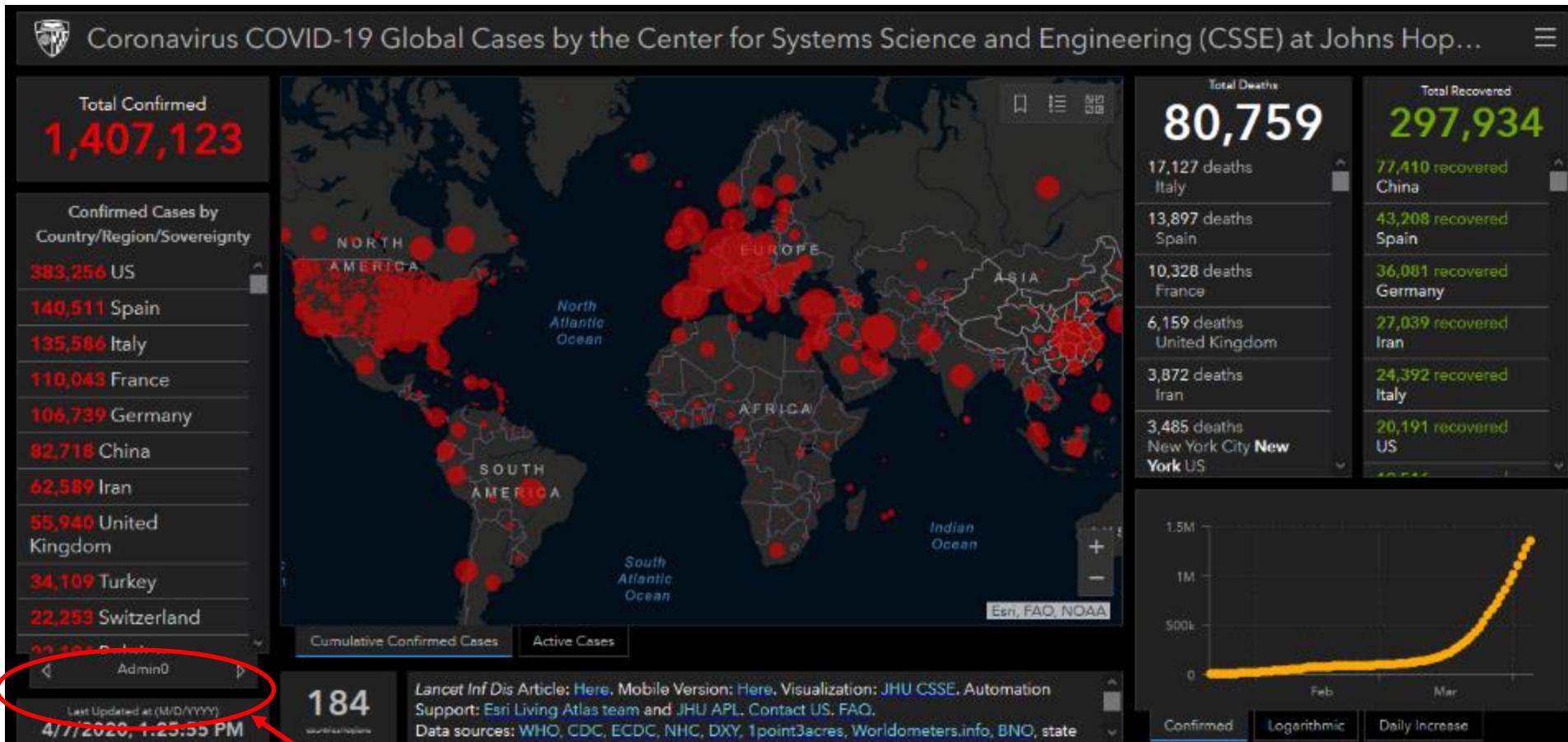


Source: Johns Hopkins University Center for Systems Science and Engineering, World Bank. Data as of 12:59pm UTC, 11 March

Johns Hopkins Case Map

22Jun - > 8,900,000 Cases, Over 468k Dead

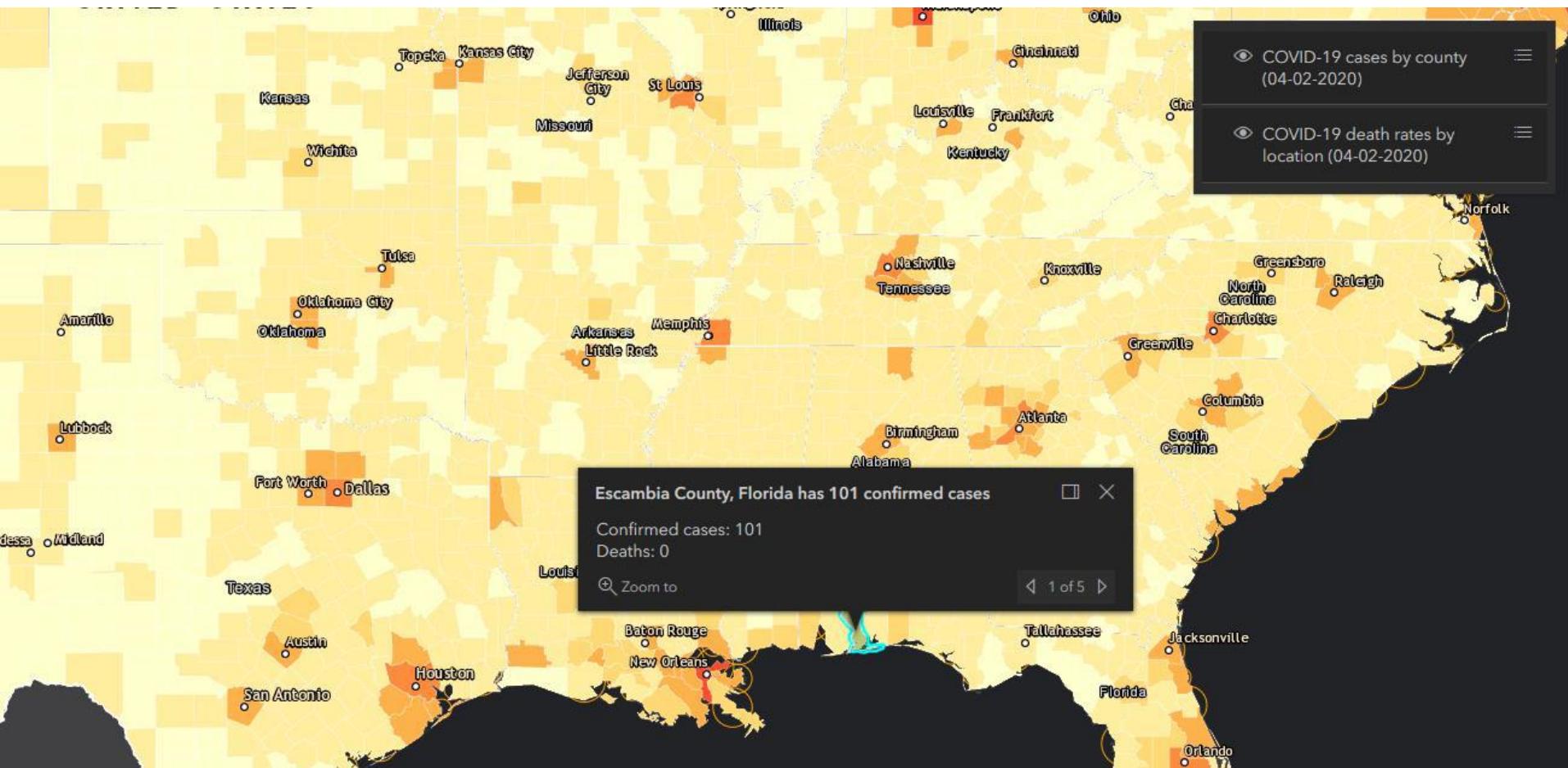
US Cases > 2,2800,000 & > 120k Dead



Admin 0 – Country
Admin 1 – State
Admin 2 - County

<https://coronavirus.jhu.edu/map.html>

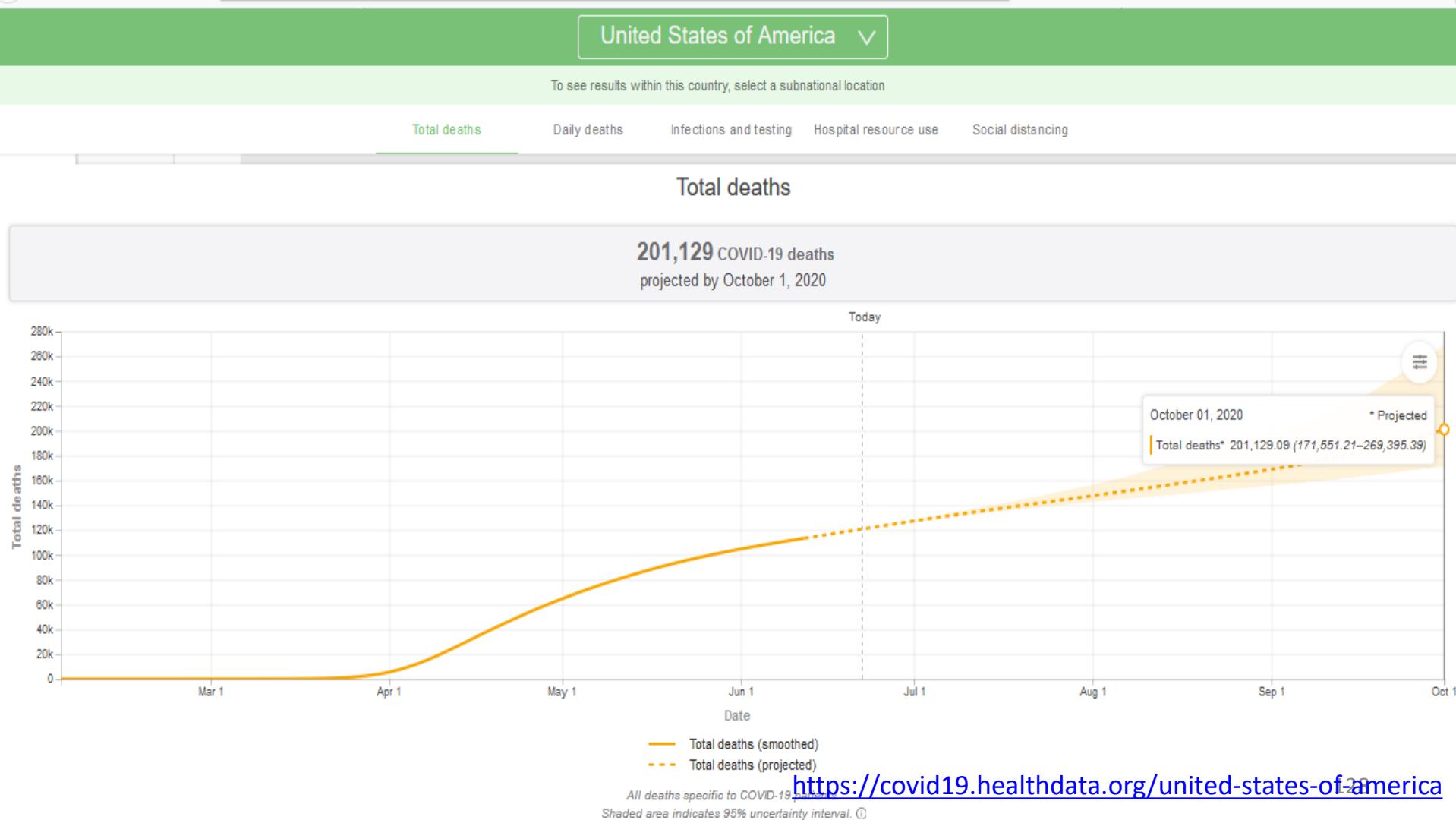
Zoom In and Right Click For Details



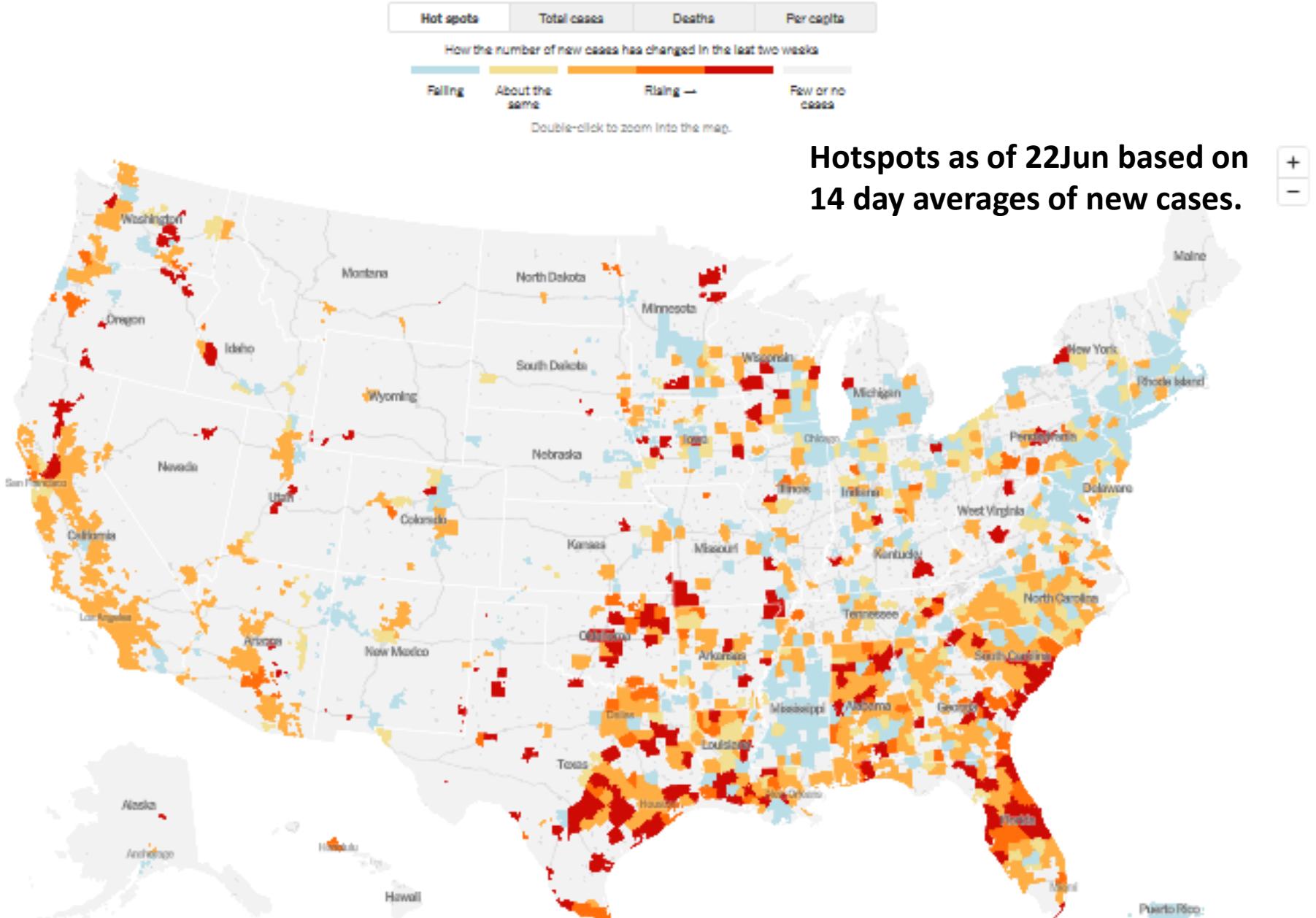
https://covid19viz.azurewebsites.net/?fbclid=IwAR2X0IHU93-m6P6Z_6fk50BSfvTzdIPbImcOgCWck6GTYoO09897jvFB8Z4

New US Mortality Projections

Between 170k-270k by 1Oct

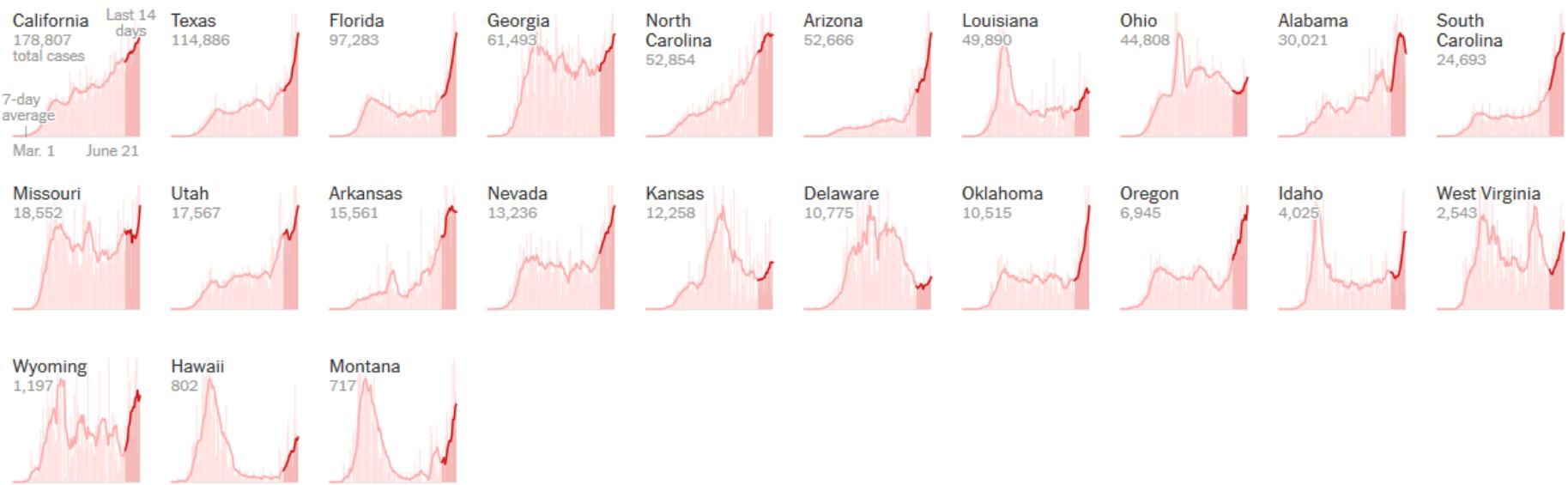


Hot spots in the United States



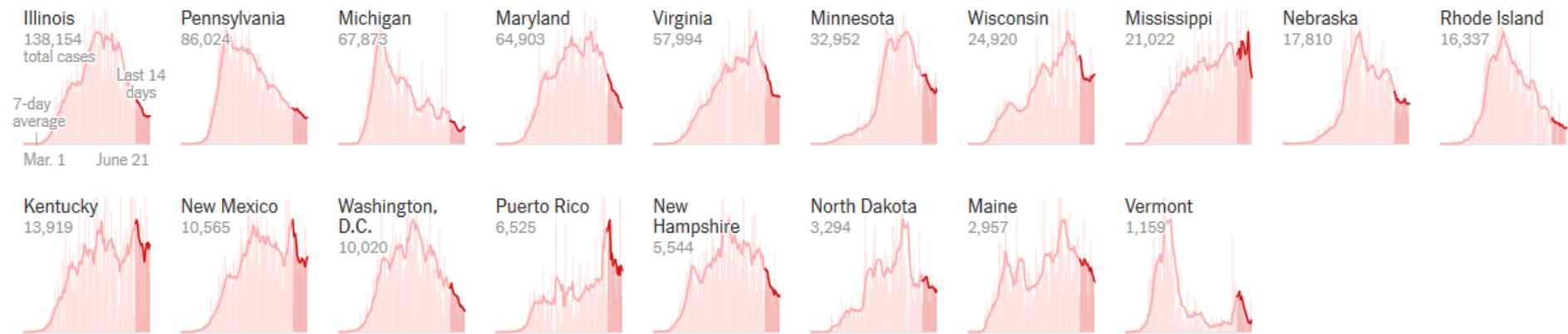
<https://www.nytimes.com/interactive/2020/us/coronavirus-us-cases.html?action=click&module=RelatedLinks&pgtype=Article>

Where New Cases Are Increasing as of 22Jun



<https://www.nytimes.com/interactive/2020/us/coronavirus-us-cases.html?action=click&module=RelatedLinks&pgttype=Article>

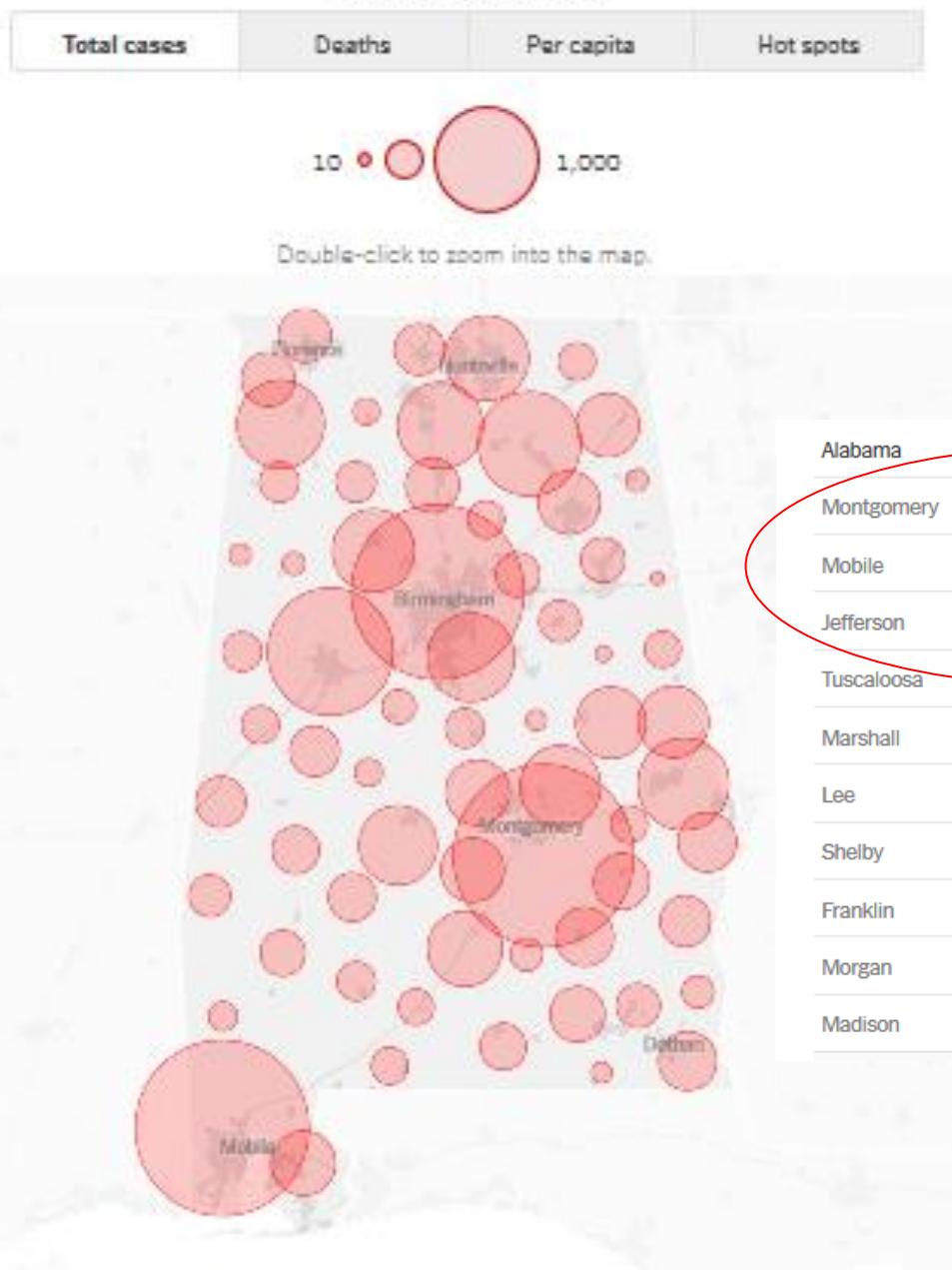
Where New Cases Are Decreasing as of 22Jun



Note: States and territories are grouped according to how the seven-day average of new cases has changed from two weeks ago to today.

<https://www.nytimes.com/interactive/2020/us/coronavirus-us-cases.html?action=click&module=RelatedLinks&pgtype=Article>

Cases in Alabama



Sources: State and local health agencies and hospitals.

[About this data](#)

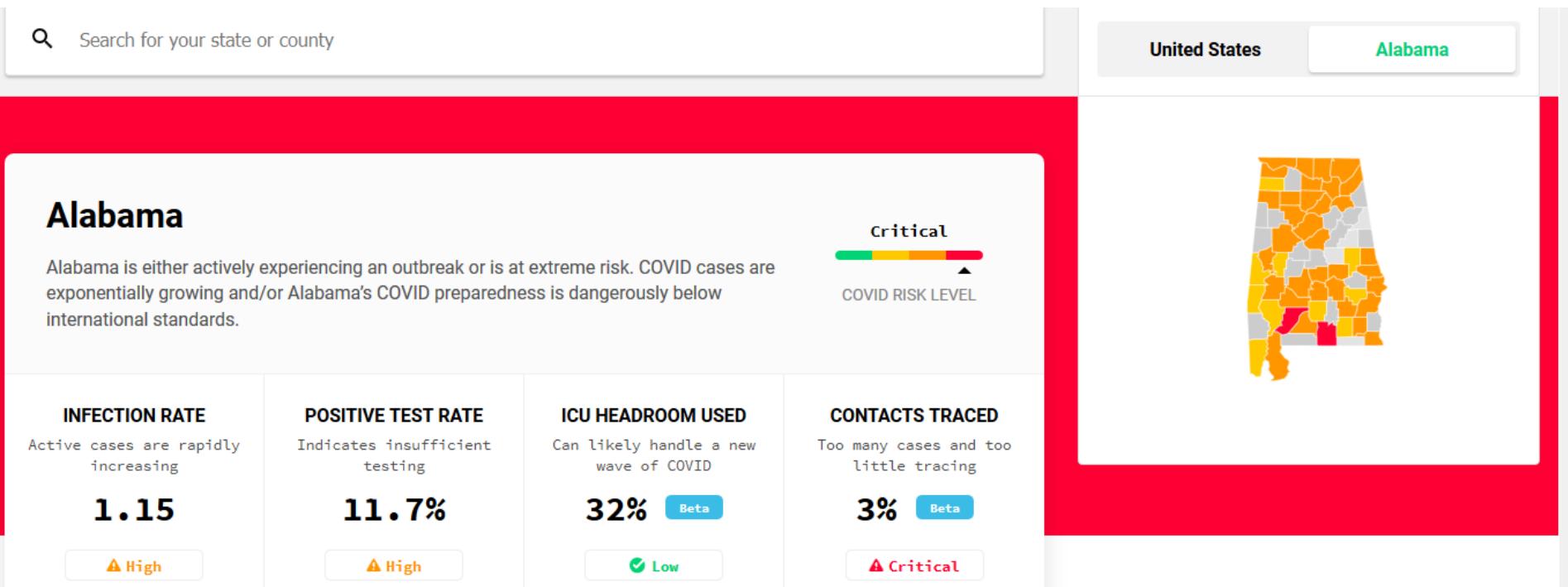
Top AL Hot Spots as of 22JUN

1. Montgomery
2. Mobile
3. Birmingham

	30,021	612	839	17	Mar. 1	June 21
Alabama						
Montgomery	3,258	1,436	81	36		
Mobile	3,016	727	133	32		
Jefferson	2,987	453	126	19		
Tuscaloosa	1,596	774	31	15		
Marshall	1,082	1,137	9	9		
Lee	852	535	35	22		
Shelby	784	371	22	10		
Franklin	782	2,479	10	32		
Morgan	754	633	2	2		
Madison	723	202	6	2		

<https://www.nytimes.com/interactive/2020/us/coronavirus-us-cases.html?action=click&module=RelatedLinks&pgttype=Article>

Alabama Is One of The Critically Increasing States 22Jun

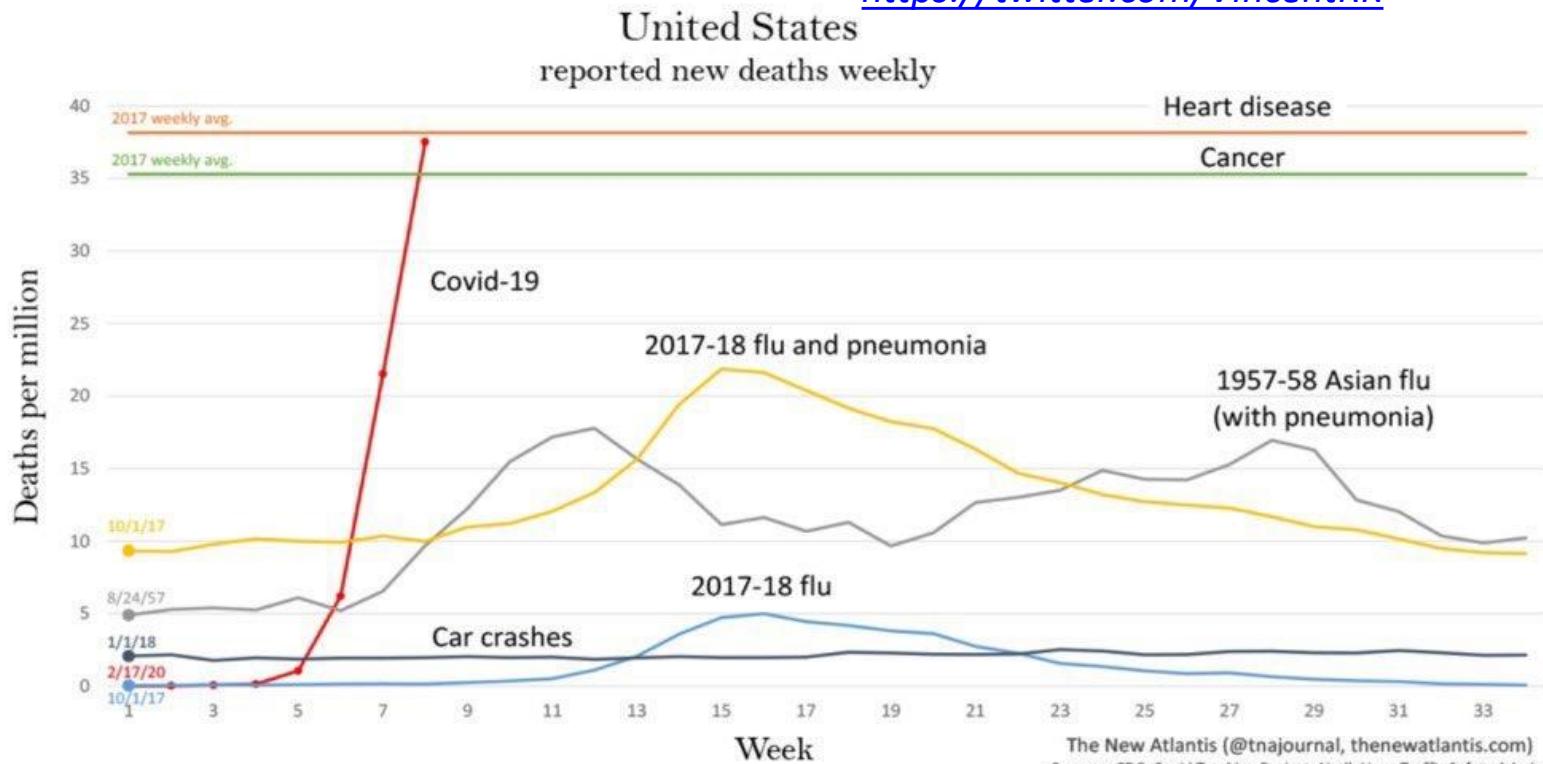


<https://covidactnow.org/us/al?s=48058>

COVID-19 Higher Weekly Mortality Than Heart Disease or Cancer

“Ultimately, the reason for my concern is this: I have been a doctor for 30 years. I work at one of the best medical centers in the world. I have done cancer research for 24 years. COVID is the worst public health problem I have seen. Do not underestimate it. This figure shows it.”

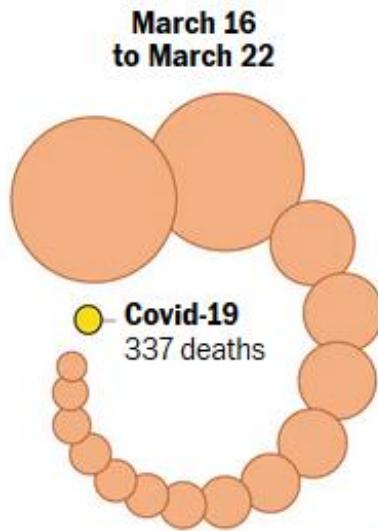
<https://twitter.com/VincentRK>



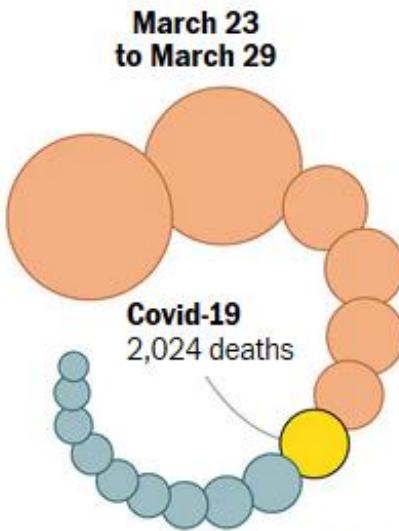
<https://twitter.com/VincentRK/status/1251140496870735872/photo/1>

Temporal Analysis

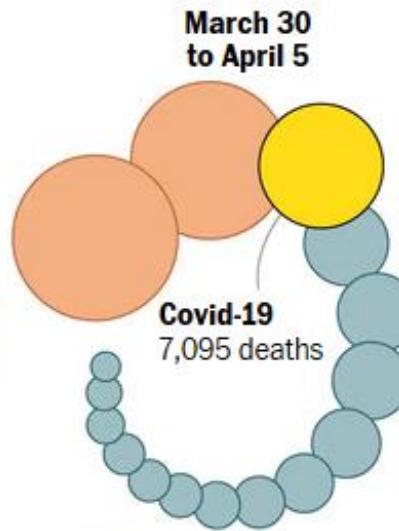
COVID compared to other health issues by weekly rate of deaths



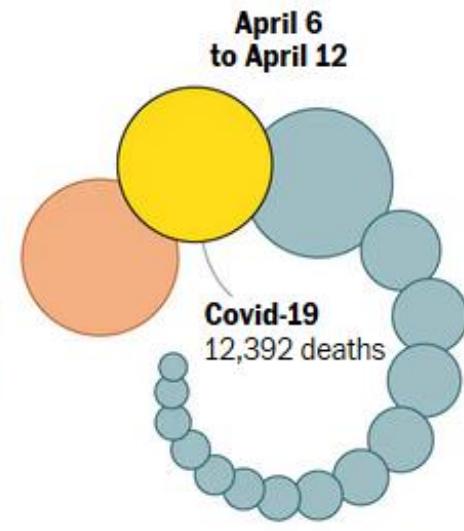
The first U.S. coronavirus death was on Feb. 29. The country first saw more than 20 deaths from covid-19 per day the week of March 16. Compared with average weeks, the coronavirus didn't yet rank among the top 15 causes of death.



The United States recorded 128 coronavirus deaths on March 23, the first day with more than 100. By later that week, covid-19 was killing more than 400 people each day, and the total weekly deaths from covid-19 passed 2,000.



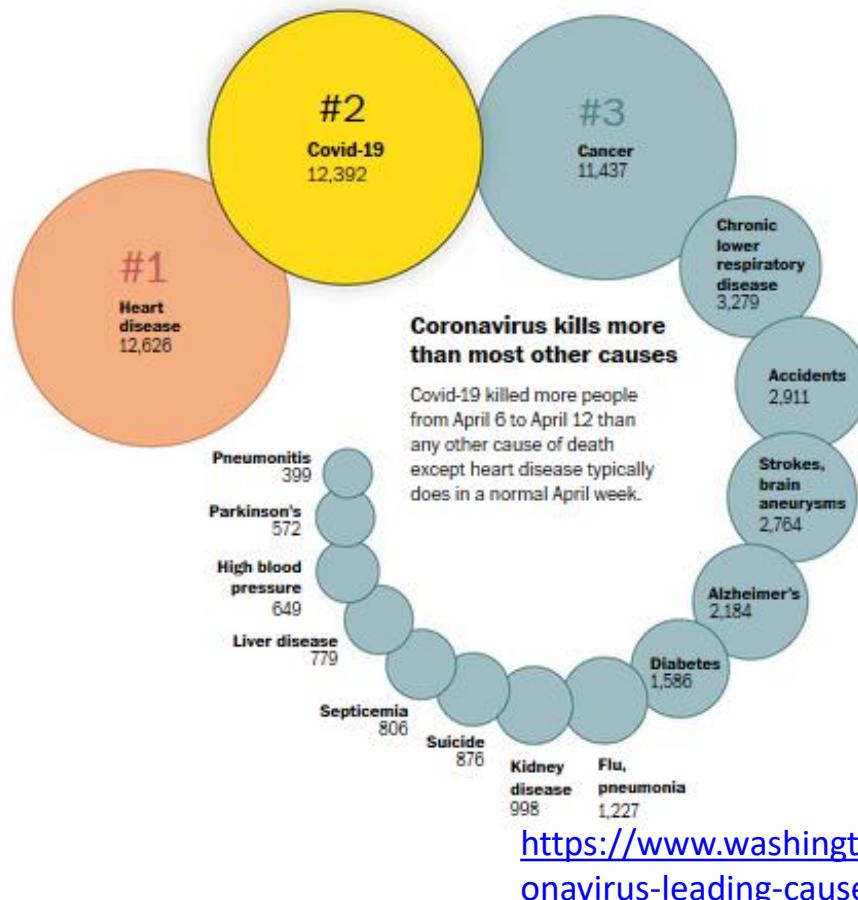
March 30 was the first day that more than 500 people died of covid-19. Three days later, more than 1,000 Americans were dying every day of the disease. The death toll hasn't been lower than that since.



The week of April 6 to 12 marked the peak of deaths so far, with Friday, April 10, marking the first time any country registered over 2,000 deaths in one day attributed to the coronavirus.

Corona Quickly Becoming a Leading Killer – Dr. Phil Has it Wrong

You can grasp the scale when you compare a single week's pandemic deaths with how many people die of major causes in a typical week.



COVID May Be More Contagious

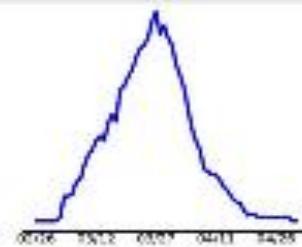
- R₀ may be as high as 6.0
- New study at Harvard seems to indicate this..
- Estimates in the range of 5.7 seem to be indicated by the difficulty some states are having in removing the virus.
- This might mean a doubling of cases every 2-3 days as opposed to 5-6 days with an R₀ of 2.5.

<https://www.harvardmagazine.com/2020/05/r-nought?fbclid=IwAR1Yqb1FUcnFktEsTZ4K1yKBDMhTj-lvBu4Gi5j0v9dk6vn9tRQwR2DoS14>

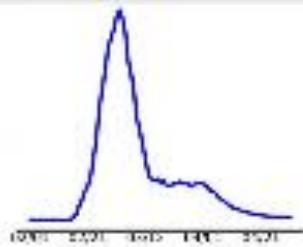
How they beat Covid-19

- **Early, common-sense action**
Don't wait for "more data" or results from complicated models
- **Isolate away from home**
Set up facilities to isolate an infected family member away from the rest

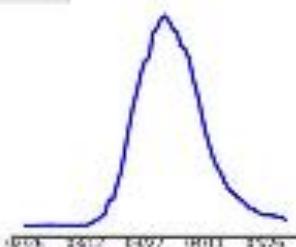
- **Strong lockdown**
- **Strict travel restrictions**
Even within the country
- **Massive testing**
- **Face masks for everyone**
The stricter these are, the shorter the lockdown



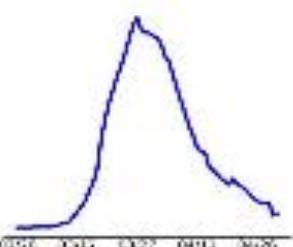
Vietnam
3 cases/M



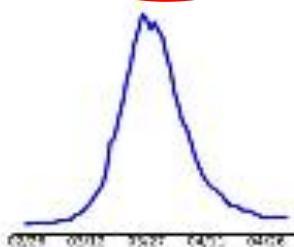
South Korea
210 cases/M



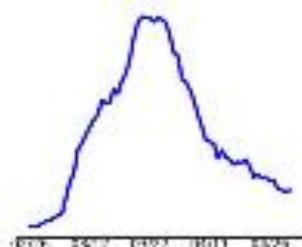
New Zealand
306 cases/M



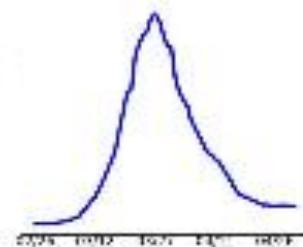
Thailand
42 cases/M



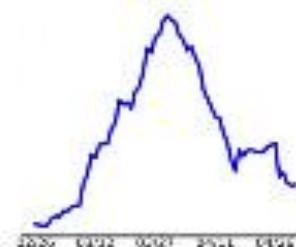
Australia
26.5 cases/M



Norway
1436 cases/M



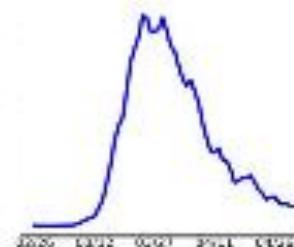
Austria
1713 cases/M



Greece
249 cases/M



Jordan
11 cases/M



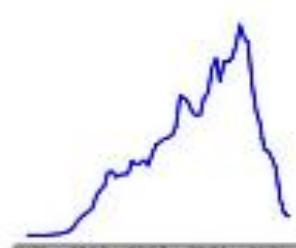
Luxembourg
614 cases/M



Slovenia
687 cases/M



Iceland
5266 cases/M



Slovakia
256 cases/M

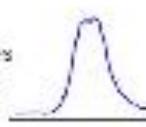


Croatia
506 cases/M



Lebanon
107 cases/M

Daily new COVID-19 cases vs time, 10 day average



Created by: Dennis van Gennep, Harvard University
Last updated 23 April 2020. Data source: JHU, <https://github.com/CSEGIS/covidData/COVID-19>.
For more information about government measures taken to stop the spread of COVID-19, visit [who.int](https://www.who.int).

pic.twitter.com/kczws6wgZ1



142
END
CORONAVIRUS.org

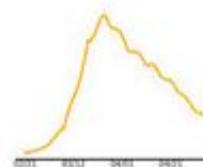
How's Your Locale Doing?

SOME ARE WINNING – SOME ARE NOT

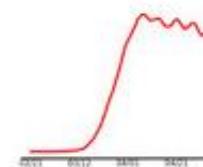
WHICH COUNTRIES DO BEST IN BEATING COVID-19?



Winning



Nearly there



Need action

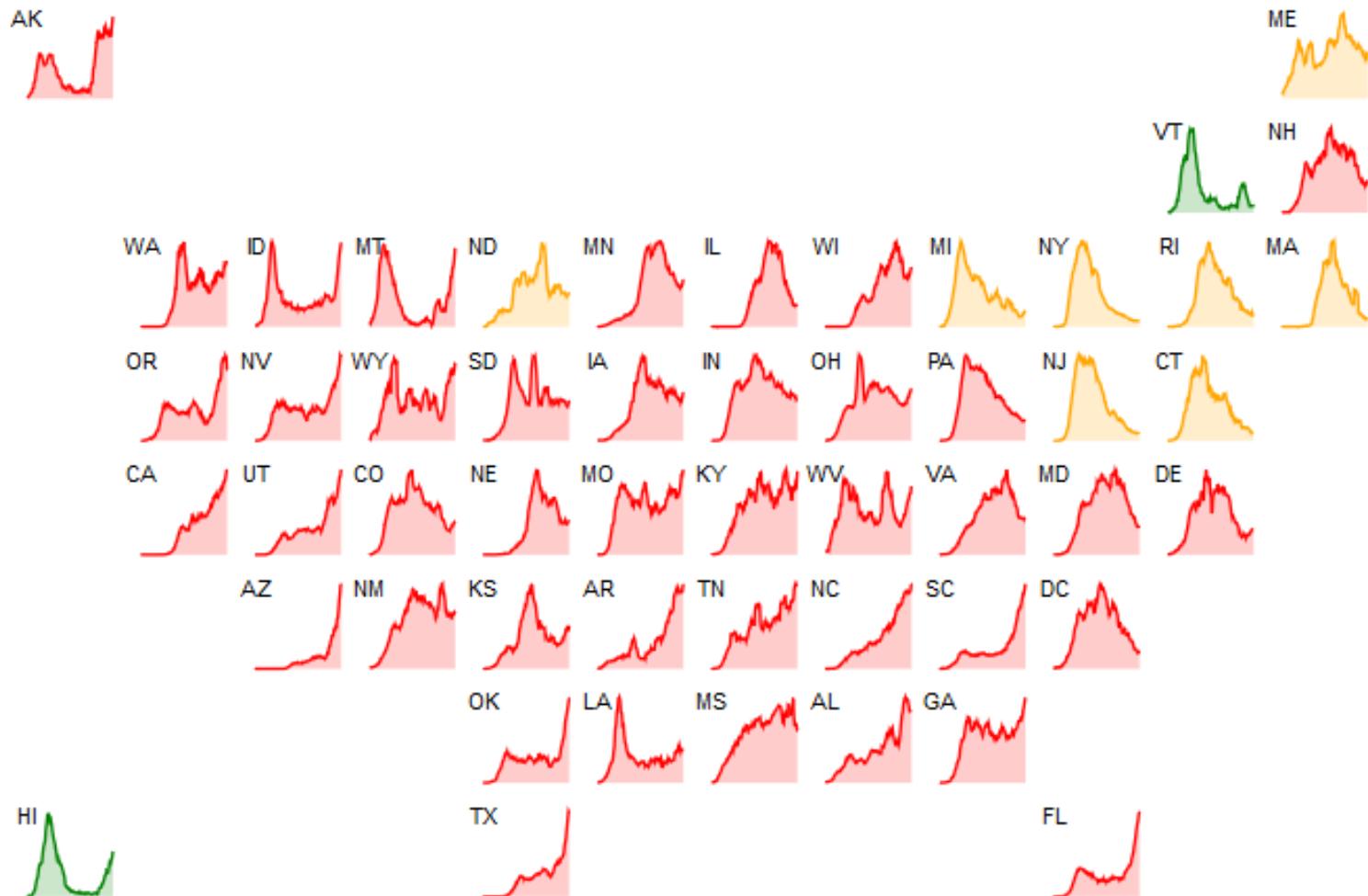
COUNTRIES BEATING COVID-19

<https://www.endcoronavirus.org/states>

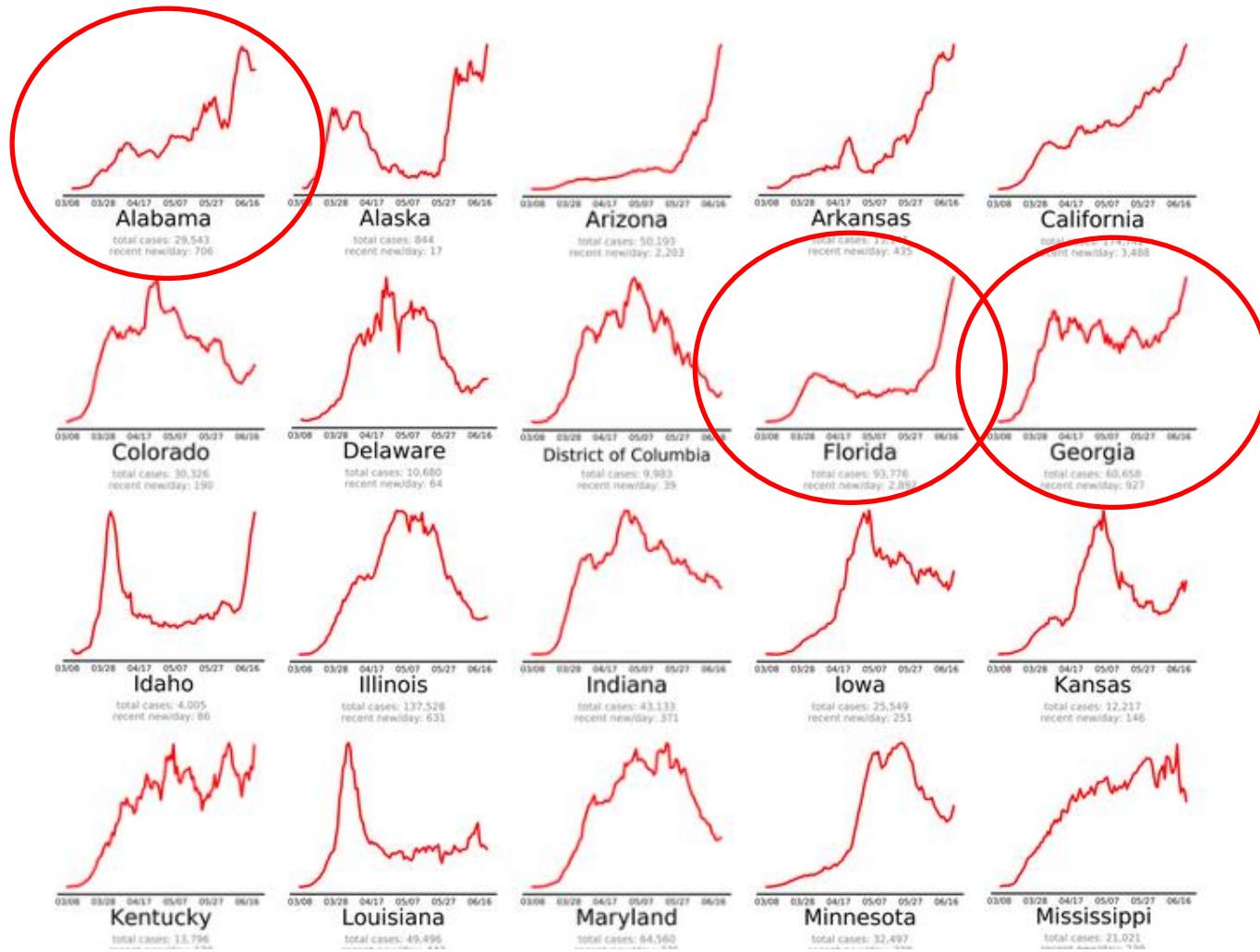
<https://www.endcoronavirus.org/countries>

COVID-19 US MAP: DAILY NEW CASES BY STATE

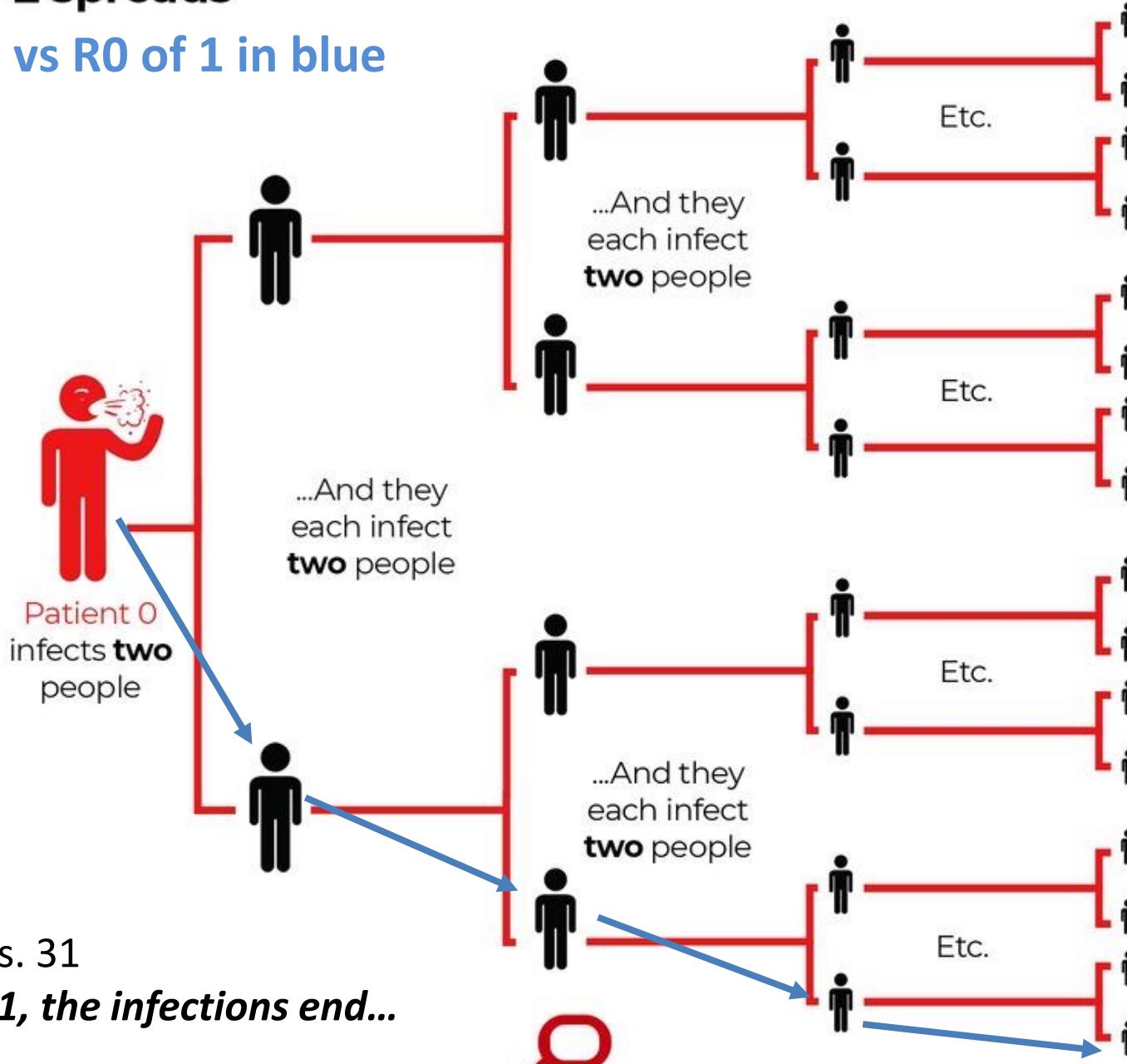
Click on a state to see new cases each day.



AL, FL & GA Need Work



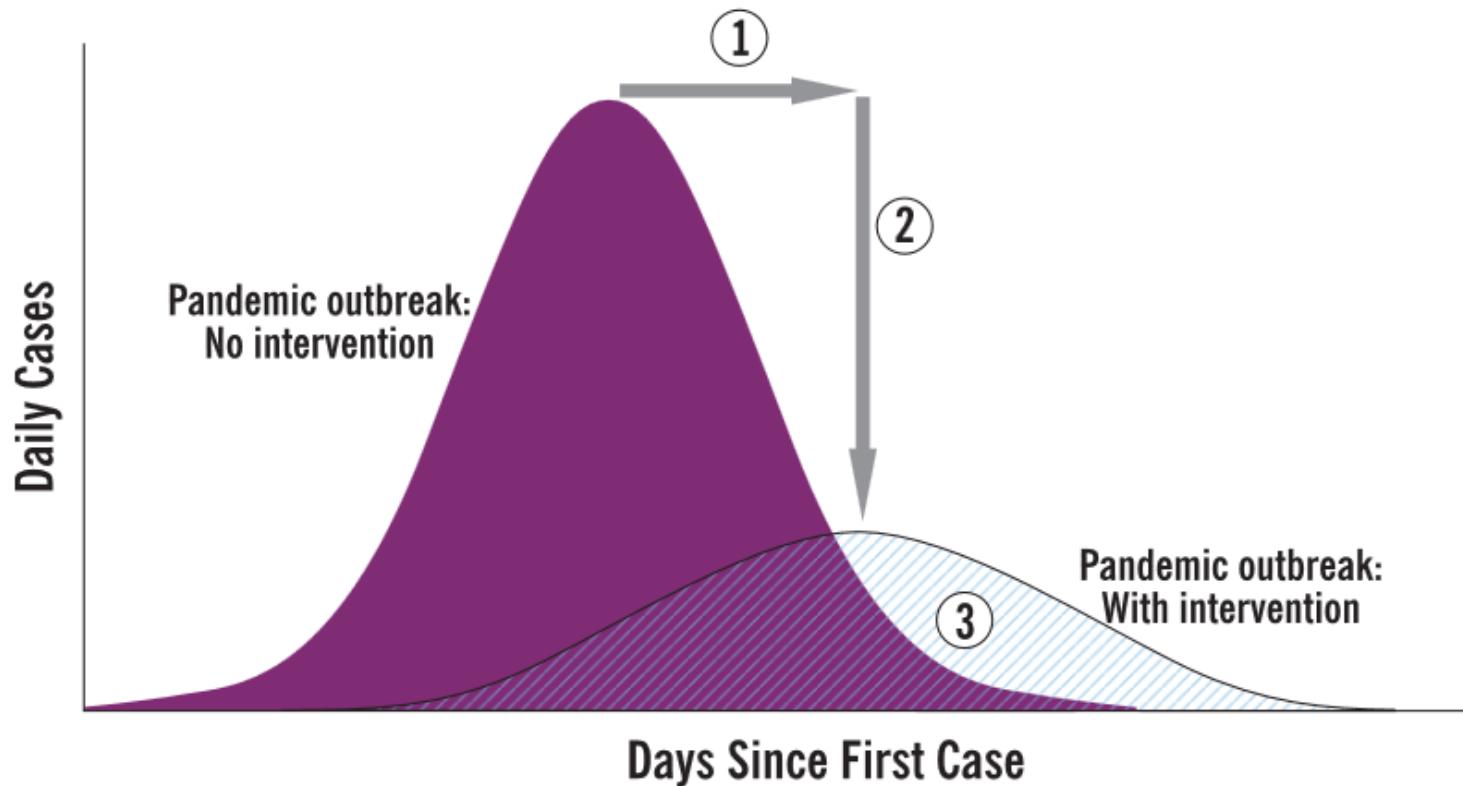
How a virus with a reproduction number (R₀) of 2 spreads vs R₀ of 1 in blue



Flattening the Curve for Dummies

Goals of Community Mitigation

- ① Delay outbreak peak
- ② Decompress peak burden on hospitals / infrastructure
- ③ Diminish overall cases and health impacts



Imperial College Study

Released 16Mar2020

Behind the Virus Report That Jarred the U.S. and the U.K. to Action

It wasn't so much the numbers themselves, frightening though they were, as who reported them: Imperial College London.



AIRPORTS, AIRPORTS, AIRPORTS: London Heathrow, London, March 16

White House Takes New Line After Dire Report on Death Toll

Federal model now warned against numbers of more than 10 people as a London report predicted 500,000 deaths in the U.S. without drastic action.



BY MARK LIDDELL FOR THE NEW YORK TIMES

March 17, 2020

LONDON — When Boris Johnson was stamping his way out of the European Union in mid-March that no one could end in disaster for the country ... one ally, Michael Gove, famously declared that "people here had enough of experts."

Increasing new federal regulations announced on Thursday let Americans to freely leave their homes appear to draw on a less-credible report warning that, unless acted by the government and individuals to slow the spread of coronavirus and surpass our rates, 50 million people in the United States could die.

The next few slides speak to the numbers in the report.

3 COAs defined:

1. US do nothing – 2.2 million deaths
2. US “mitigate” corona – 1.1 million deaths
3. US “suppress” corona with lockdown starting with 30 day quarantine. Not **so** bad, but economic ramifications...

Imperial College Study Discredited? Emphatically, NO!

But models change as data is collected...

- Did a British Scientist Retract His Prediction That the U.K. Would Have 500,000 Coronavirus Deaths? **No.**
- **Congressman Buck seems to think so and is misinformed.**
- Dr. Ferguson, in both his testimony and subsequent interviews, made clear that his new projections are due to the very steps the British government adopted as a result of the Imperial College report.
- *(More on the actual study later in the brief, but until then...)*

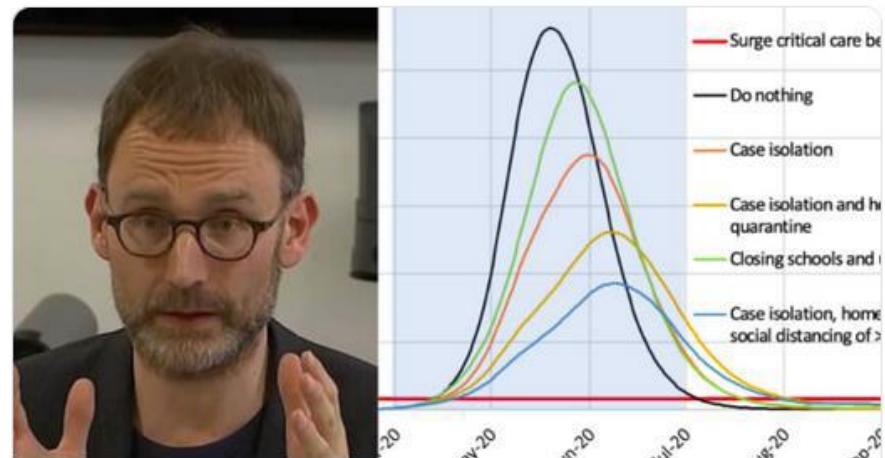


Congressman Ken Buck

@RepKenBuck

Doomsday-like predictions of #COVID_19 have created unnecessary panic and reactionary policy decisions.

We need to instill confidence in the American people and hyperbolic reports like Mr. Ferguson's are making matters worse.



The Scientist Whose Doomsday Pandemic Model Predicted Armageddon Just Walked Back The Apocalyptic Predictions

After the U.S. and U.K. governments effectively shut down their citizens and economies, scientist Neil Ferguson is walking back his doomsday forecasts.

thefederalist.com

<https://thedispatch.com/p/did-a-british-scientist-retract-his>

Imperial College Study Discredited? Emphatically, NO!

But models change as data is collected...

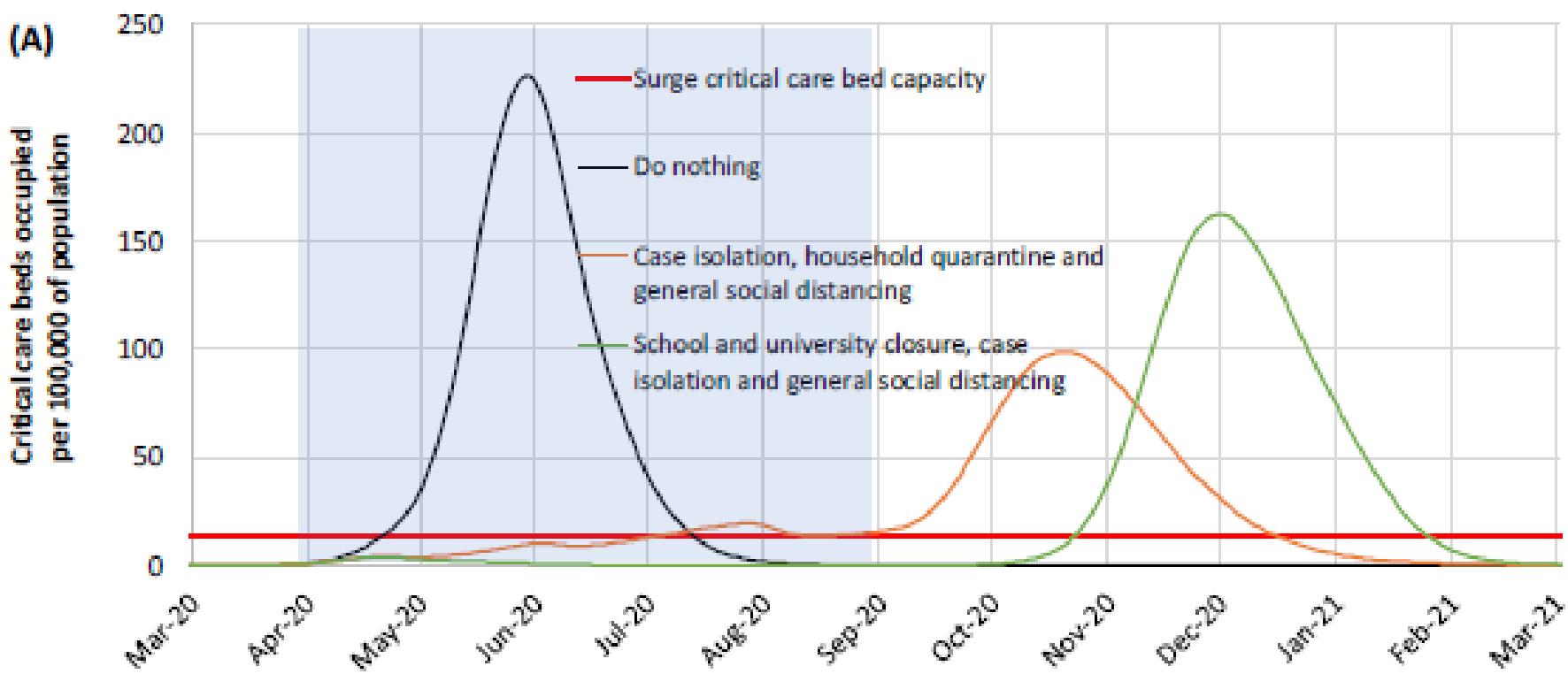
- “Given the virus-aversion policies that have been adopted, Mr. Ferguson told Parliament the actual death figures for the U.K. would most likely be less than 20,000, and said that is consistent with previous studies.”
- “Absolute rubbish coming out from unreliable outlets such as the Daily Wire, claiming that this is an abrupt reversal by the Imperial College team, rather than a model of successful suppression based on more aggressive control measures.”

<https://www.washingtontimes.com/news/2020/mar/28/british-epidemiologist-colleagues-insist-coronavirus/>
<https://www.unz.com/isteve/new-imperial-college-report/>

Assumptions Imperial College

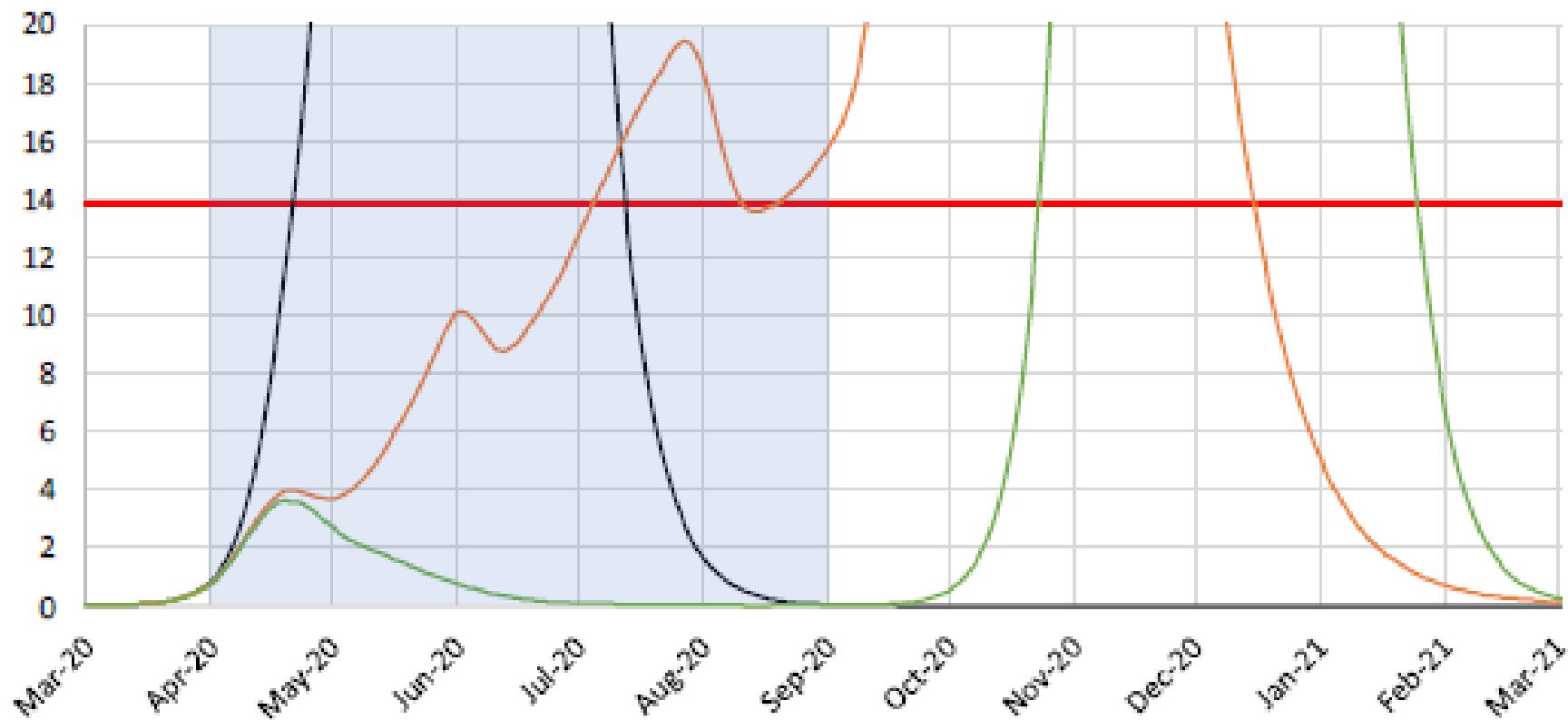
- Baseline R=2.4 (test values between 2 and 2.6)
- Symptomatic individuals 50% more infectious
- Individual infectiousness gamma distribution mean 1 and alpha=0,25
- Early January seeded in each country with doubling time of 5 days (rate of seeding calibrated to current available cumulative number of deaths data of local epidemics in each country)
- 2/3 of cases self-isolate within 1 day of symptoms, mean delay from symptoms to hospitalization of 5 days (rest of 1/3 are asymptomatic)
- Apply estimates of IFR per age to each country based on data from China with non-uniform attack rate
- In GB this means 0,9% IFR and 4,4% hospitalized (on average) but this has to be done per country
- 30% of hospitalized require critical care
- 50% of those in critical care will die
- An age dependent proportion of those that don't require critical care die (calculated to match overall IFR)
- 8 days in hospital if critical care not required
- 16 days (10 days in ICU) if critical care is required
- Both of those metrics assume that they don't have to wait longer for negative testing results (slower testing => more time in hospital)

(A)



Suppression strategy scenarios for US showing ICU bed requirements. The black line shows the unmitigated epidemic. Green shows a suppression strategy incorporating closure of schools and universities, case isolation and population-wide social distancing beginning in late March 2020. The orange line shows a containment strategy incorporating case isolation, household quarantine and population-wide social distancing. The red line is the estimated surge ICU bed capacity in US. The blue shading shows the 5-month period in which these interventions are assumed to remain in place.

(B)

Critical care beds occupied
per 100,000 of population

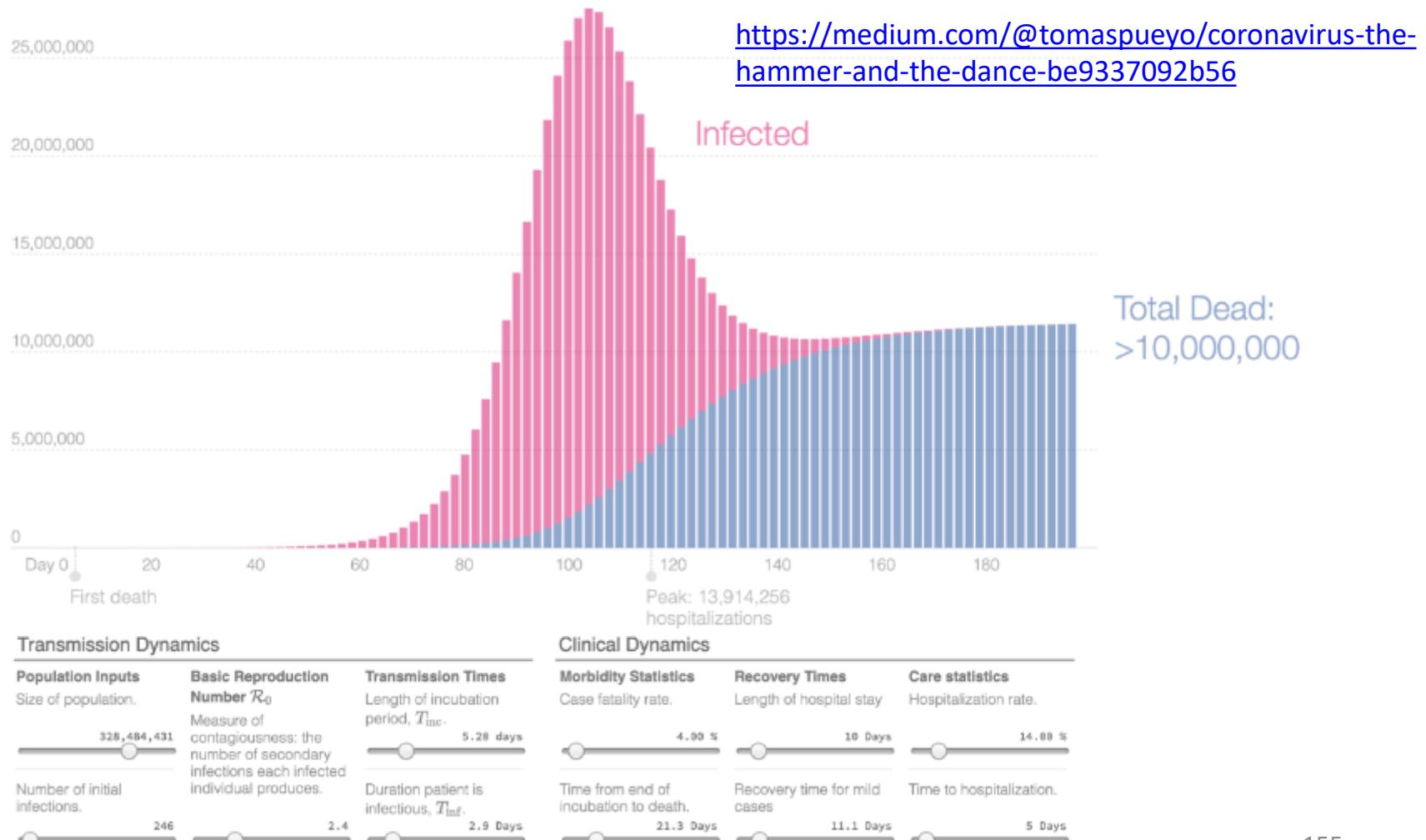
(B) shows the same data as in panel (A) but zoomed in on the lower levels of the graph.

Just coming to grips. Sobering.

- 1) 'Do-nothing': 2M+ deaths in US by summer
- 2) 'Mitigation': hospital overruns in 2 months, 1M deaths
- 3) 'Suppression': lockdown for 12+months till vaccine

Option 1: Do Nothing

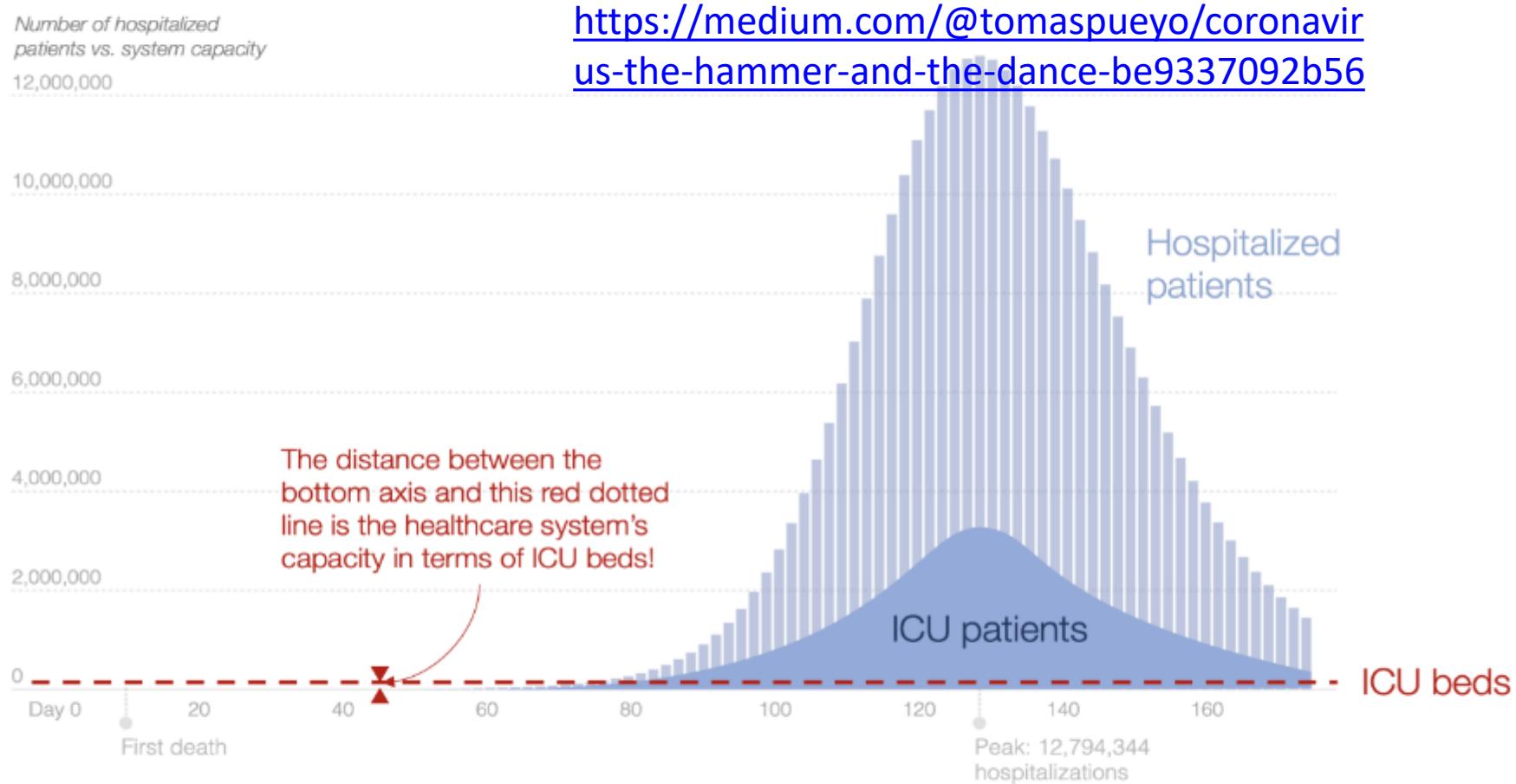
Chart 3: Infections and Deaths If We Do Nothing in the US



Source: Epidemic Calculator, Gabriel Goh, <http://gabgoh.github.io/COVID/index.html>.

Option 1 (cont.)

Chart 4: Hospitalized Coronavirus Patients vs. System Capacity



Option 2 – Mitigation – What the US is Doing as of 1June

But... Mutations in the Virus Are Occurring



RNA-based viruses like the coronavirus or the flu tend to mutate around 100 times faster than DNA-based ones—although the coronavirus mutates more slowly than influenza viruses.

The best way for this virus to mutate is to have millions of opportunities to do so, which is exactly what a mitigation strategy would provide hundreds of millions of people infected.

The mitigation strategy not only assumes millions of deaths for a country like the US or the UK. It also gambles on the fact that the virus won't mutate too much — which we know it does. Once we're done with a few million deaths, we could be ready for a few million more — *every year*, recurring like the flu, but many times deadlier.

Mutations Have Occurred

THE THREE STRAINS OF CORONAVIRUS



TYPE A

Closest to coronavirus found in bats and pangolins
Considered the 'root of the outbreak'
Two sub-clusters - one linked to Wuhan and one common in America and Australia

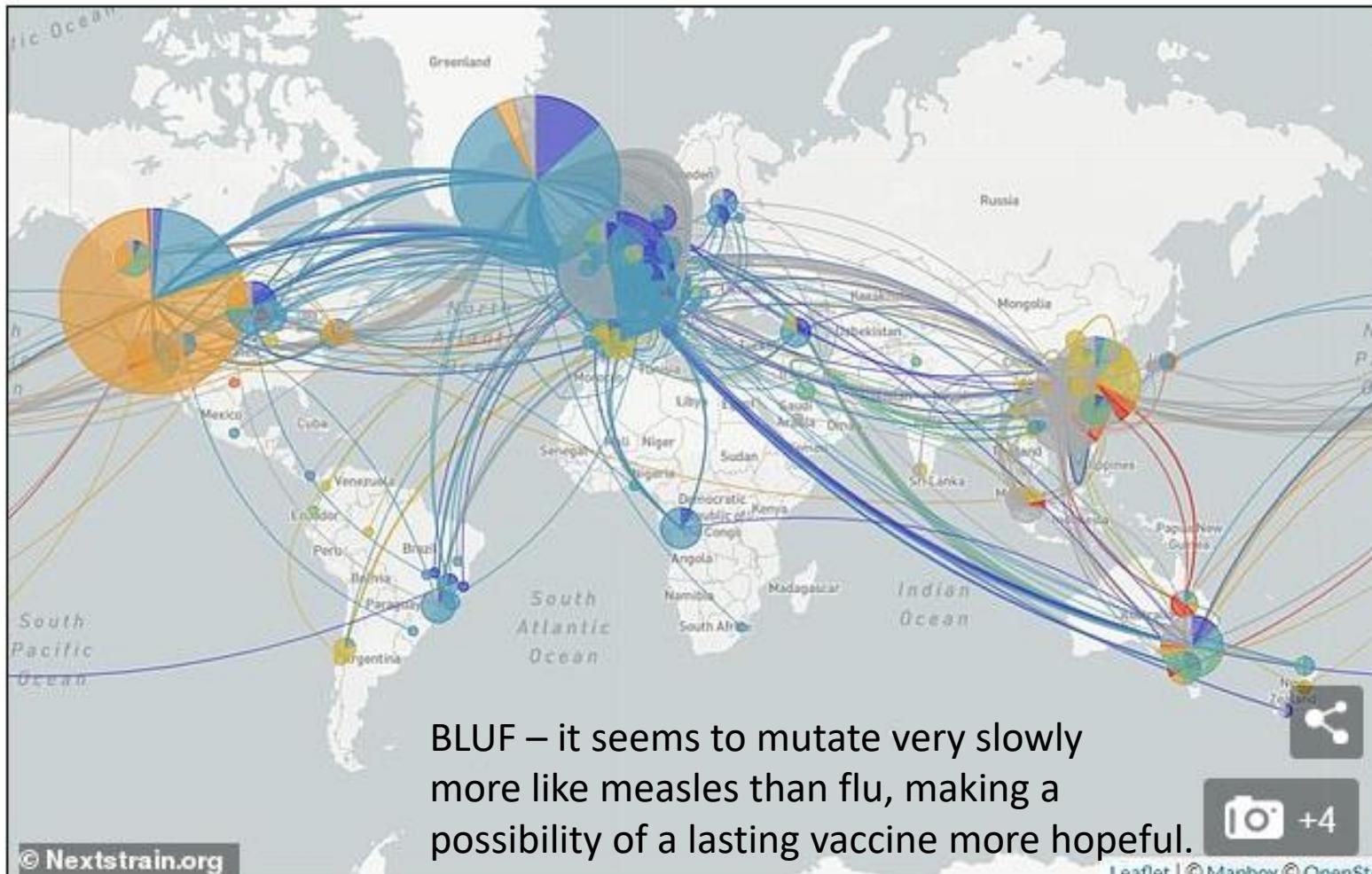
TYPE B

Variation of coronavirus most common in Wuhan
Derived from type 'A' via two mutations
Mutates slowly in China but rapidly outside China

TYPE C

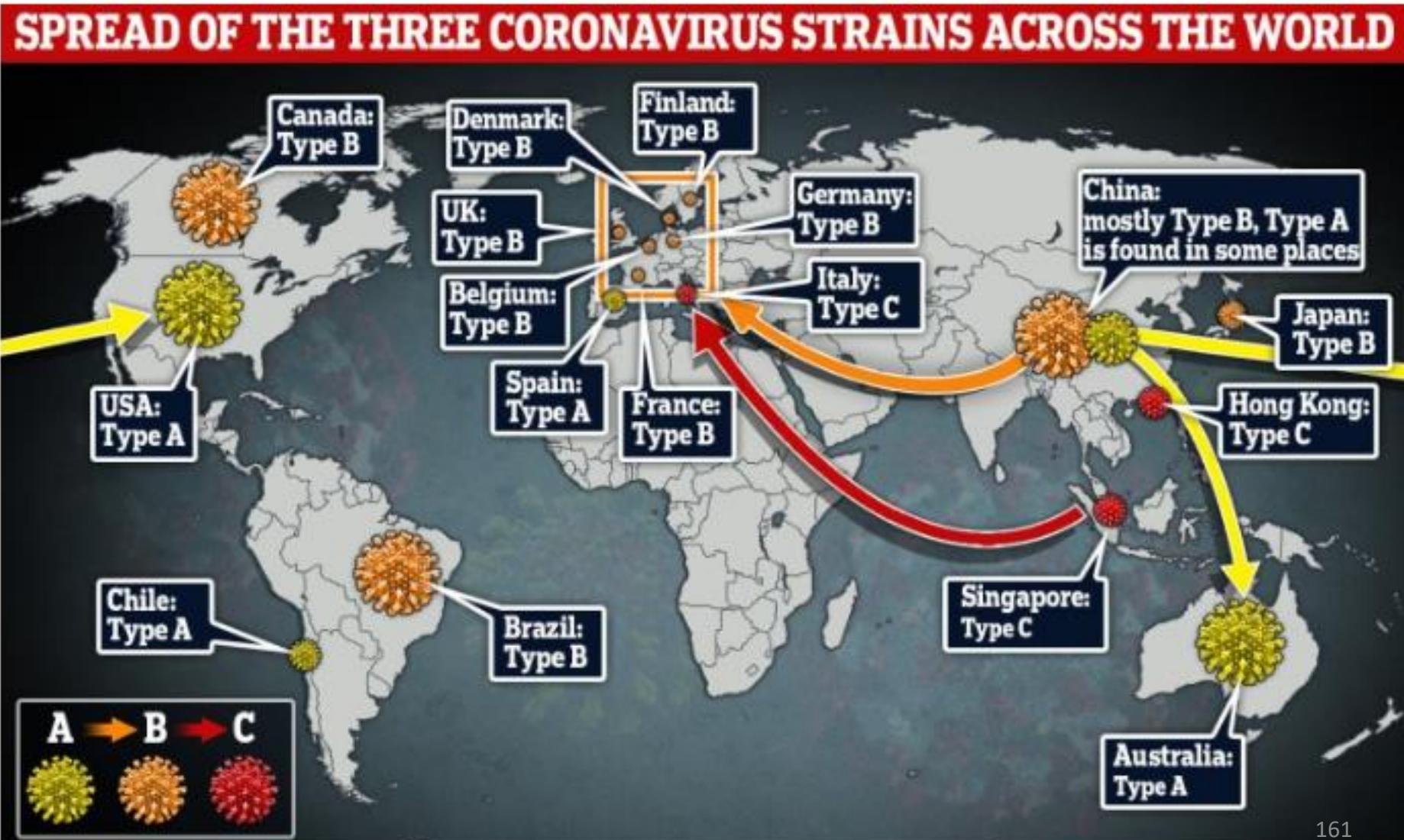
Type C is the 'daughter' of type B
One mutation different to parent variation
Spread to Europe via Singapore

Mapping the Mutations



A map based on genome sequences shows have different strains of coronavirus have spread around the world, with at least eight strains being tracked

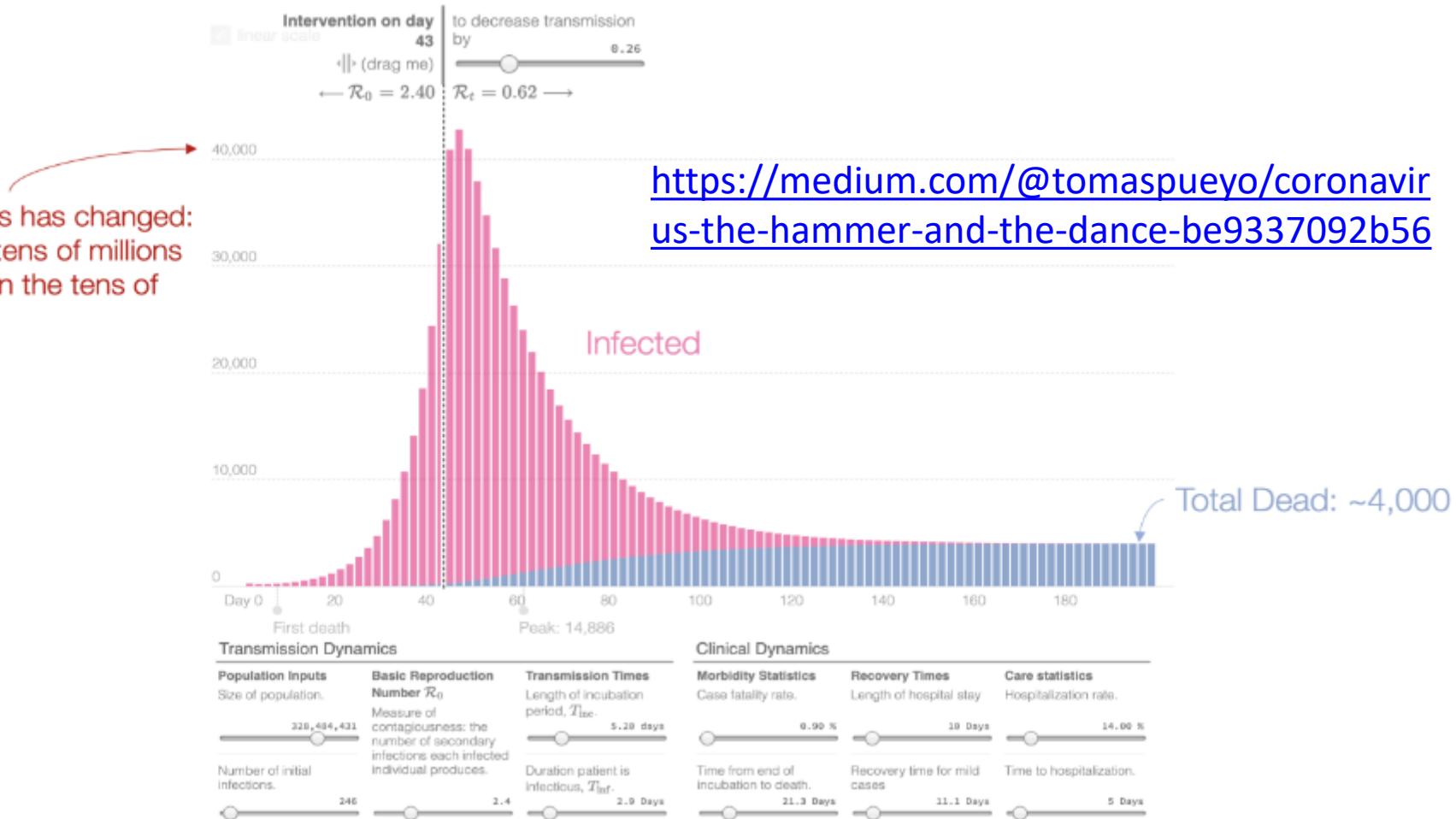
How Will This Affect Vaccine Development? Too Many Mutations May Complicate Vaccine Development; If Mutation Rate is High Then A Vaccine May Not Work After the First Year
i.e Lifetime Measles Vaccine vs Annual Flu Shot



Option 3 - Suppression

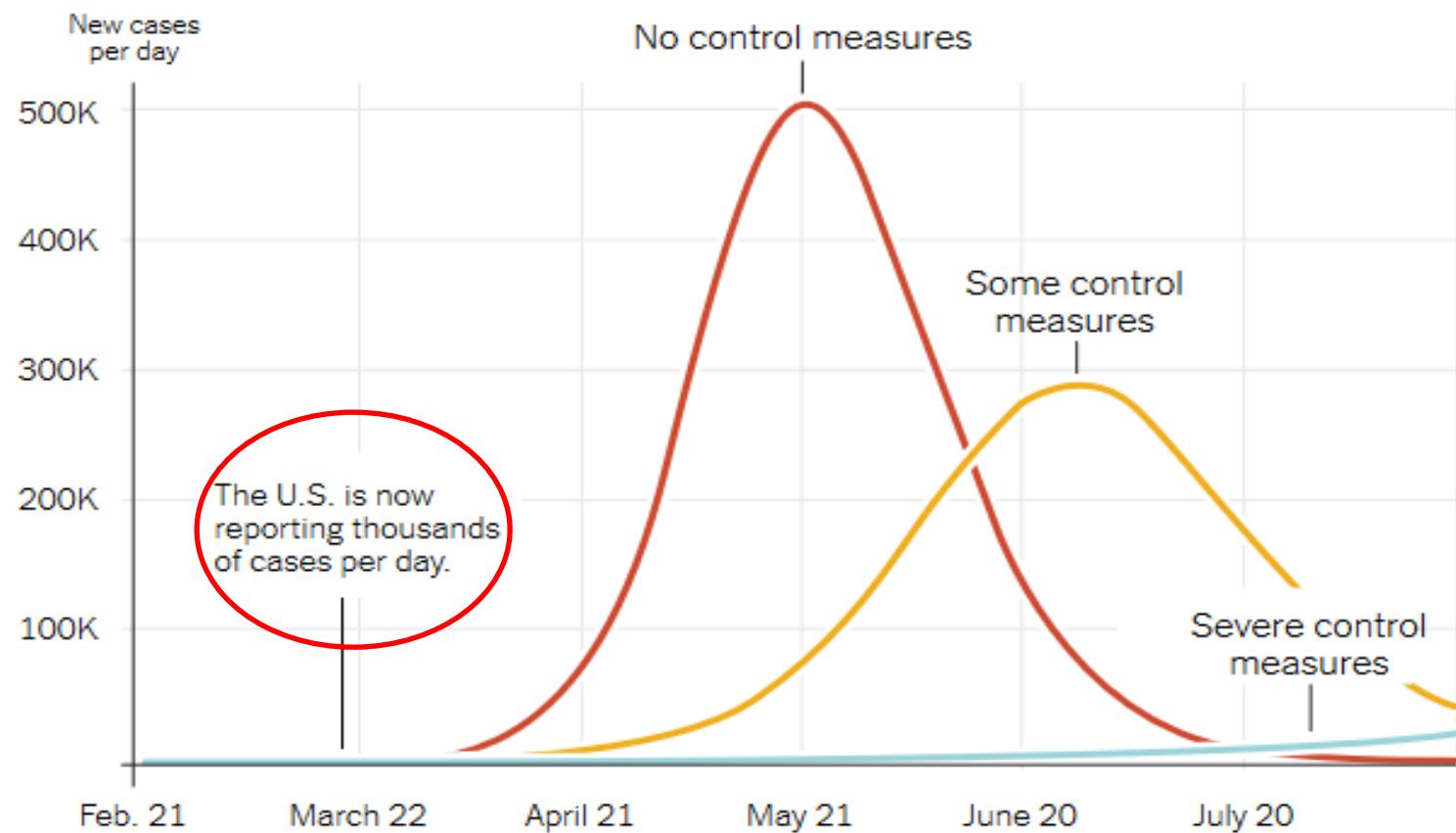
Chart 7: Coronavirus Cases and Deaths under Suppression Strategy

Notice the axis has changed:
it's not in the tens of millions
anymore, it's in the tens of
thousands!



Source: Tomas Pueyo et. All Analysis, Epidemic Calculator, Gabriel Goh, <http://gabgoh.github.io/COVID/index.html>.

How Control Measures Could Slow the Outbreak



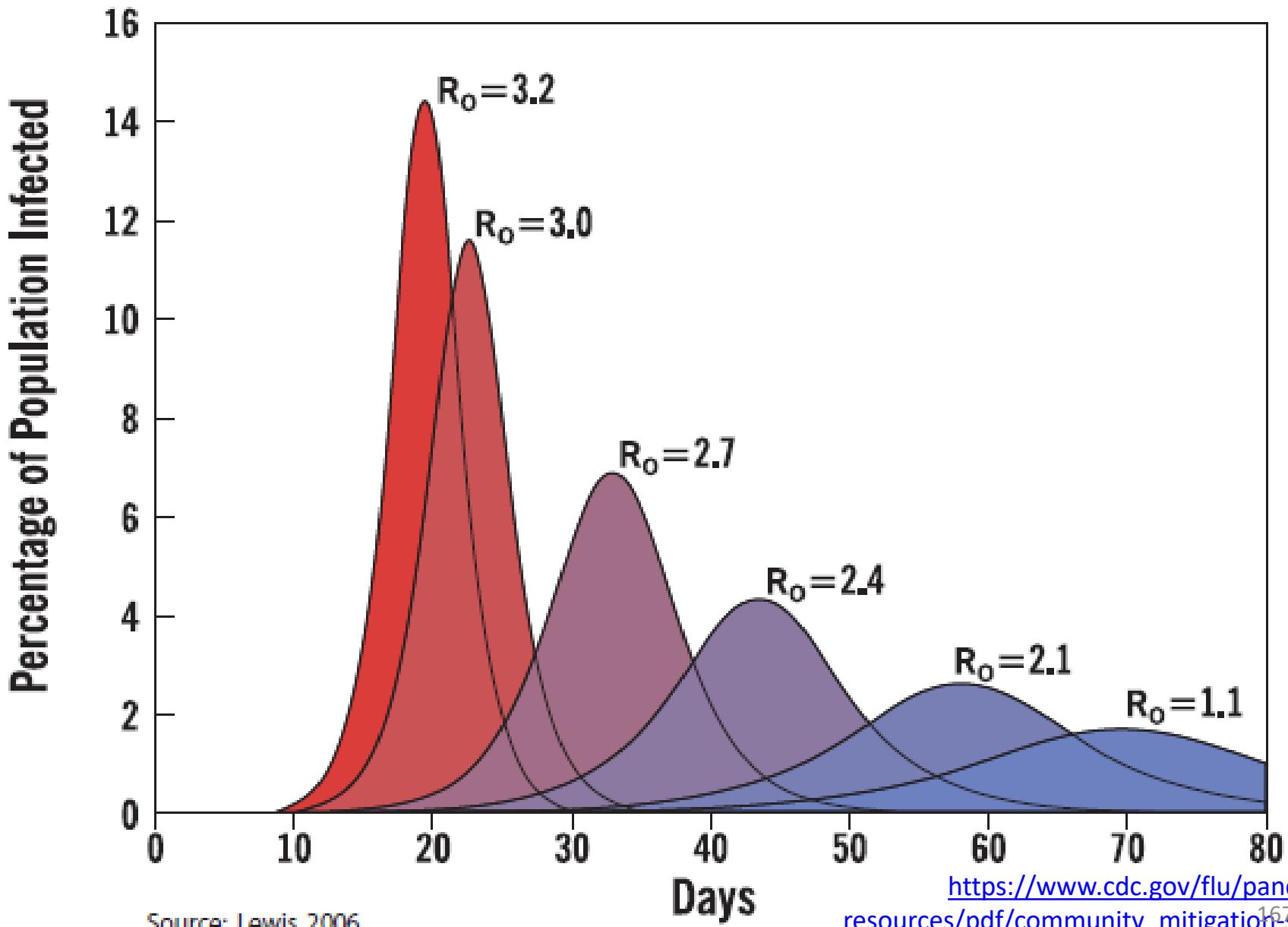
By The New York Times • Source: Sen Pei and Jeffrey Shaman, Columbia University

Discover our newsletters. Add insight to your inbox.

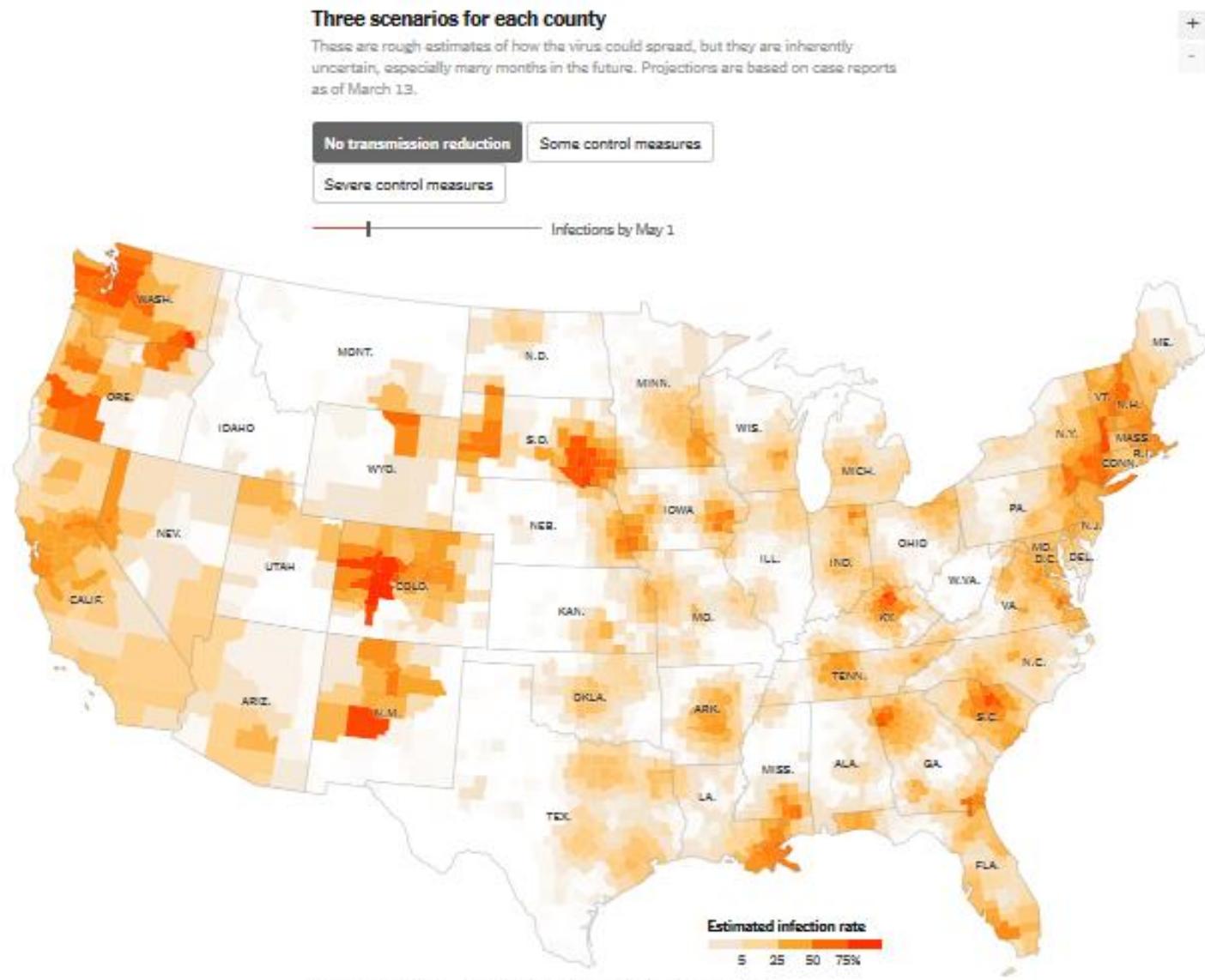
<https://www.nytimes.com/interactive/2020/03/20/us/coronavirus-model-us-outbreak.html?referringSource=articleShare>

Figure 2.

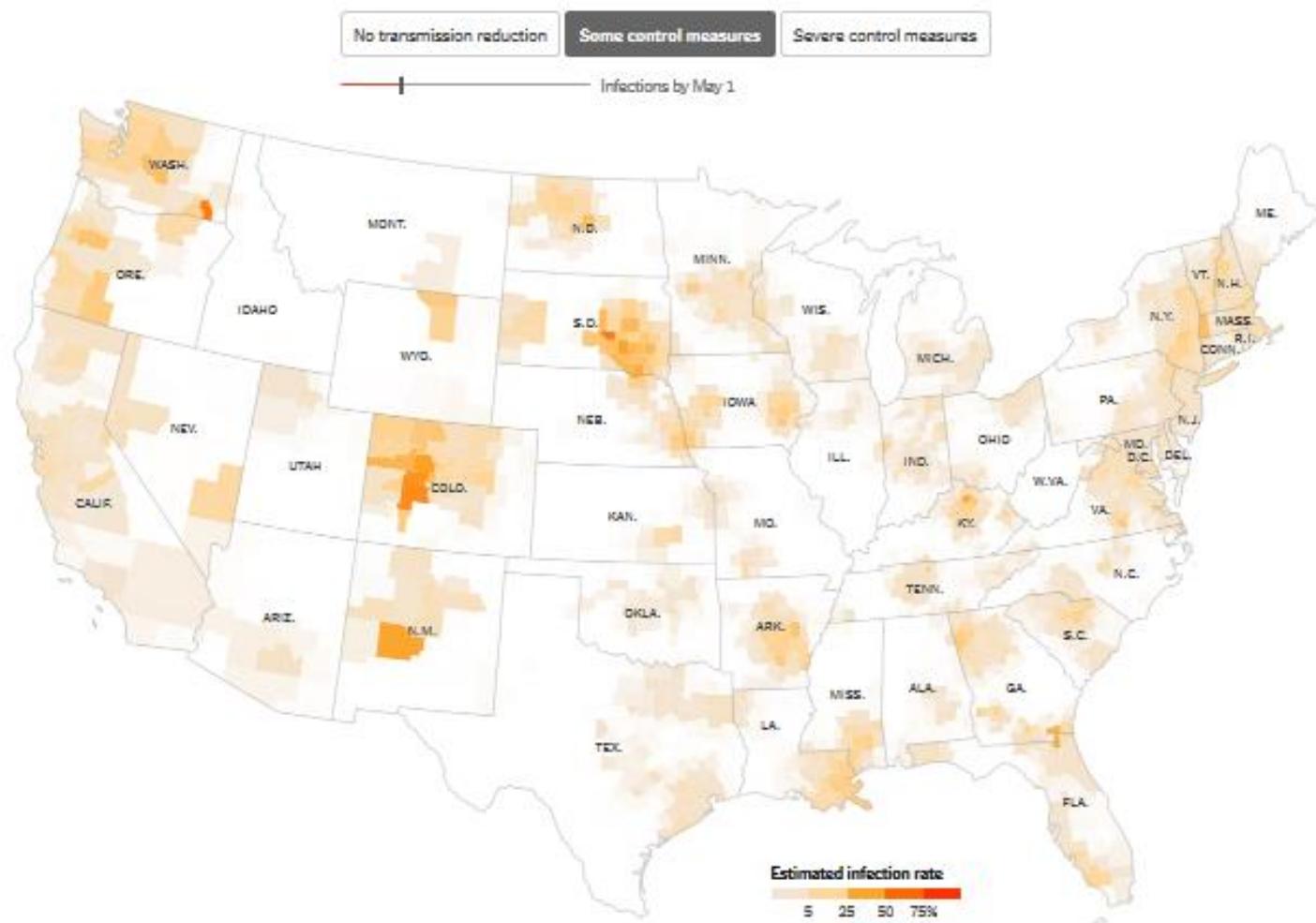
Effect of R_0 on Epidemic Curves



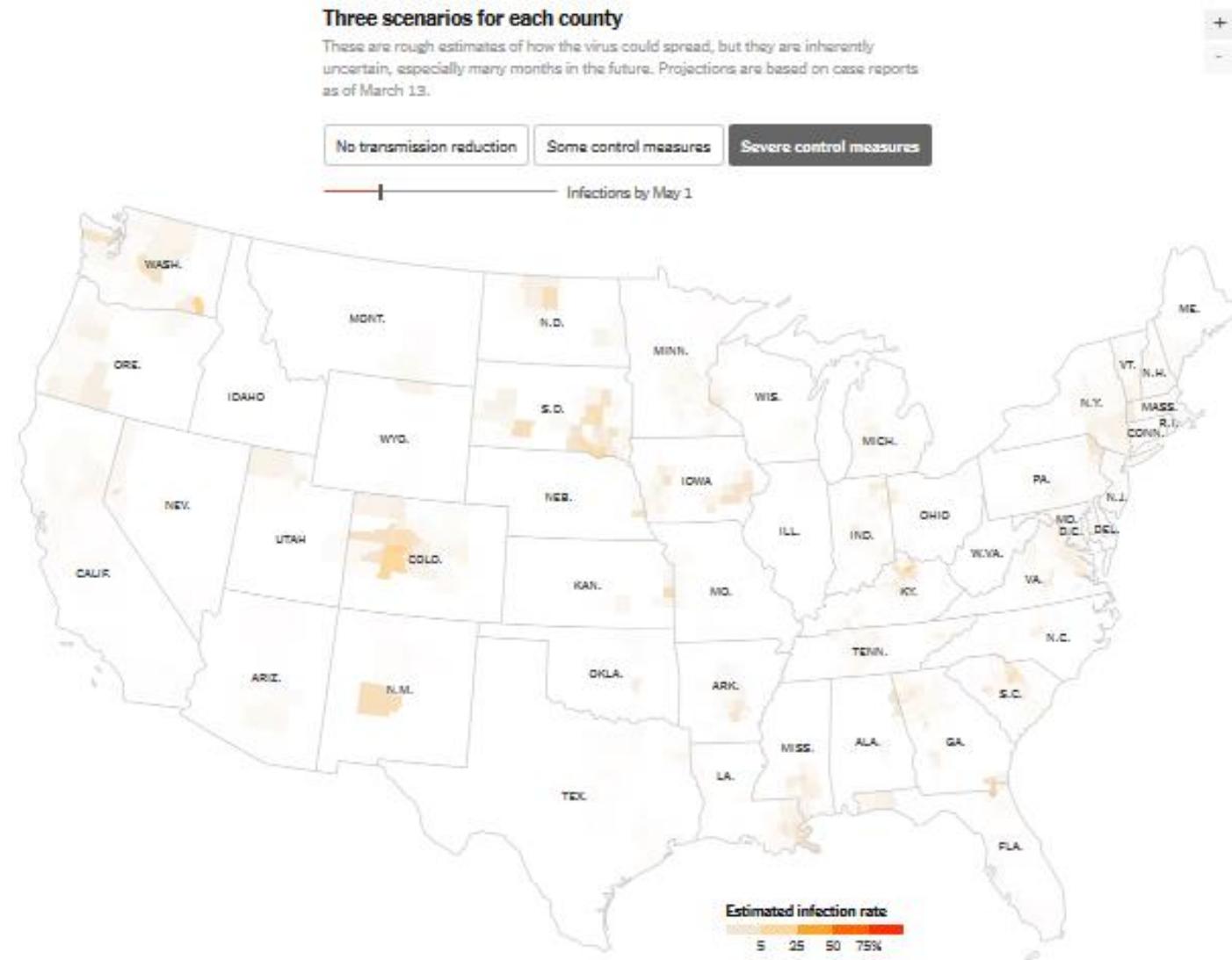
No Transmission Reduction ($R \gg 1$)



Some Control Measures – Mitigate ($R > 1$)



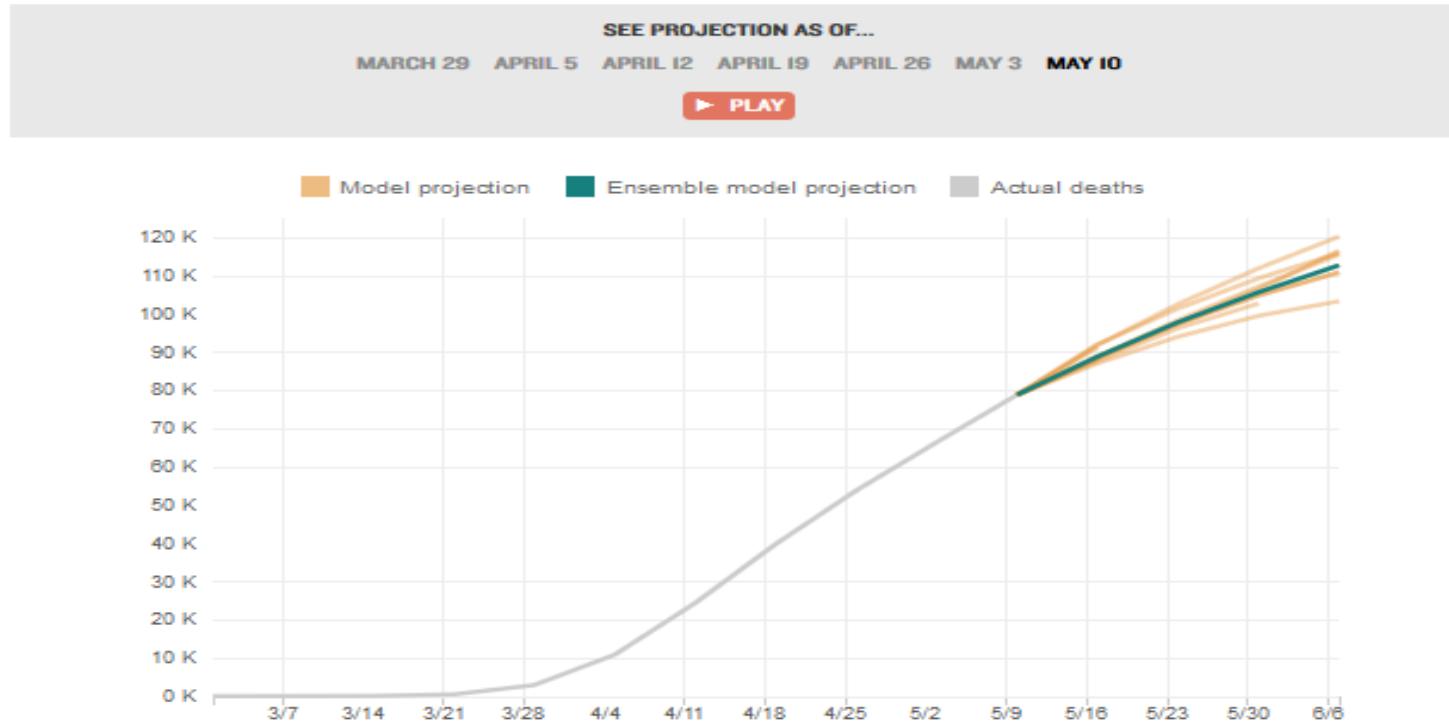
Severe Control Measures – Submission ($R < 1$)



How To Make Sense of All The COVID-19 Projections? A New Model Combines Them

Multiple Models Converge, Projecting 110K U.S. Deaths by Early June

Lines represent projections for cumulative COVID-19 death totals four weeks ahead. The ensemble model combines other models' projections and updates weekly.



Notes

Ensemble model incorporates projections from Imperial College, University of Washington Institute for Health Metrics and Evaluation, Columbia University, Northeastern University, YYY, University of Geneva / Swiss Data Science Center, UT-Austin, Johns Hopkins University, Los Alamos National Labs, MIT, Georgia Institute of Technology, Iowa State University and UCLA

https://www.npr.org/sections/health-shots/2020/05/13/855038708/combining-different-models-new-coronavirus-projection-shows-110-000-deaths-by-ju?utm_source=share&utm_medium=ios_app&fbclid=IwAR0e7dJR3etQCrB-kVKCC0YV-CxW14kJ4EmekX0N2elkHo4Un3GR6xG1aZc

How To Make Sense of All The COVID-19 Projections? A New Model Combines Them

- The team unveiled the first version four weeks ago and ever since has been adding in more forecasts and updating the projections weekly.
- The latest update — released Tuesday — incorporates eight models, including some oft-cited ones, such as those built by the Imperial College London, the University of Washington Institute for Health Metrics and Evaluation, Columbia University and Northeastern University. (The team also sends each week's release to the CDC, [which publishes a version](#) with a slight time lag.)
- The projections varied substantially — with the most ***pessimistic forecasting a total death toll of 120,000 by June 6 and the most optimistic forecasting 103,000*** deaths by that date.
 - **120,000 deaths was actually reached on 21Jun – two weeks later.**
- But the models have been inching closer to each other. Over the past several weeks, the distance between the highest and lowest estimates has halved from a gap of 36,000 deaths two weeks ago to a gap of 17,000 deaths in the most recent update released Tuesday.

Why The Coronavirus Is Triggering Mental Health Issues:

Despair

Mindset switch from
"living" to "survival"

Triggers feelings
of hopelessness

Increased
health anxiety

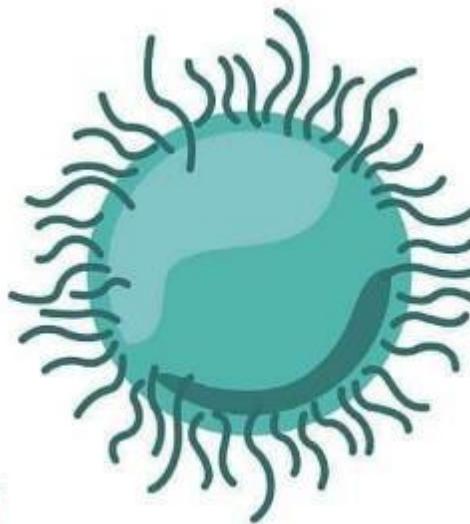
Decreased
job security

Fear for
loved ones lives

Promotes
social withdrawal

Decreased
financial security

Loneliness



Quarantine makes it more difficult to distract
oneself from existing mental health issues



**Coronavirus isn't just threatening our physical
health, but our mental health too. Look after it.**

Please share to raise awareness.

It's Taking a Toll



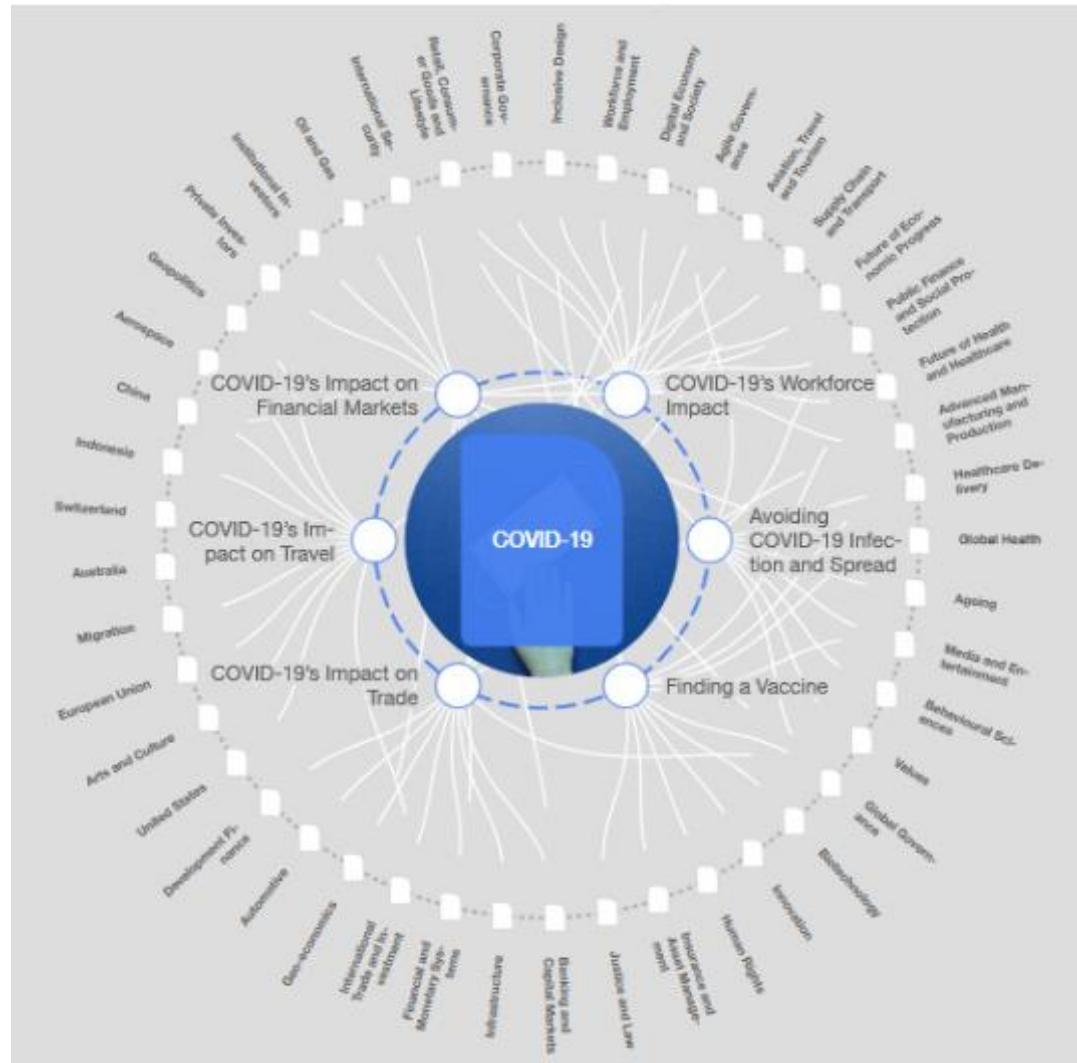
https://www.newyorker.com/cartoons/daily-cartoon/daily-cartoon-tuesday-march-24th?source=EDT_NYR_EDIT_NEWSLETTER_0_imagenewsletter_Humor_ZZ&utm_campaign=aud-dev&utm_source=nl&utm_brand=tny&utm_mailing=TNY_Humor_032420&utm_medium=email&bvid=5c9a99d80564ce2e1c22fc&cmid=56792819&esrc=End_Humor_442&mbid=&utm_term=TNY_Humor

Isolation is Hard



He's becoming isolated and weird...

Globalized Economy Was to Grow *Maybe* 1.6% but later projected for Global Recession



- <https://intelligence.weforum.org/topics/a1G0X000006O6EHUA0?tab=publications>

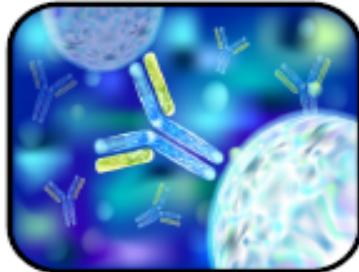
THE GREAT RE-OPENING DEBATE

Whether, When & How to Re-Start?



THE NEW NORMAL

- A Half-Speed Economy: investment, consumption, trade, growth
- Temperature checks to travel, dine, go to work, attend class
- Rolling regional flare-ups & lock-downs (red / green zones)
- Ubiquitous masks, wipes, re-designed public spaces



THE ANTIBODY ECONOMY

- COVID immunity tests are the new I-9 Forms
- Salary premiums for “uninfectables”... “CV” on your CV?
- Smarter quarantine spaces (safer, connected COVID hotels)



THE GREAT DEBATE

- Have we gone too far or not far enough? THAT is the question.
- Should the responsible subsidize the reckless?
- Is excluding higher-risk people protective or discriminatory?
- *COVID is the new climate change: Ground Zero for 2020 culture wars*

The US Must Re-Open Carefully

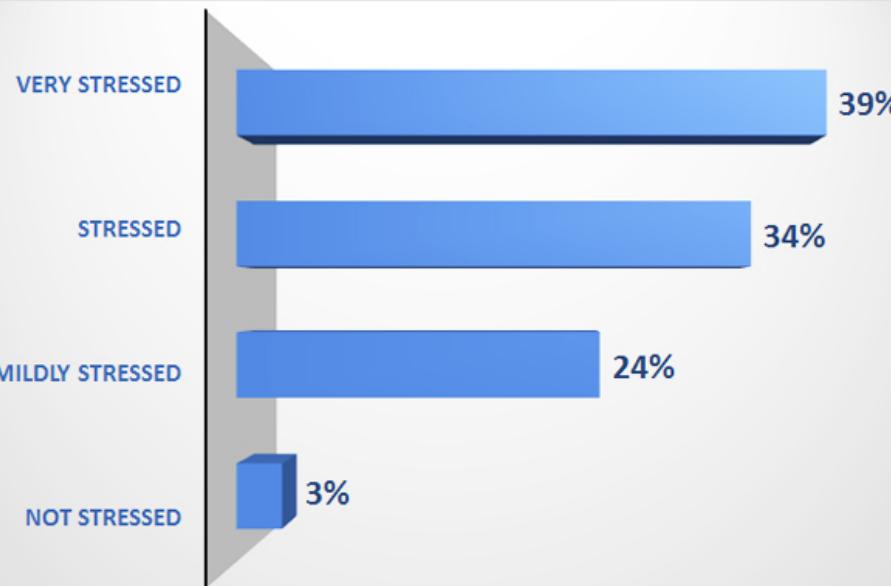


Perception is NOT Reality

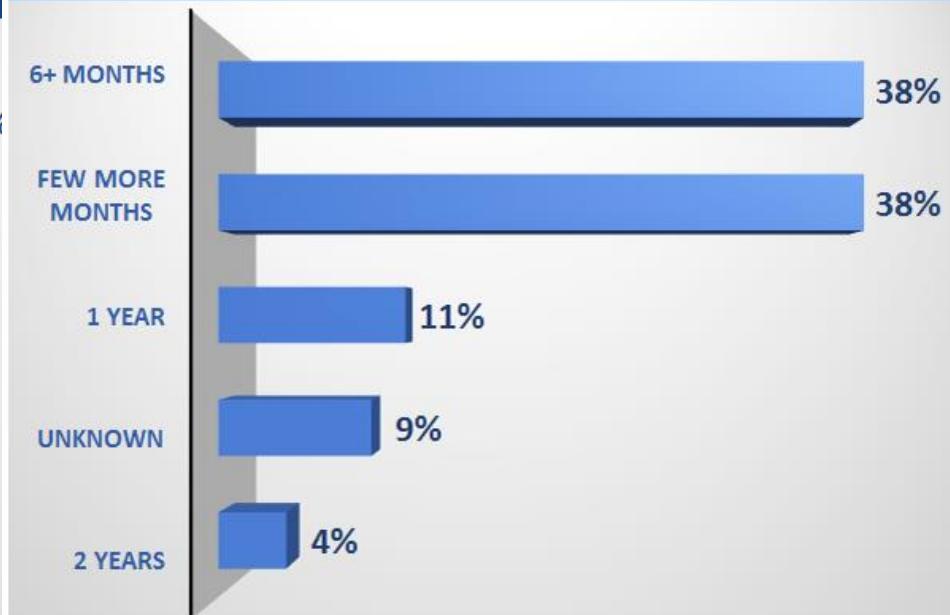
But it CAN Feel That Way

People Are Stressed and Worried It Will Last Quite Awhile

How Stressed Are You About
The Coronavirus Outbreak?



For How Long Do You Expect The Status
Of The Coronavirus To Continue?

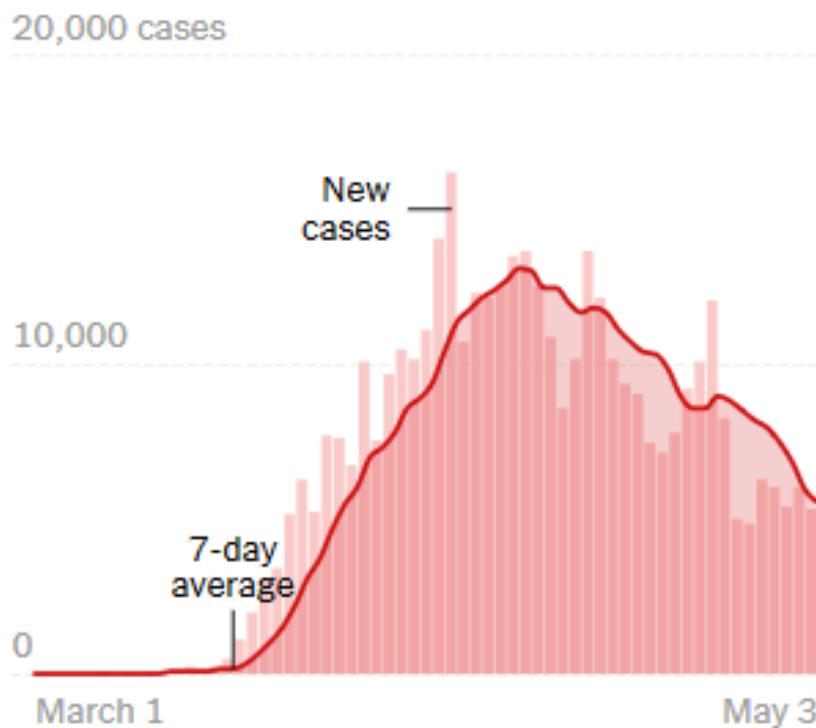


<https://www.emedihealth.com/covid-19-survey.html>

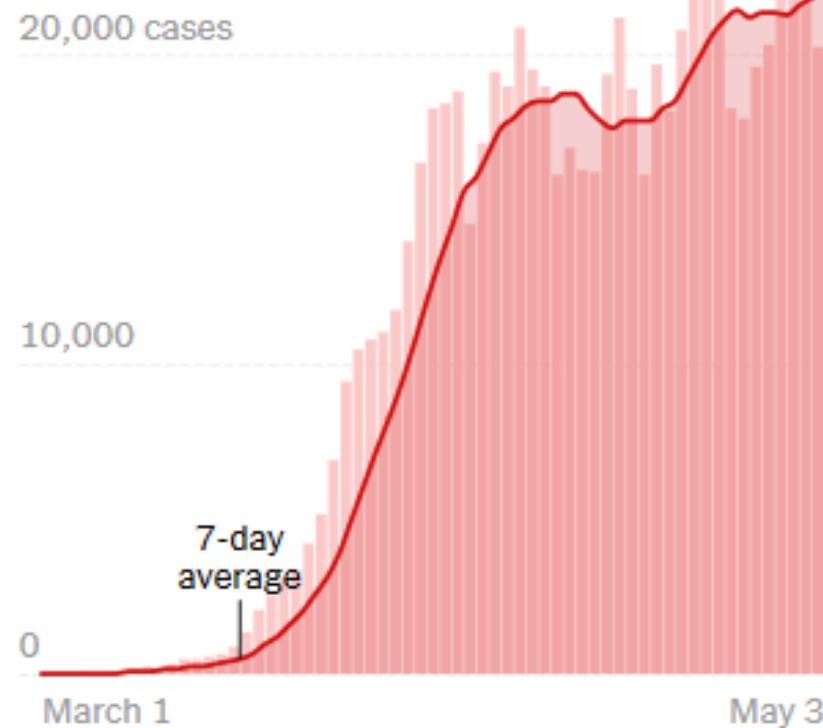
New Reported Cases by Day

As the New York metro area has seen a recent decline in new cases, the number of cases in the rest of the United States has steadily increased.

New York metro area



Rest of the United States

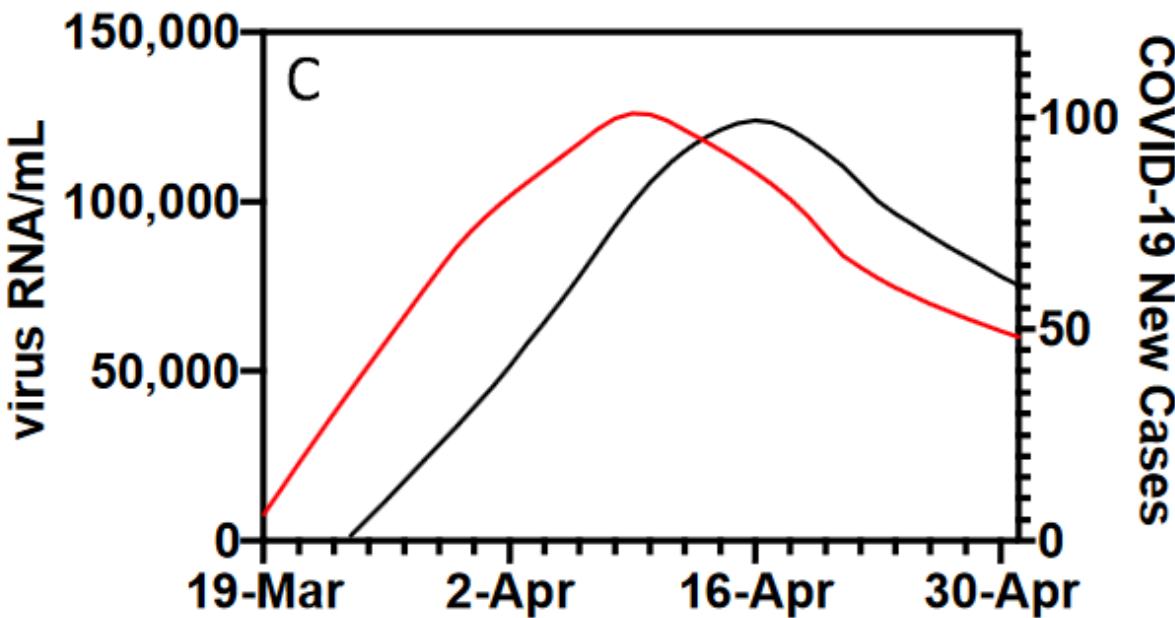


Source: [New York Times database](#) of reports from state and local health agencies and hospitals. • The New York City metropolitan area is defined by the U.S. Census Bureau and includes nearby cities and suburbs in Westchester, Long Island and northern New Jersey.

So, after accounting for NYC, the rest of the country has yet to peak...

<https://www.nytimes.com/2020/05/05/us/coronavirus-deaths-cases-united-states.html>
182

Imagine Being A Week Ahead of the Virus Rather Than A Week Behind



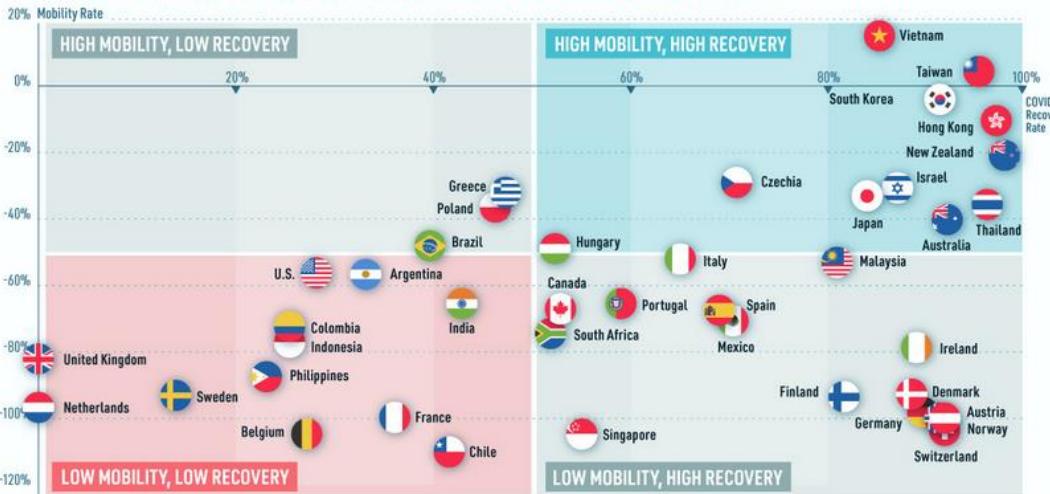
This graph is amazing. It shows that measuring [#SARSCoV2](#) levels in municipal sewage almost perfectly predicts forthcoming [#COVID19](#) cases with a full week's notice ($R=0.994$). It's one of several discoveries in this new study. This study should be fast tracked for peer review.

You could start sampling the incoming sewer lines to narrow down what neighborhoods the clusters are in, and test everyone there. (Original idea from someone on Twitter months ago.)

Pooling samples also can identify where there might be clusters. It would be very useful for office/manufacturing settings. You can test 32 on one test kit

Speed of Recovery – US Compared to Others

GOOGLE MOBILITY INDEX AGAINST COVID-19 RECOVERY RATE



<https://www.visualcapitalist.com/the-road-to-recovery-which-economies-are-reopening-covid-19/>

This chart measures the extent to which 41 major economies are reopening, by plotting two metrics for each country: the **mobility rate** and the **COVID-19 recovery rate**:

1. Mobility Index

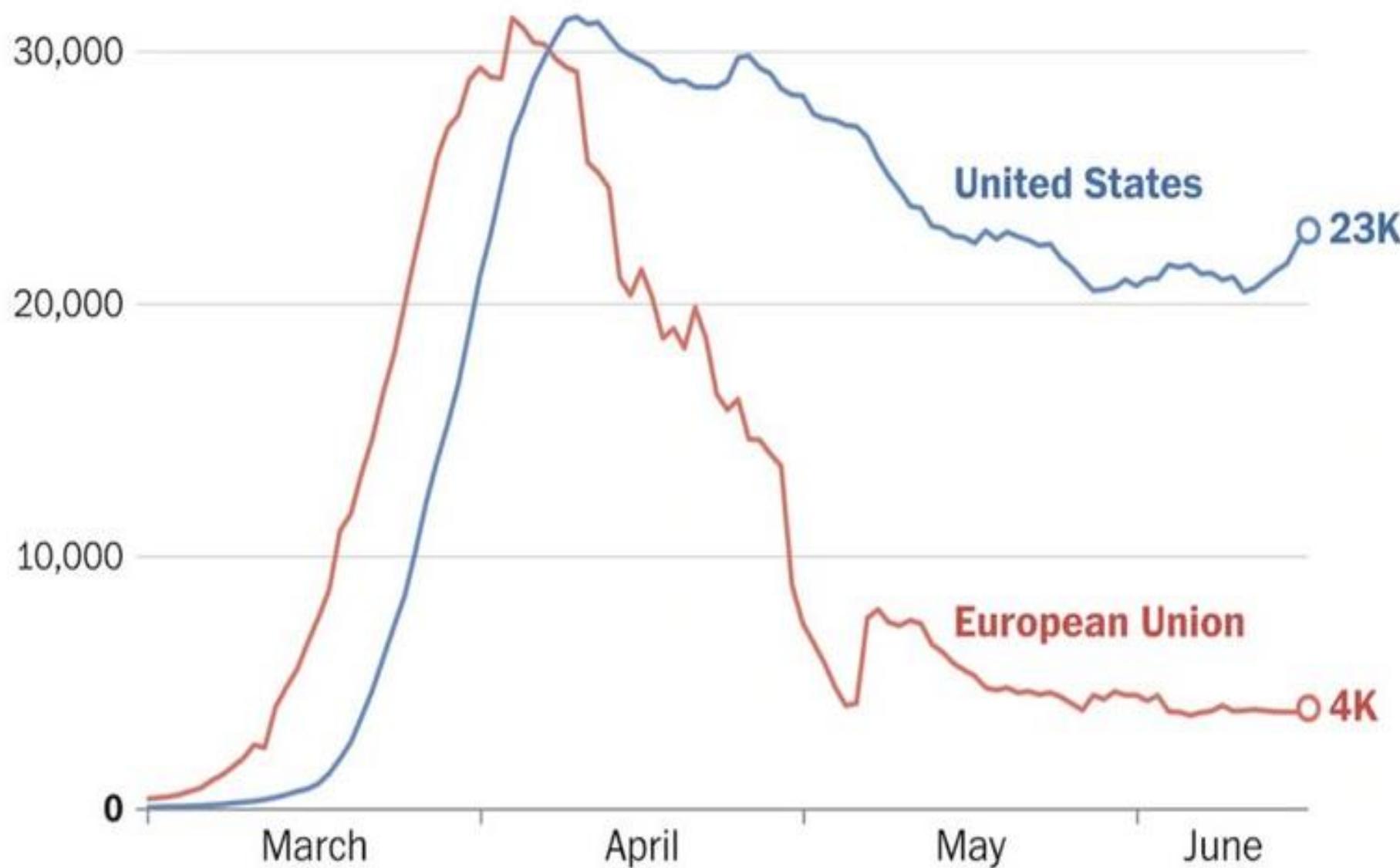
This refers to the change in activity around workplaces, subtracting activity around residences, measured as a percentage deviation from the baseline.

2. COVID-19 Recovery Rate

The number of recovered cases in a country is measured as the percentage of total cases.

Data for the first measure comes from [Google's COVID-19 Community Mobility Reports](#), which relies on aggregated, anonymous location history data from individuals. Note that China does not show up in the graphic as the government bans Google services.

Seven-day rolling average of new coronavirus cases, March 1 to June 17



Source: Johns Hopkins University

HARRY STEVENS/THE WASHINGTON POST

Welcome to the First Global Economic Depression of Our Lifetimes



People wait on a long line to receive a food bank donation at the Barclays Center on May 15, 2020 in the Brooklyn borough in New York City. [Stephanie Keith—Getty Images](#)

When we use the word “depression,” the images we conjure up tend to be of Hoovervilles and soup lines circa 1930’s. But the world has come a long way since then, and the last 100 years or so of globalization has catapulted humanity into unprecedented levels of human, economic, political and technological capital.

When the Great Depression happened, we didn’t have the social safety nets and political institutions we have today. We also didn’t have a decades-long track record showing the world was better off when cooperating rather than in conflict. Thanks to technology and other advancements, today’s “global middle class” enjoys a quality of life that would have made even the well-off of 1930 envious.

Also, the same things that make pandemics so deadly in 2020—global supply chains and international travel, for example—has also enabled the global interdependence that keeps the world in a relative peace even when the global politics seem to be pushing in the other direction. As a collective whole, humanity is better prepared to weather this depression than we were a century ago.

UI Cumulative Claims

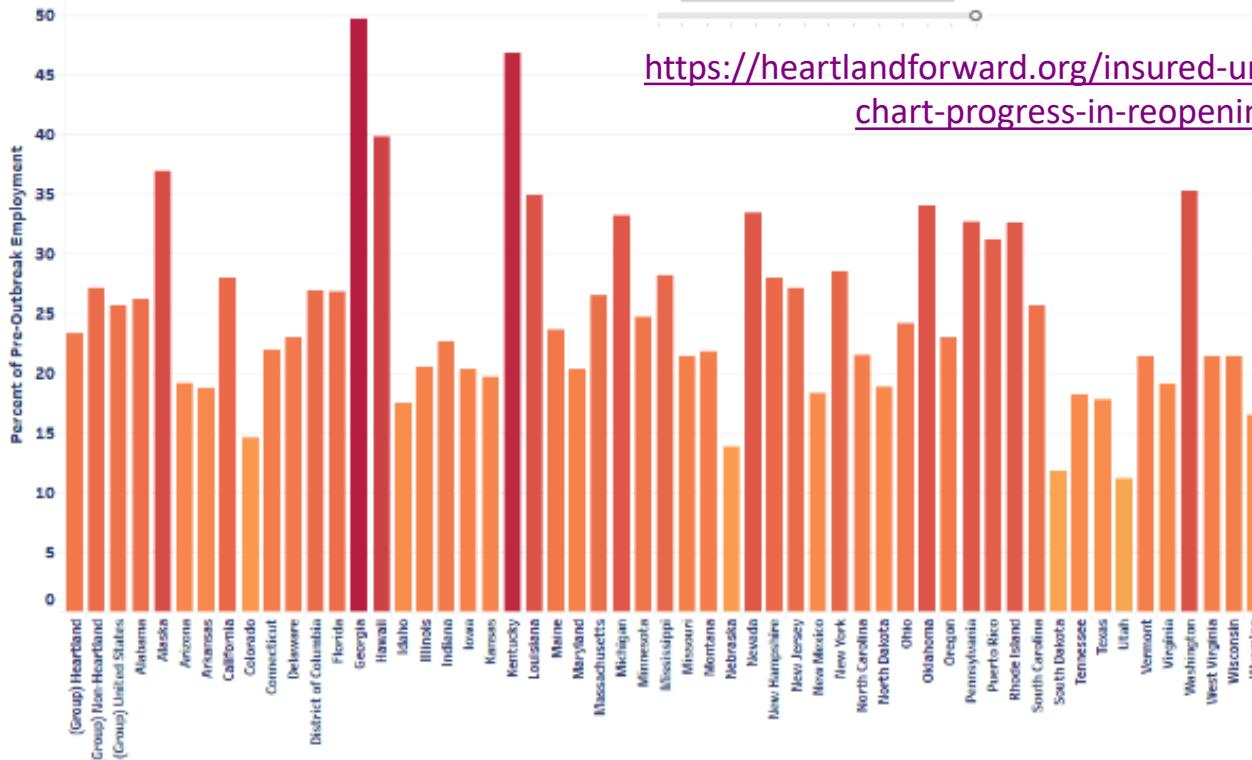
Search by State as of 6June

UI Cumulative Claims

Initial Unemployment Insurance Claims from March 1st through the Selected Week As a Share of Pre-Outbreak (February) Employment

Select an End Week

Week 14 (Week Ending June 6)



<https://heartlandforward.org/insured-unemployment-rates-chart-progress-in-reopening-states-economies>

Source: Department of Labor; Bureau of Labor Statistics

Notes: Data are based on initial claims from March 1 through the selected week. We use seasonally adjusted February 2020 employment from the Current Population Survey (CPS) to capture pre-outbreak employment. Because workers are generally required to file unemployment claims in their state of prior employment and the CPS employment measure counts workers in the state they reside, there is a slight mismatch between the measures when workers worked in one state and reside in another. However, the CPS employment measure better aligns with the current class of workers eligible for unemployment insurance than other measures. Due to a lack of employment data, Virgin Islands shares are not provided and the islands are not included in the state group calculations.

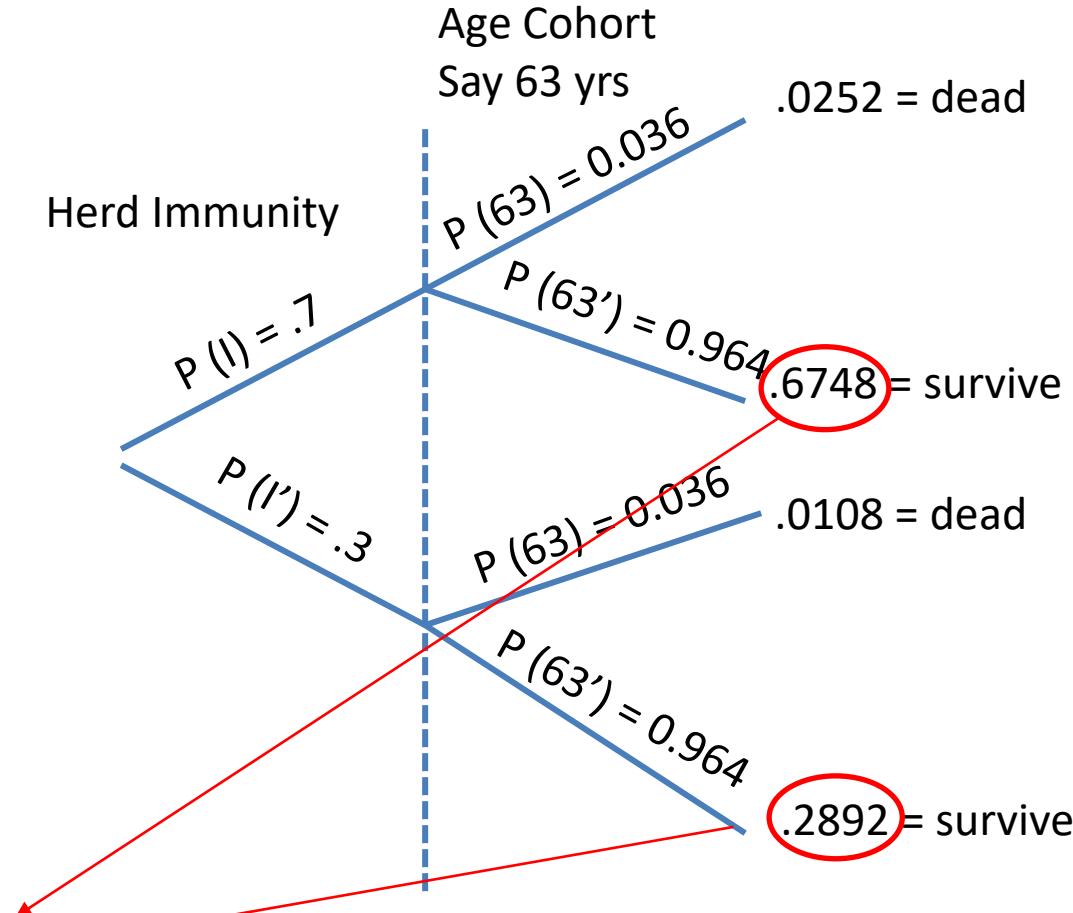
Herd Immunity

AGE	DEATH RATE confirmed cases	DEATH RATE all cases
80+ years old	21.9%	14.8%
70-79 years old		8.0%
60-69 years old		3.6%
50-59 years old		1.3%
40-49 years old		0.4%
30-39 years old		0.2%
20-29 years old		0.2%
10-19 years old		0.2%
0-9 years old		no fatalities

**Herd Immunity Is Important.
With It and Corona Danger by
Age Cohort, You Can Estimate
Your Chances of Dying**

Conditional Probability Will Provide an Estimate of Survival for An Individual

- Herd Immunity
- $P(\text{Immune} = I = 0.7)$
- $P(\text{Not Immune} = I' = 0.3)$
- Mortality Rate
- $P(\text{Mortality})$ for a given age from previous slide
- $P(\text{Mortality}') = \text{living}$ from previous slide



$P(\text{survival for a 63 yr old} = .6748 + .2892 = 0.964 \text{ or a } 96.4\% \text{ chance of survival}$

$P(\text{dying for a 63 yr old} = 1 - 0.964 = .036 \text{ given herd immunity} = 0.7 \text{ or 70\% of the population immune}$

$P(\text{survival drops to 69.4\% if herd immunity is only 60\%. Ergo The higher the herd immunity the better!}$

Sweden's Goal of Herd Immunity Results So Far – Not Working

cause of death means that the number of confirmed deaths may not be an accurate count of the true number of deaths from COVID-19.

LINEAR

1,200

1,000

800

600

400

200

0

Jan 22, 2020

Mar 1, 2020

Apr 16, 2020

+ Add country

Sweden

Denmark

Poland

South Korea

Norway

Finland

However - Herd immunity is only valid for diseases which are person to person transmitted

- The concept was introduced in epidemiology dynamic, a branch of math that deals with the dynamics of epidemics.
- The population is divided into three sub populations:
 - The healthy: called susceptible.
 - The infectious.
 - The recovered: a patient that is cured and immune or dead...
- We know the disease can be spread by soiled surfaces and is found up to 17 days after being spread on the surface.
- This new mode of infection invalidates the previous analysis.
As long as the susceptible persons can touch an infected surface (and then his nose or eyes), they are going to get infected, no matter how dense is the ocean of immune people around them.

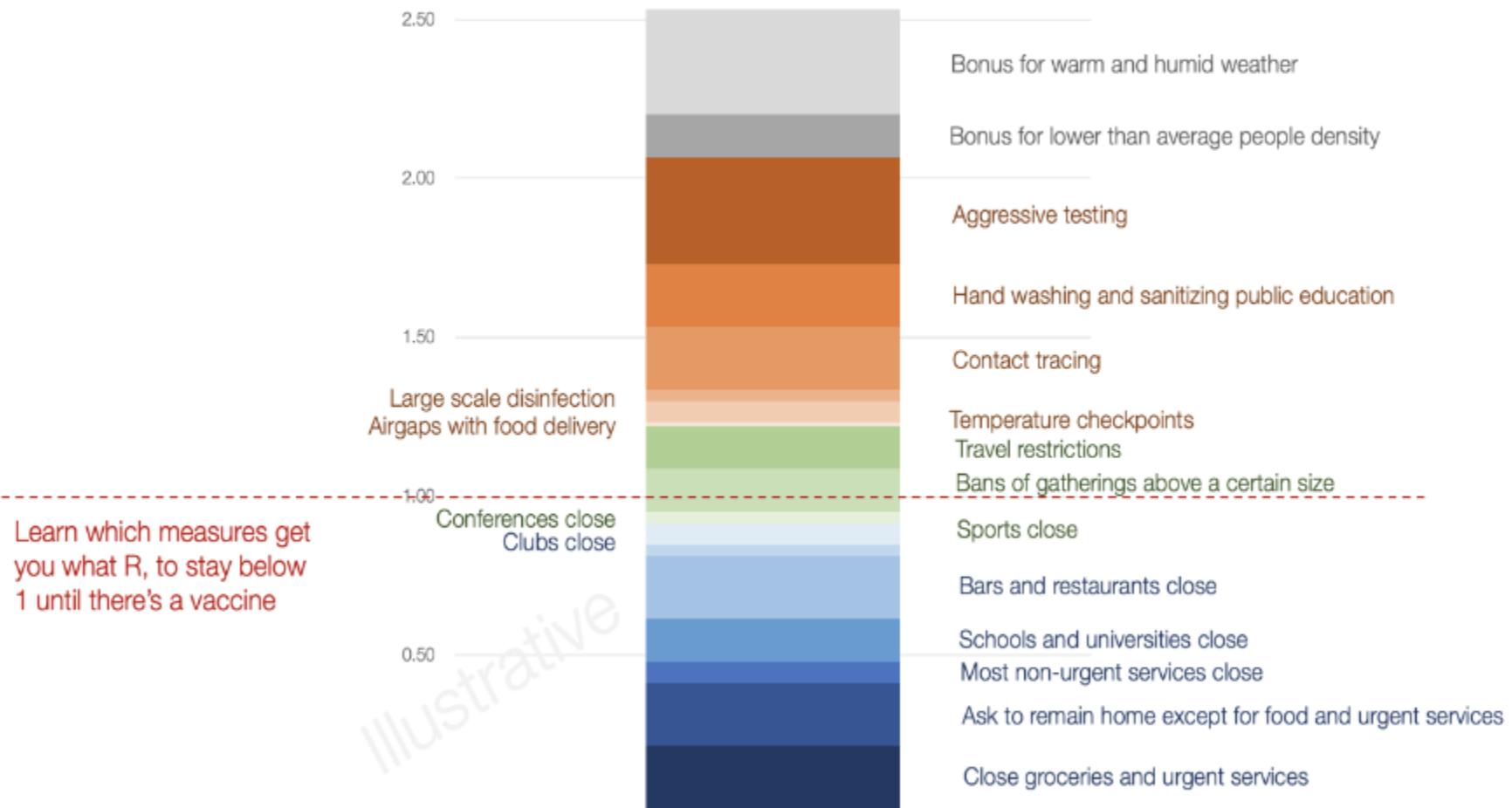
<https://www.quora.com/Why-do-people-keep-saying-we-will-reach-COVID-19-herd-immunity-at-70-infection-I-have-NEVER-heard-any-less-than-92-for-any-other-virus-What-am-I-missing/answer/Fabrice-Allais?ch=99&share=e7789724&srid=xCjJ9>

If we do what we should, it'll feel like we overreacted.
Please do it anyway.



Chart 15: Building Up to R = 1

*Illustrative Example of How Politicians Could Make Decisions during the Dance Phase**



Source: Tomas Pueyo

Note: None of these numbers are known today. But in one month, we might have enough data to quantify them. Furthermore, this graph suggests that these measures add up, when in fact they don't. For example, mandating at least 2m of distance between people would capture much of the benefit of other social distancing measures

<https://medium.com/@tomasguey/coronavirus-the-hammer-and-the-dance-be9337092b56>

Chart 16: How to Dance around the R

*Illustrative Example of Data-Driven Decision-Making for Politicians,
including costs, benefits, and confidence*

		Benefit in R	Confidence in benefit	Cost per week	Confidence in cost	Implement?
Social Distancing	Close groceries and urgent services	0.26	Low	\$1,000,000,000	Low	No
	Ask to remain home except for food and urgent services	0.22	High	\$ 500,000,000	Low	No
	Most services close	0.07	Medium	\$2,000,000,000	Low	No
	Schools and universities close	0.15	Very high	\$ 500,000,000	Medium	No
	Bars and restaurants close	0.24	Very high	\$ 300,000,000	Very high	No
	Clubs close	0.04	Medium	\$ 200,000,000	Very high	Yes
	Sports close	0.08	Medium	\$ 100,000,000	Very high	Yes
	Conferences close	0.04	Medium	\$ 120,000,000	Very high	Yes
	Bans of gatherings above a certain size	0.16	Very high	\$ 40,000,000	High	Yes
	Travel restrictions	0.16	Very high	\$ 300,000,000	Medium	Yes
	Airgaps with food delivery	0.02	Low	\$200,000	Very high	Yes
	Temperature checkpoints	0.08	Medium	\$ 3,000,000	Very high	Yes
Reduce contagiousness	Large scale disinfection	0.04	Low	\$ 50,000,000	Very high	Yes
	Contact tracing	0.25	Very high	\$ 20,000,000	Very high	Yes
	Hand washing and sanitizing public education	0.25	Very high	\$ 200,000	Very high	Yes
	Aggressive testing	0.41	Very high	\$ 25,000,000	Very high	Yes

R after all Chosen Measures a

0.94

Source: Tomas Pueyo

- This is for illustrative purposes only. All data is made up. However, as far as we were able to tell, this data doesn't exist today. It needs to.
- Initially, their confidence on these numbers will be low.

Corona Testing

- Two Types of Testing Required
 - Test for Infection
 - Test for Antibodies
- All Agree aggressive tests protocols of BOTH types are needed.
- ID infected to isolate & drive down R₀
- ID “cured” to allow back to work at no risk to others
- BLUF – not enough testing is happening.

How Do I Know How Good The Test Is?

- Prevalence - frequency of the condition in the population tested
- Specificity - probability of identifying the patients that do not have the condition
- Sensitivity - probability of being correct
- It's a combination of these factors that work into the calculation of the “accuracy” of any given test. It's a Bayesian probability.
- Fortunately there is a site that will do the math for you!

How Do I Know How Good The Test Is?

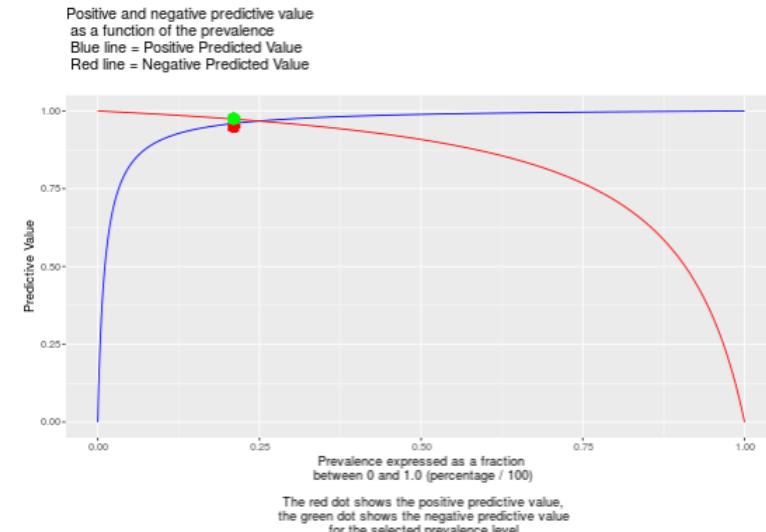
Bayesian Clinical Diagnostic Model

© 2016 - 2020 Kennis Research

Bayesian inference is a method of statistical inference in which Bayes' rule is used to update the probability that a hypothesis is correct as evidence is added. In clinical medicine Bayesian methods are used to establish the probability that a patient has a particular condition given the results of the test used and the prevalence of the condition in the population tested. This applet shows the percentage of patients that having tested positive for a condition, do actually have the condition being tested. The probability that the subject has the condition is largely dependent on the frequency of the condition in the population tested (prevalence). This applies even if the test has a high probability of being correct (sensitivity) and a high probability of identifying the patients that do not have the condition (specificity). The applet allows the user to set the values for the condition's prevalence and for the test's accuracy (sensitivity and specificity) and displays the results as the number of patients who actually have the disease and the chance that if the test is positive the subject does have the condition tested (positive predictive value). The chart shows the user how the positive and negative predictive values change with the sensitivity and specificity of the test. For information on Bayesian Inference click [here](#) for the Wikipedia page.



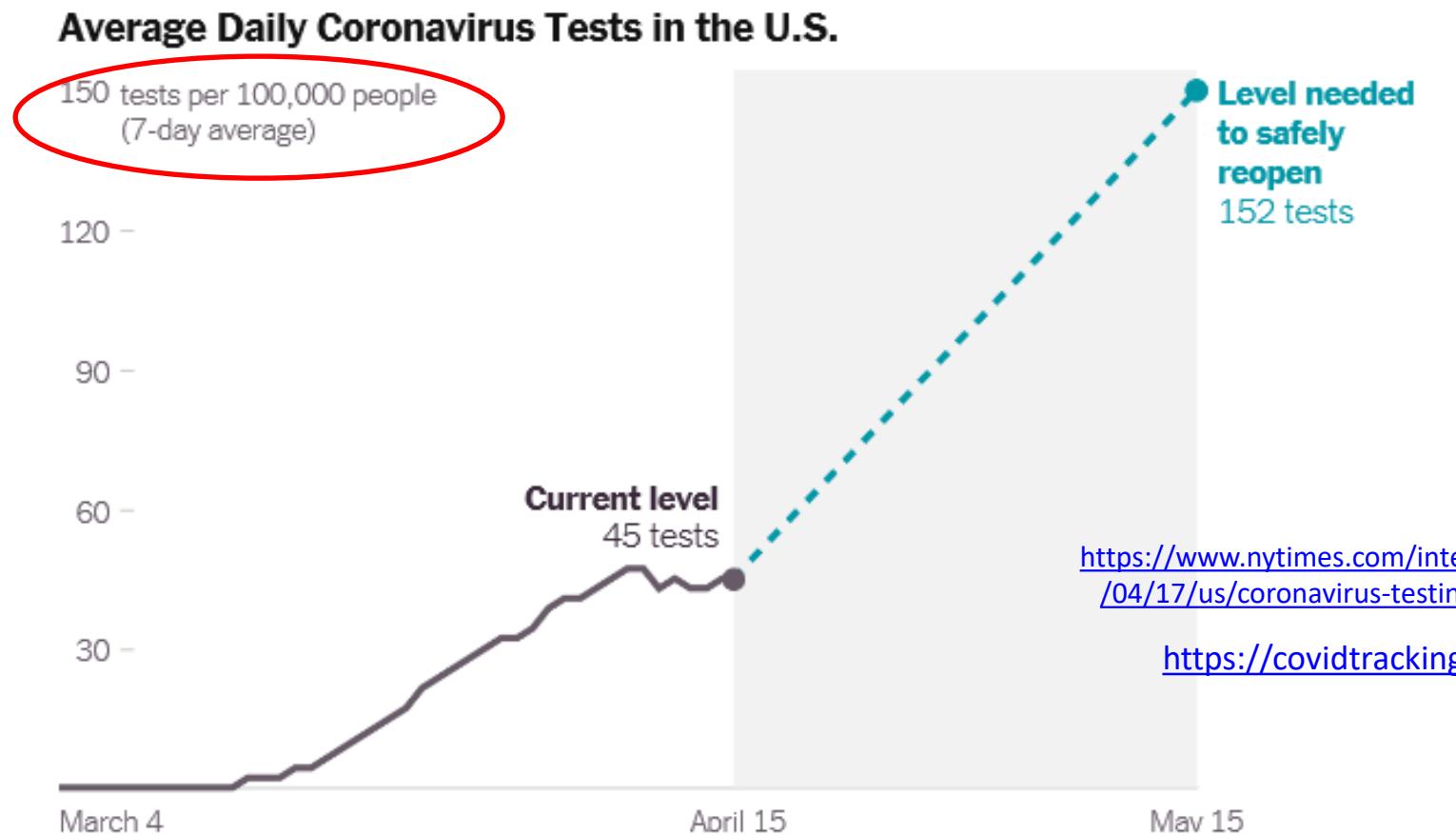
Parameter	Value
Prevalence	0.21
Sensitivity	0.9
Specificity	0.99
Number of Observations	100
True Positives	19
True Negatives	78
False Negatives	2
False Positives	1
Positive Predictive Value	0.95
Negative Predictive Value	0.975
Positive Likelihood Ratio	90
Accuracy	0.97



The chart shows the user how the positive and negative predictive values change with the sensitivity and specificity of the test. For information on Bayesian Inference click [here](#) for the Wikipedia page.

<https://kennis-research.shinyapps.io/Bayes-App/>

Testing for Infection – Short of What is Needed Nationally

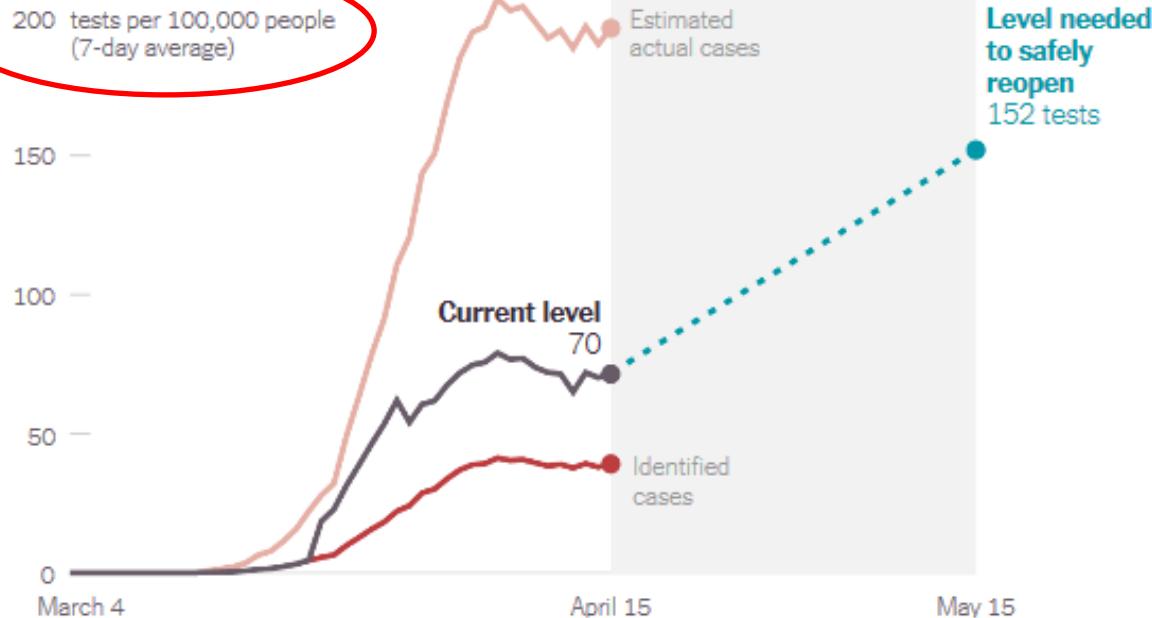


An average of 146,000 people per day have been tested for the coronavirus nationally so far this month, according to the [COVID](#)

Example of Testing Shortfalls

Average Daily Tests in New Jersey

200 tests per 100,000 people
(7-day average)



Note: Estimated cases are five times the number of cases identified. The researchers estimate that at least 80 percent of people who have the virus have not been tested.

The state's testing has been hindered by setbacks, including long lines at testing facilities and a shortage of health care workers and testing swabs.

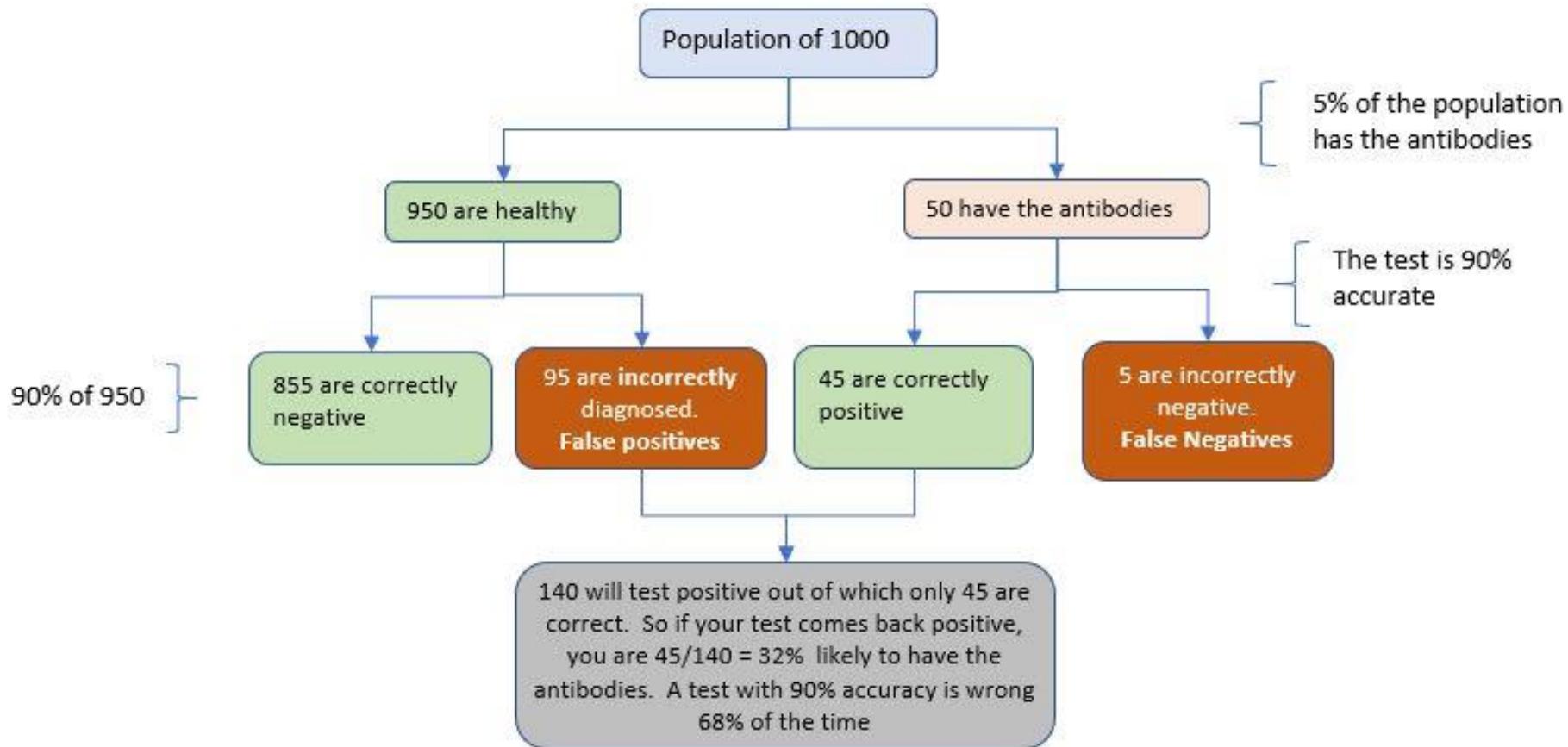
New Jersey currently (17Apr) has the highest positive rate among all states — about half of the 157,000 coronavirus tests that it has conducted so far have come back positive.

That suggests that many of the people in the state who have the coronavirus have not been tested.

And recently, testing in New Jersey has started to decline.

Testing By the Numbers

Bayesian Probability: A 90% accurate test for a disease found in 5% of the population



This is why the importance of the testing have a high accuracy in the positives column. 90% accuracy is weak sauce. I think the CDC wants closer to 99%. False-negatives are less consequential than False-positives for anti-body tests.

Types of Testing

What They Say and Why it Matters

Type of test

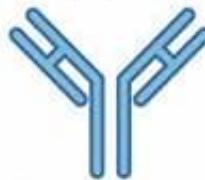
Molecular test

Molecular tests detect genetic material from the virus.



Antibody test

These tests detect antibodies: Y-shaped molecules made by the immune response to disable a virus or mark it for destruction.



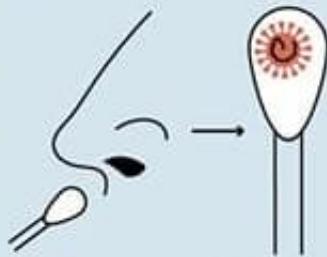
Antigen test

This is the newest of the three testing types. These tests detect antigens: pieces of a virus that the immune system recognizes. A single virus has many antigens.



Sample collection

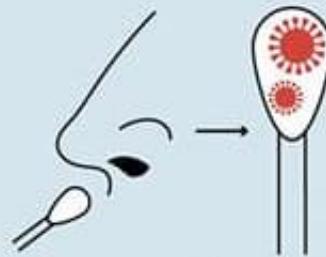
A nasal or throat swab collects infected cells.



A blood draw collects antibodies produced by immune cells.

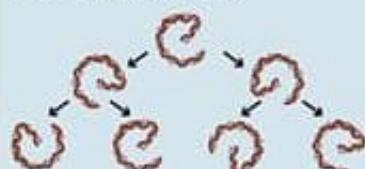


A nasal swab collects infected cells.

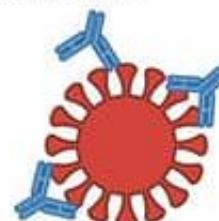


Detection

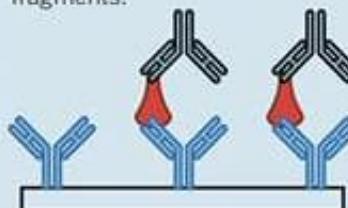
A series of chemical reactions copies viral genetic material. If you're not infected there won't be any viral material to copy.



The test measures whether these antibodies bind to the novel coronavirus.



Chemicals fragment the virus, and then antibodies attached to a plate detect these fragments.



Types of Testing

What They Say and Why it Matters

Type of test	Molecular	Antibody	Antigen
What the test tells you	If you are infected now.	If you were infected in the past.	If you are infected now.
Why it's helpful	Used to isolate those infected so treatment can be provided and other potential cases of infection can be traced.	Identifies people who may have immunity and whose antibodies could be used to treat COVID-19 patients.	Provides the same information as a molecular test in 15 minutes and can be done in a doctor's office.
Limitations	A negative result doesn't guarantee immunity in the future.	Unclear if antibodies provide protection, how long immunity lasts, or what level and kind of antibody response is protective.	A negative result doesn't guarantee immunity in the future. Molecular tests are more accurate.
Some local test makers	•Mesa Biotech •Hologic	•Diazyme •Genalyte	Quidel received FDA emergency authorization for the first antigen test.
Where can you get a test?	State and county testing sites, hospitals, community clinics.	Community clinics; also commercially available. Genalyte has partnered with the San Diego Blood Bank to do broad-based antibody testing.	Antigen testing for the coronavirus is still new, but tests would likely be administered in hospitals and doctors' offices.

Testing is Not a Trivial Task As It Stands

Labor Intensive and Few Test Analysis Sets (2Apr2020)



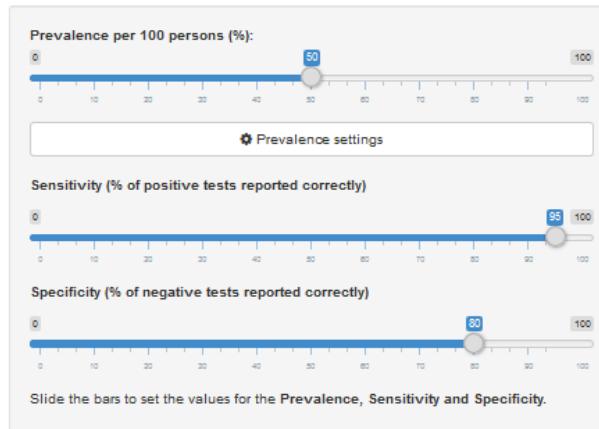
<https://www.cbsnews.com/video/military-scientists-working-with-coronavirus-samples-to-develop-possible-treatment/>

Sensitivity & Specificity Must Be > 0.9 For A Test to Be Any Use

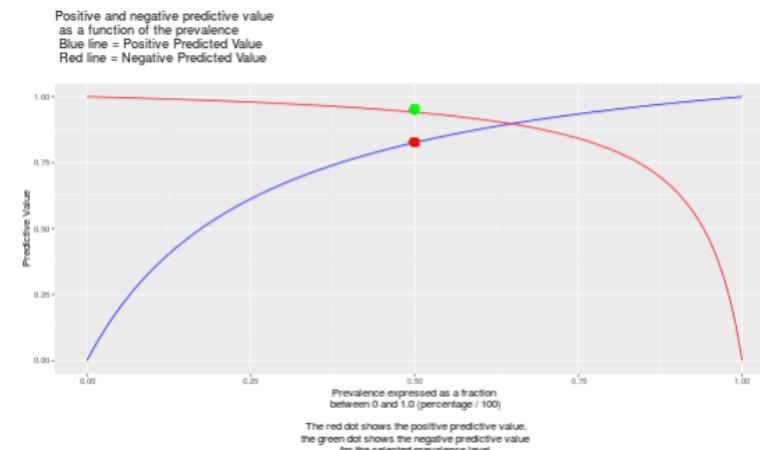
Bayesian Clinical Diagnostic Model

© 2016 - 2020 Kennis Research

Bayesian inference is a method of statistical inference in which Bayes' rule is used to update the probability that a hypothesis is correct as evidence is added. In clinical medicine Bayesian methods are used to establish the probability that a patient has a particular condition given the results of the test used and the prevalence of the condition in the population tested. This applet shows the percentage of patients that having tested positive for a condition, do actually have the condition being tested. The probability that the subject has the condition is largely dependent on the frequency of the condition in the population tested (prevalence). This applies even if the test has a high probability of being correct (sensitivity) and a high probability of identifying the patients that do not have the condition (specificity). The applet allows the user to set the values for the condition's prevalence and for the test's accuracy (sensitivity and specificity) and displays the results as the number of patients who actually have the disease and the chance that if the test is positive the subject does have the condition tested (positive predictive value). The chart shows the user how the positive and negative predictive values change with the sensitivity and specificity of the test. For information on Bayesian Inference click [here](#) for the Wikipedia page.



Parameter	Value
Prevalence	0.5
Sensitivity	0.95
Specificity	0.8
Number of Observations	100
True Positives	48
True Negatives	40
False Negatives	2
False Positives	10
Positive Predictive Value	0.8276
Negative Predictive Value	0.9524
Positive Likelihood Ratio	4.75
Accuracy	0.88



Usage

Enter the values of prevalence, sensitivity and specificity with the sliders on the left panel. The table will show the updated positive and negative predictive values in addition to the other parameters of the test. The graph on the right depends on the sensitivity and specificity of the test and tells how the positive and negative predicted Values change as a function of the prevalence. Positive and negative predictive values are the proportions of positive and negative results that are true positives and true negatives. The likelihood ratio is the odds that the subject has the condition given that the test is positive as opposed to the test being negative. Here, the positive predictive value is the actual probability that the subject has the condition tested for. The negative predictive value is the probability that given that the test is negative the subject does not have the condition tested for. For information about Sensitivity and Specificity, click [here](#) for the Wikipedia page.

© 2016 - 2020 Luis D. Berribetia MD - Kennis Research

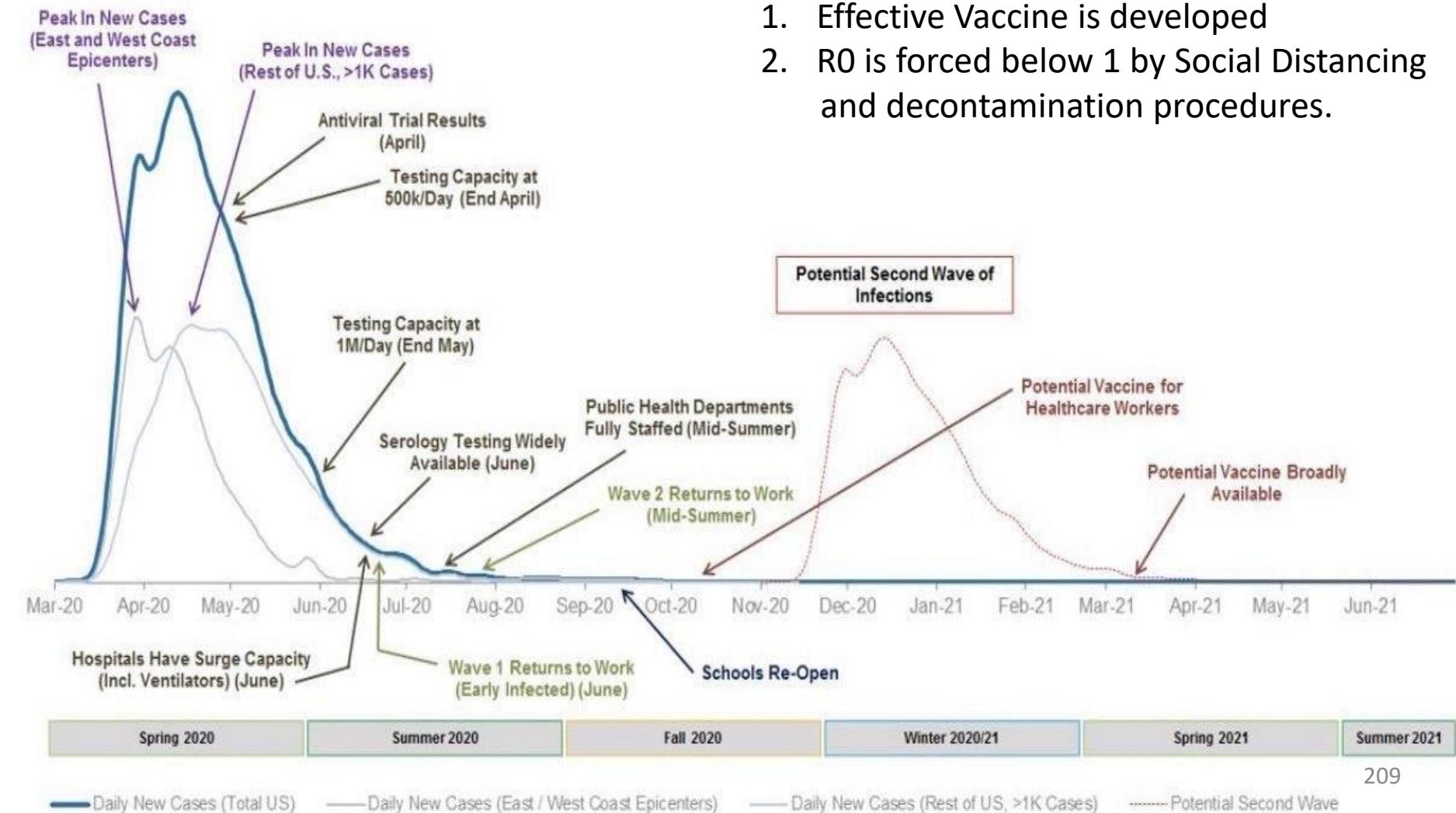
<https://kennis-research.shinyapps.io/Bayes-App/>

A Plan for How it Ends?

- The diagram on the next slide (by Morgan Stanley) depicts how and when restrictions might be lifted (shown in waves, though more probably states/regions). Note the importance of widespread testing for the virus and for antibodies, and the significance of building hospital and health worker capacities (the latter for contact tracing).
- The lifting of restrictions should be both conditions-based and graduated.
- The conditions should include a certain number of days (14?) with reductions in positive tests; a certain percentage of a state/region tested; contact-tracing methodologies established and elements for implementing them “manned;” hospital capacities at sufficient levels to react quickly to a new increase; and antibody testing well along, as well.
- Graduated reductions of restrictions would not lift restrictions on gatherings of certain sizes or restrictions on movements of those in vulnerable age groups or with conditions that increase the health risk of the virus, and would include various procedures (space between tables at restaurants, continued wear of masks in certain public spaces, verification of COVID-free to return to work, etc.), and so on.

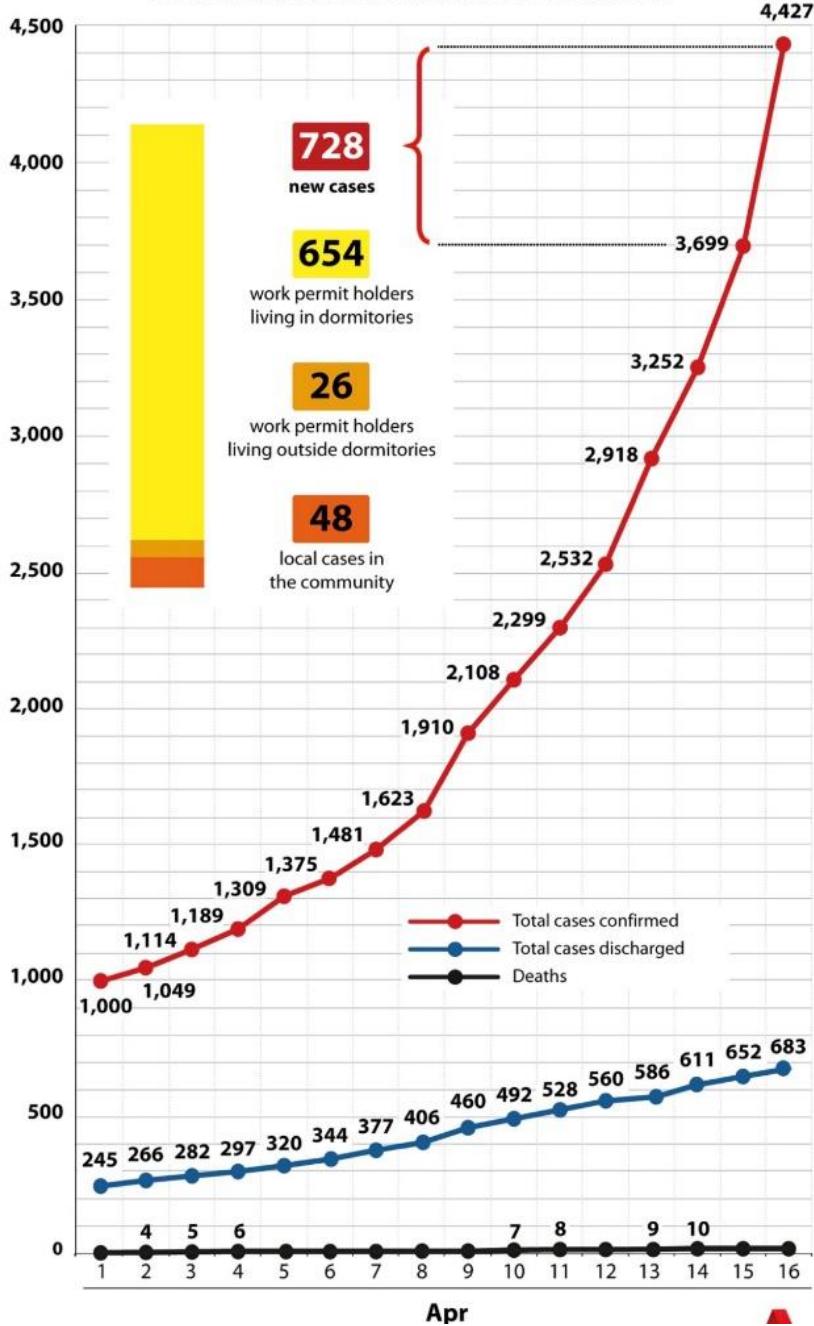
How Does it End?

Actual/Estimated New Case Count (United States, Non-Cumulative)



COVID-19 IN SINGAPORE

TOTAL CASES AND TOTAL DISCHARGED



But it only continues to work as long as you Social Distance, wear masks etc.

Too soon an opening of their economy?

Singapore should be a warning to us. They had COVID under excellent control.

Now it's out of control: 728 new cases yesterday.

When we relax social distancing measures prematurely we risk a second wave.

Places where groups of people work/live close to each other are at high risk.

Other Proposals

- Assorted proposals now coming out such as:
- American Enterprise Institute,
- Center for American Progress, and
- Harvard University's Edmond J. Safra Center for Ethics,
- The basic outlines are all similar.
- We can learn by observing what is working abroad as well.

Pressing Issues

- Because of a longer incubation period, more asymptomatic spread, and a higher R₀, COVID-19 appears to spread more easily than flu.
- A higher R₀ means more people will need to get infected and become immune before the pandemic can end.
- Based on the most recent flu pandemics, this outbreak will likely last 18 to 24 months.
- It likely won't be halted until 60% to 70% of the population is immune.
- Depending on control measures and other factors, cases may come in waves of different heights (with high waves signaling major impact) and in different intervals. We present 3 possibilities.

https://www.cidrap.umn.edu/sites/default/files/public/downloads/cidrap-covid19-viewpoint-part1_0.pdf

Recommendations

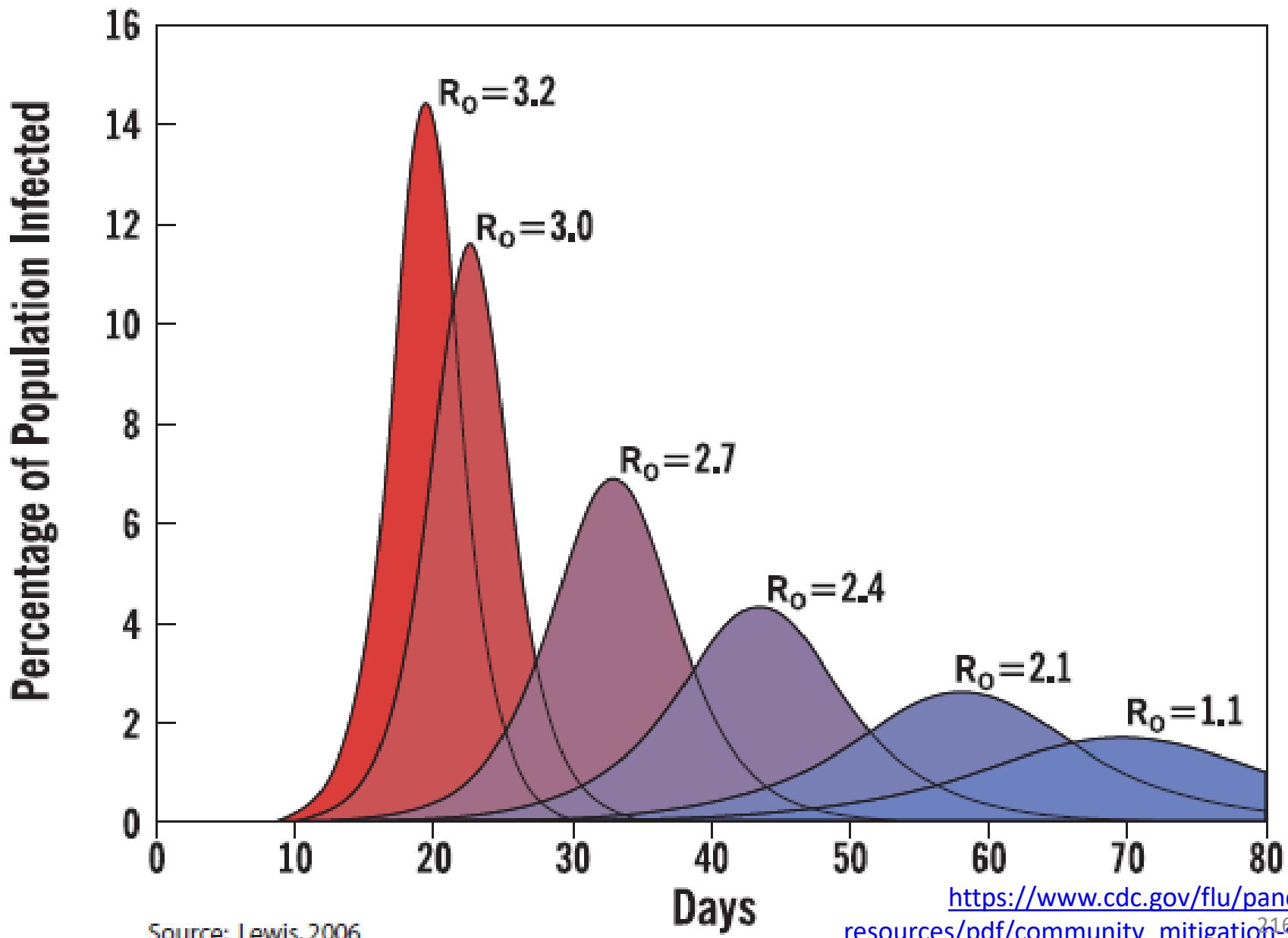
- States, territories, and tribal health authorities should plan for the worst-case scenario (Scenario 2), including no vaccine availability or herd immunity.
- Government agencies and healthcare delivery organizations should develop strategies to ensure adequate protection for healthcare workers when disease incidence surges.
- Government officials should develop concrete plans, including triggers for reinstituting mitigation measures, for dealing with disease peaks when they occur.
- Risk communication messaging from government officials should incorporate the concept that this pandemic will not be over soon and that people need to be prepared for possible periodic resurgences of disease over the next 2 years.

What's R₀ vs R_t?

- Early on in the Covid-19 outbreak, different teams of researchers came up with varying estimates of R₀, with most ranging [between two and three](#). Some put the number lower, like the World Health Organization's estimates of [1.4 to 2.5](#). But R₀ is not set in stone.
- *It is an average, and can also vary from place to place.*
- As science journalist Ed Yong put it in the Atlantic, R₀ “[is a measure of a disease's potential,](#)” and once response measures are put in place—screening and quarantines, for example—the actual transmission rate can be lowered.
- The actual or “effective” version of the reproductive number, as opposed to the basic version, is known as R_t—that is, the virus's actual transmission rate *at a given time*, t.

Figure 2.

Effect of R_0 on Epidemic Curves



Source: Lewis, 2006

https://www.cdc.gov/flu/pandemic-resources/pdf/community_mitigation-sm.pdf

Rt Graphs

- The following slides are up-to-date values for R_t , a key measure of how fast the virus is growing. It's the average number of people who become infected by an infectious person. If R_t is above 1.0, the virus will spread quickly. When R_t is below 1.0, the virus will stop spreading. Learn More.
- **R_t graphs reflect corrections for the amount of testing done over time in any given state. An increase or decrease in testing should not affect accuracy of R_t values in the future. This correction has significantly improved R_t values in most states.**

<https://rt.live/>

Rt 8 Weeks Ago

(Red > 1.0 in most states)



<https://rt.live/>

Rt 6 Weeks Ago

(Red > 1.0 in many states)



<https://rt.live/>

Rt As Of 13May

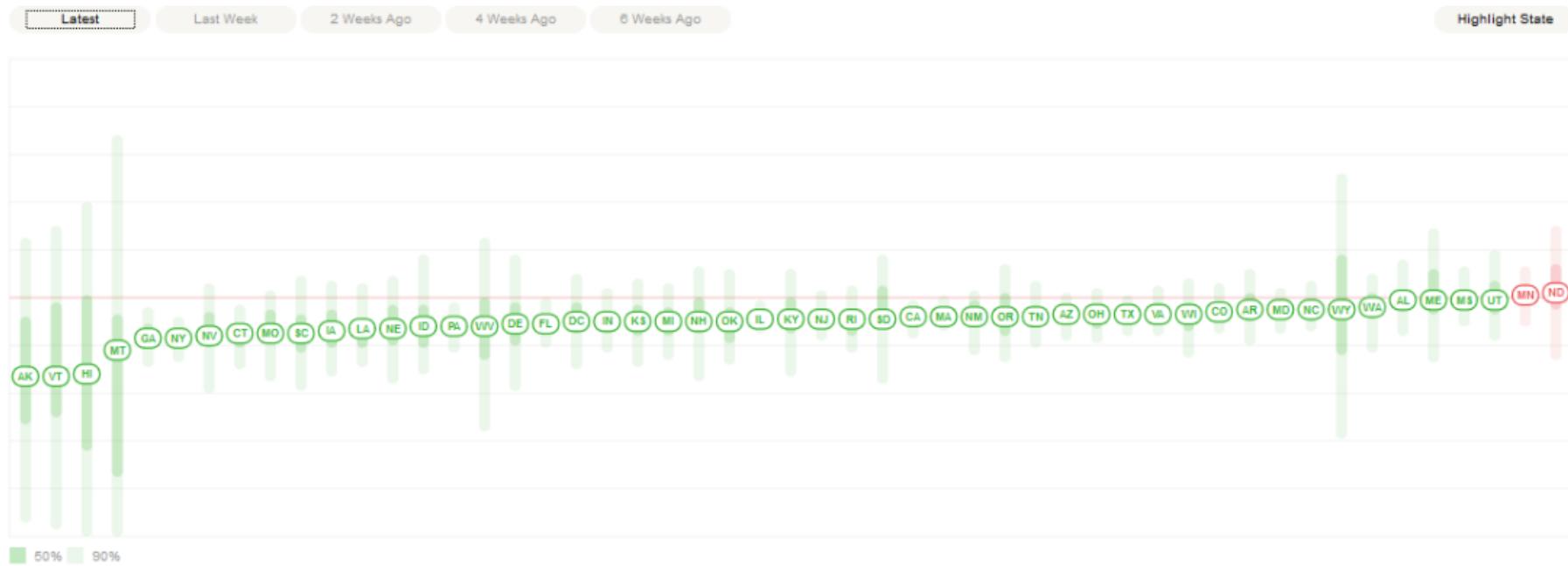
(Red > 1.0 in only 3 states)



<https://rt.live/>

Rt As Of 21May

(Red > 1.0 in only 2 states)



So it is apparent the situation is getting better as of 21May. However it should be noted that R0 may be a better measure since it *is a moving average over a period of time that includes the current time "t"* as measure by Rt, and hence is more conservative.

Rt As Of 28May

(Red > 1.0 in 9 states)



Rt As Of 6June

(Red > 1.0 in 15 states)

These are up-to-date values for R_t , a key measure of how fast the virus is growing. It's the average number of people who become infected by an infectious person. If R_t is above 1.0, the virus will spread quickly. When R_t is below 1.0, the virus will stop spreading. [Learn More](#).

5/20 model update: some states' R_t have changed because we improved our testing volume adjustments.

Data Last Updated: 6/6 at 12:03PM



A Second Wave May Have Already Started – We'll Know Soon

Rt As Of 22June

(Red > 1.0 in 31 states)

We have significantly improved and modified our Rt algorithm. We also now show values back to the beginning of the pandemic. You can read more in [our FAQ](#).

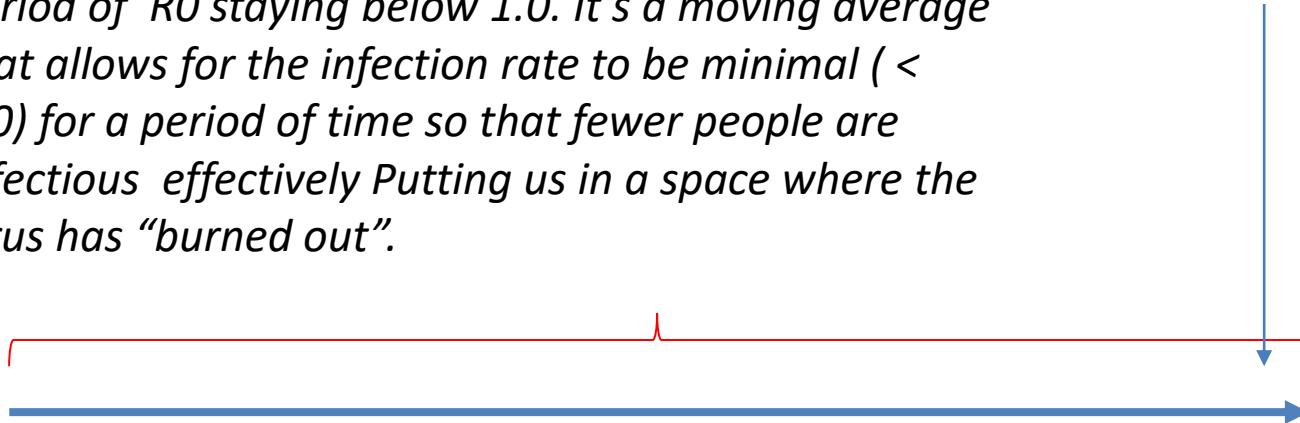


R₀ vs R_t

- So it is apparent the situation was getting better as of 13May. However it should be noted that R₀ may be a better measure since it *is a moving average over a period of time that includes the current time "t"* as measure by R_t, and hence is more conservative.
- R_t is minimal as a result of measures put in place. Remove those measures before the time has passed to safely do so and R₀ will go back over 1.0
- ***This means a second wave has begun. Mid-late June was critical. We've gone from 15 to 31 states with R_t > 1.0***

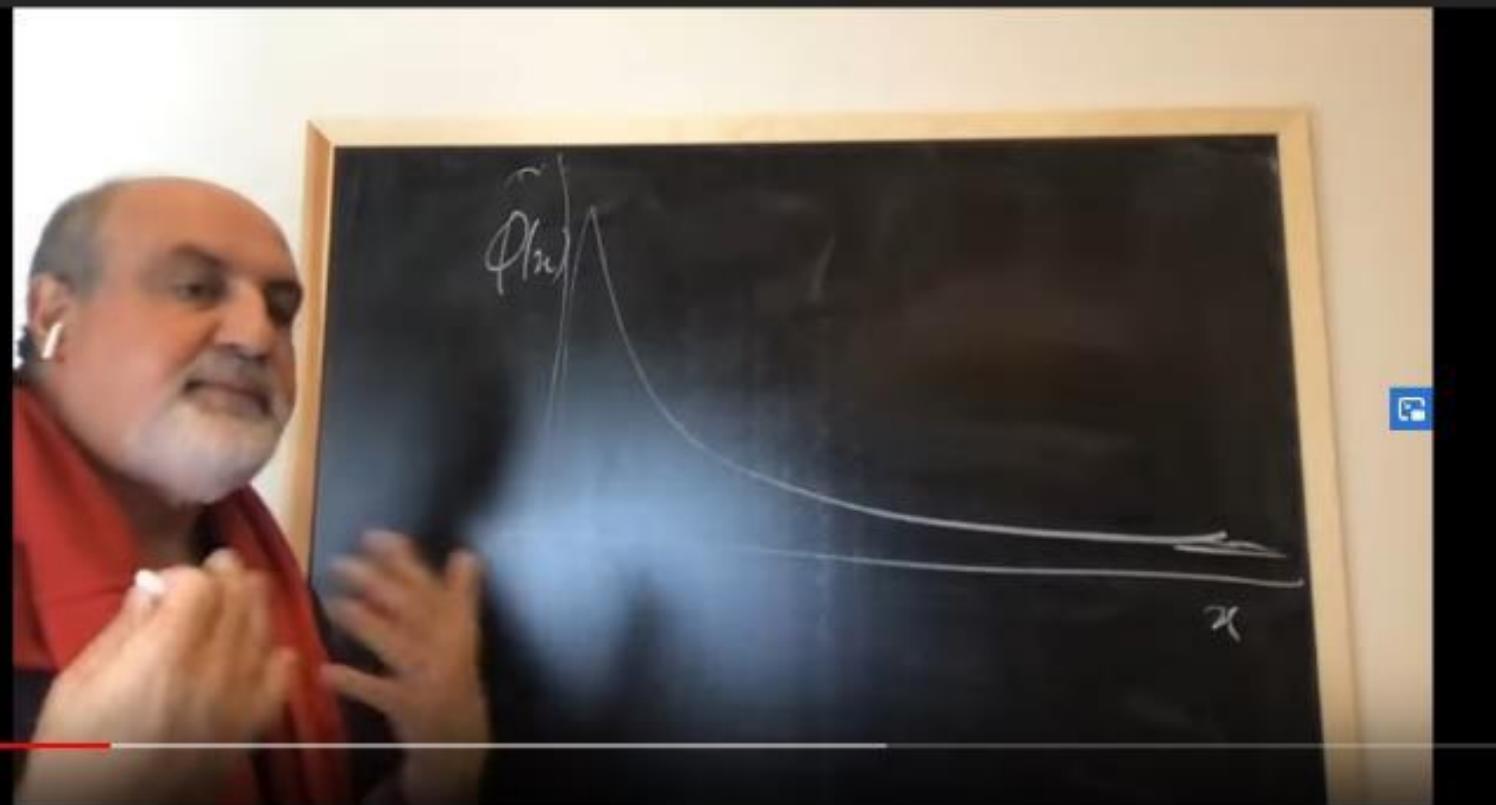
"R₀" is basically the moving average of many "R_t's" over a period of time. The CDC guidelines state that we should be cautious until there is a prolonged period of R₀ staying below 1.0. It's a moving average that allows for the infection rate to be minimal (< 1.0) for a period of time so that fewer people are infectious effectively Putting us in a space where the virus has "burned out".

"Point measure" of R_t on a given day from <https://rt.live/>



“Fat Tailed” Distributions in Pandemics

Dr. Nassem Taleb – “The Black Swan”



▶ ▶ 🔍 0:45 / 3:29

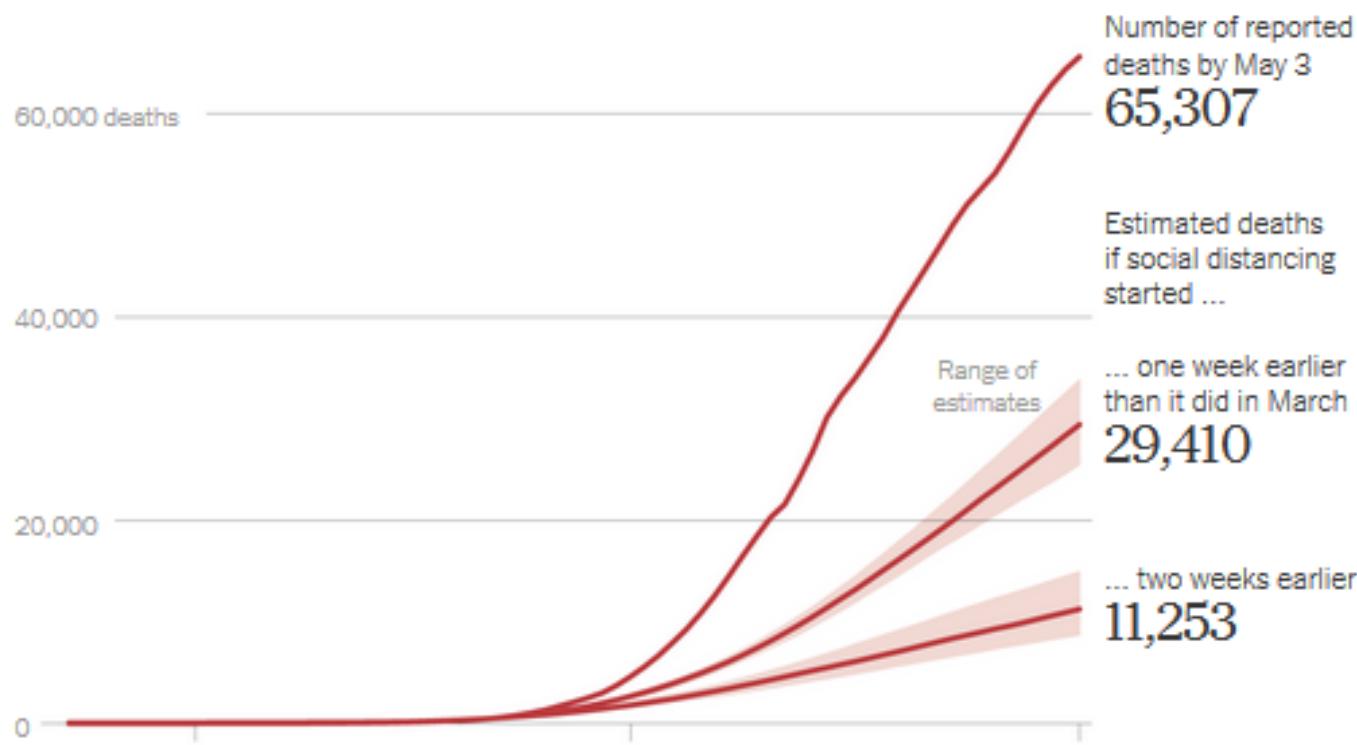
Never use single point estimates for pandemics

11,717 views • Mar 19, 2020

Up next

What Could Faster Response Have Done?

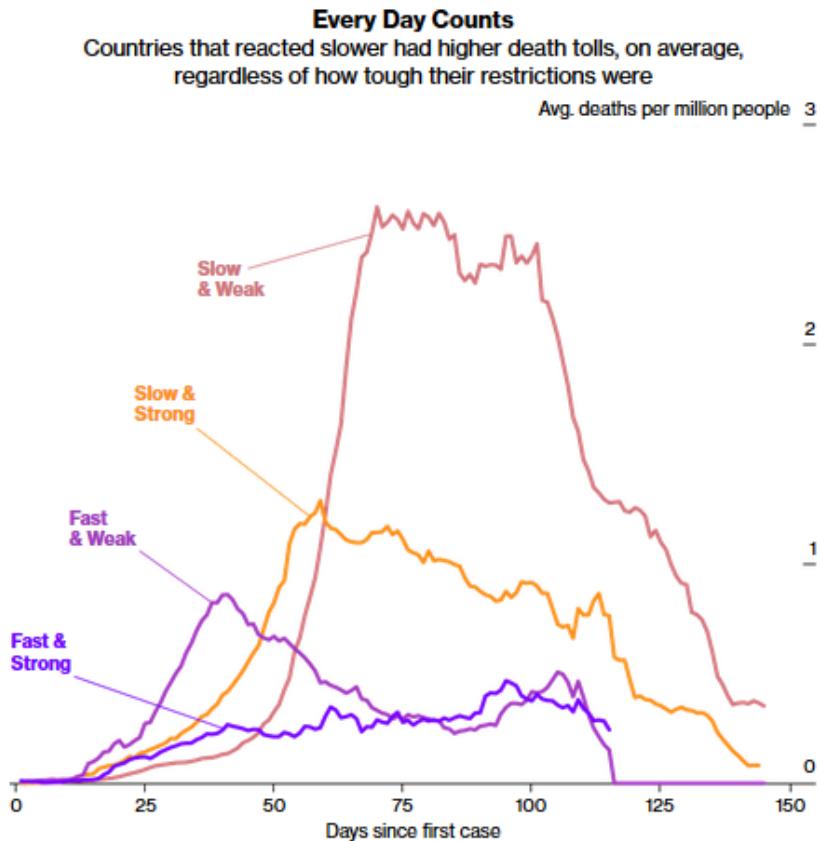
How Earlier Control Measures Could Have Saved Lives



By Weiyi Cai - Source: "Differential Effects of Intervention Timing on COVID-19 Spread in the United States," by Sen Pei, Sasikiran Kandula and Jeffrey Shaman, Columbia University

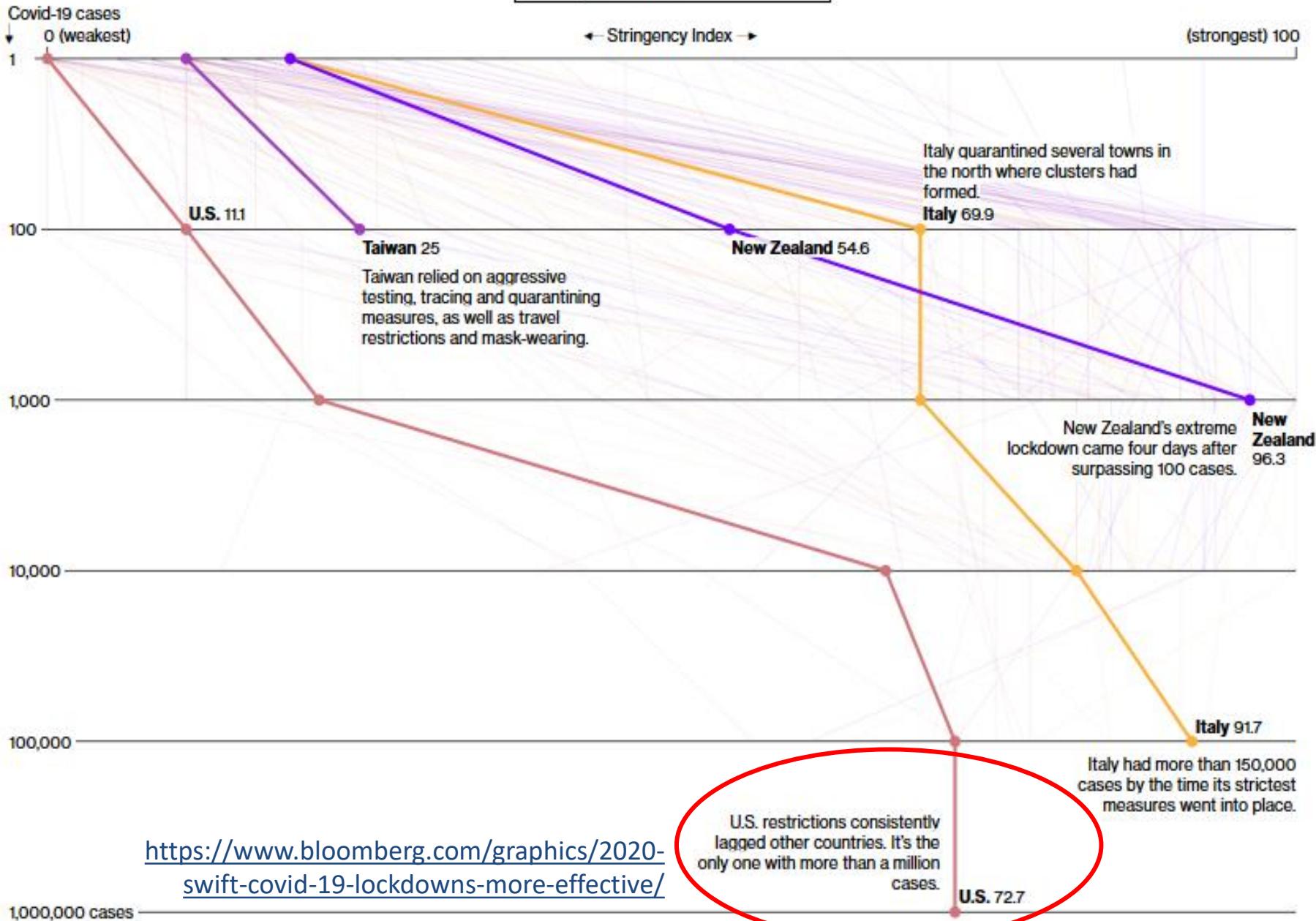
FAST vs SLOW Responses to COVID

The U.S. response to the virus was both slower and weaker than most other countries



Fast responses were those where the full suite of containment measures went into effect within 35 days of reporting a first case—the average length of time for all countries analyzed. Slow responses entailed waiting to react—including the U.K.’s initial “herd immunity” strategy—or increasing restrictions gradually as infections rose. Strong responses included a broad array of measures related to everything from the size of gatherings to domestic travel, and restrictions were often mandated for the entire country. Weak responses utilized fewer measures, with only regional mandates or mere recommendations. That includes Japan, where the federal government recommended staying inside, working from home and canceling events, but didn’t place limits on gatherings nor on its infamously crowded metro lines, and let prefectures determine school closures.

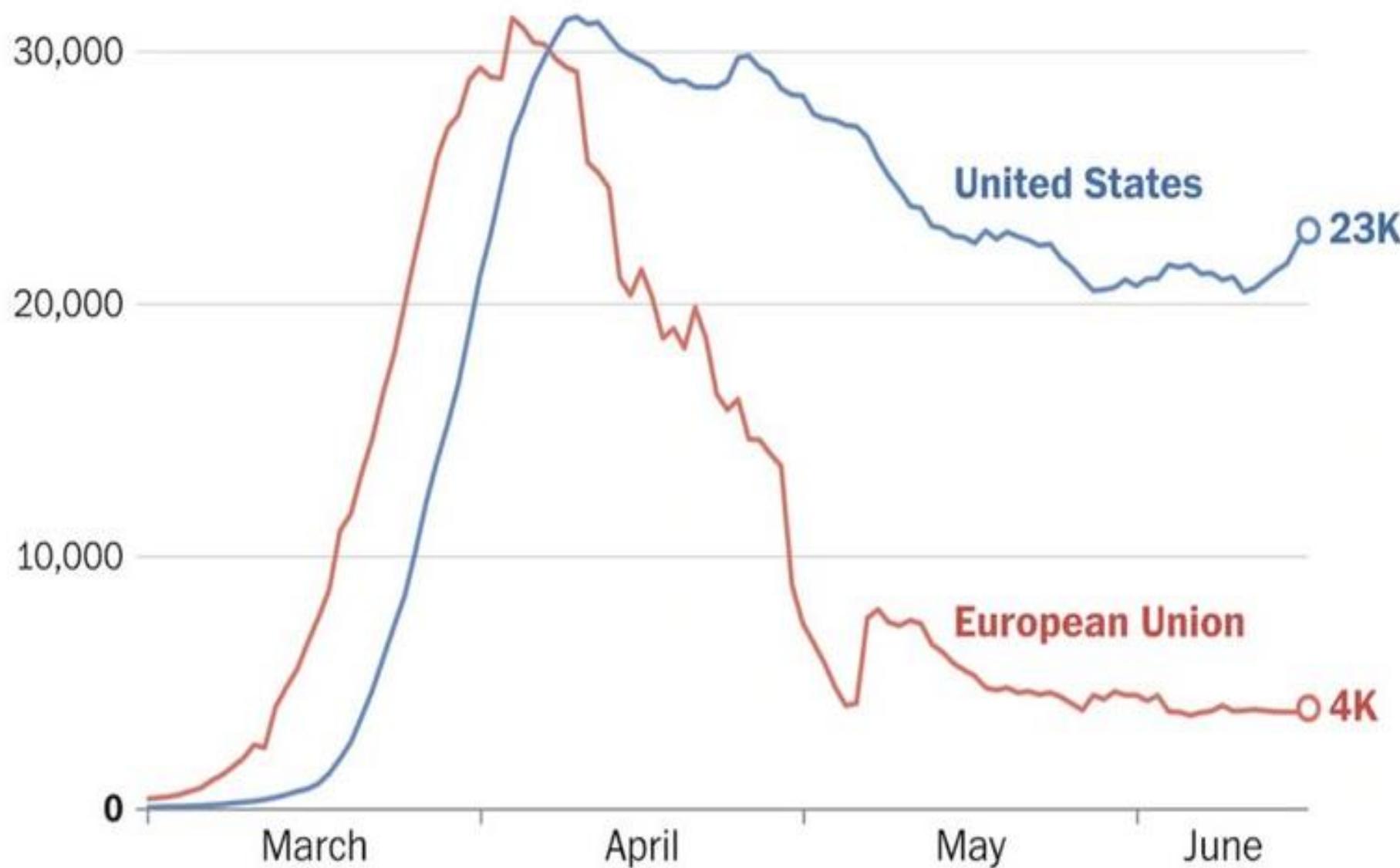
<https://www.bloomberg.com/graphics/2020-swift-covid-19-lockdowns-more-effective/>



<https://www.bloomberg.com/graphics/2020-swift-covid-19-lockdowns-more-effective/>

Note: Stringency scores are shown for the day a country first exceeded a benchmark number of cases.
Response color categories are shown for maximum stringency scores.

Seven-day rolling average of new coronavirus cases, March 1 to June 17



Source: Johns Hopkins University

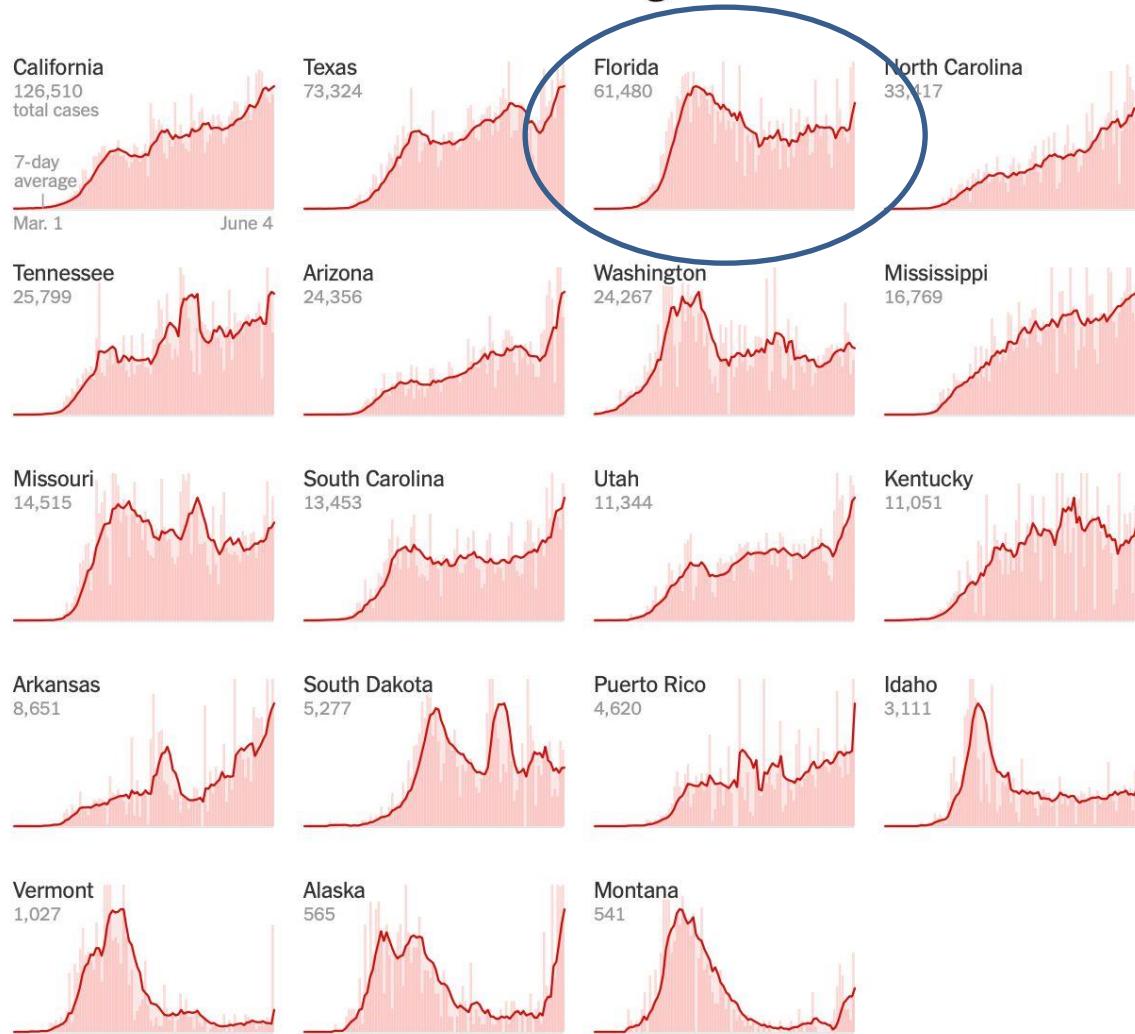
HARRY STEVENS/THE WASHINGTON POST

Where Do We Stand As A State?

- **How We Reopen Safely?**
 - Where Is My State on the Road to Recovery?
 - Using the gating criteria provided by the [White House](#), each state can be tracked each state's progress towards its reduction in symptoms and cases, health system readiness, and increased test capacity.
 - What Data Is Missing?
 - *How Are States Progressing on Reopening?*

Is This Where a Second Wave Is Starting?

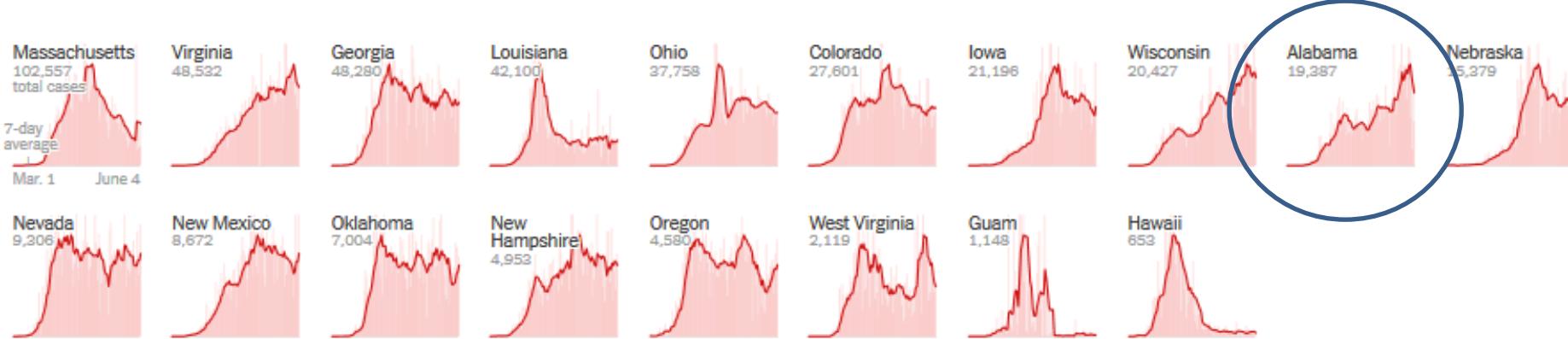
Where new cases are increasing



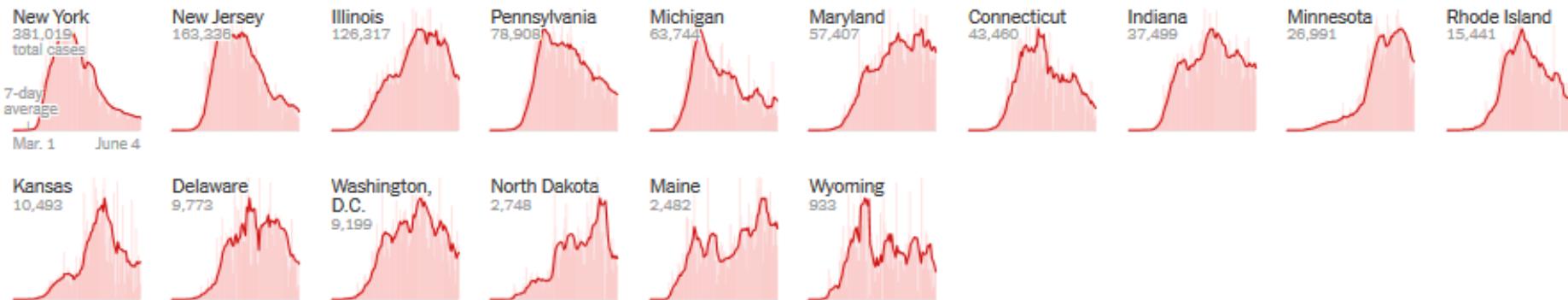
<https://www.nytimes.com/interactive/2020/us/coronavirus-us-cases.html>

Better and No Changes

Where new cases are mostly the same



Where new cases are decreasing



Note: States and territories are grouped according to how the seven-day average of new cases has changed from two weeks ago to today.

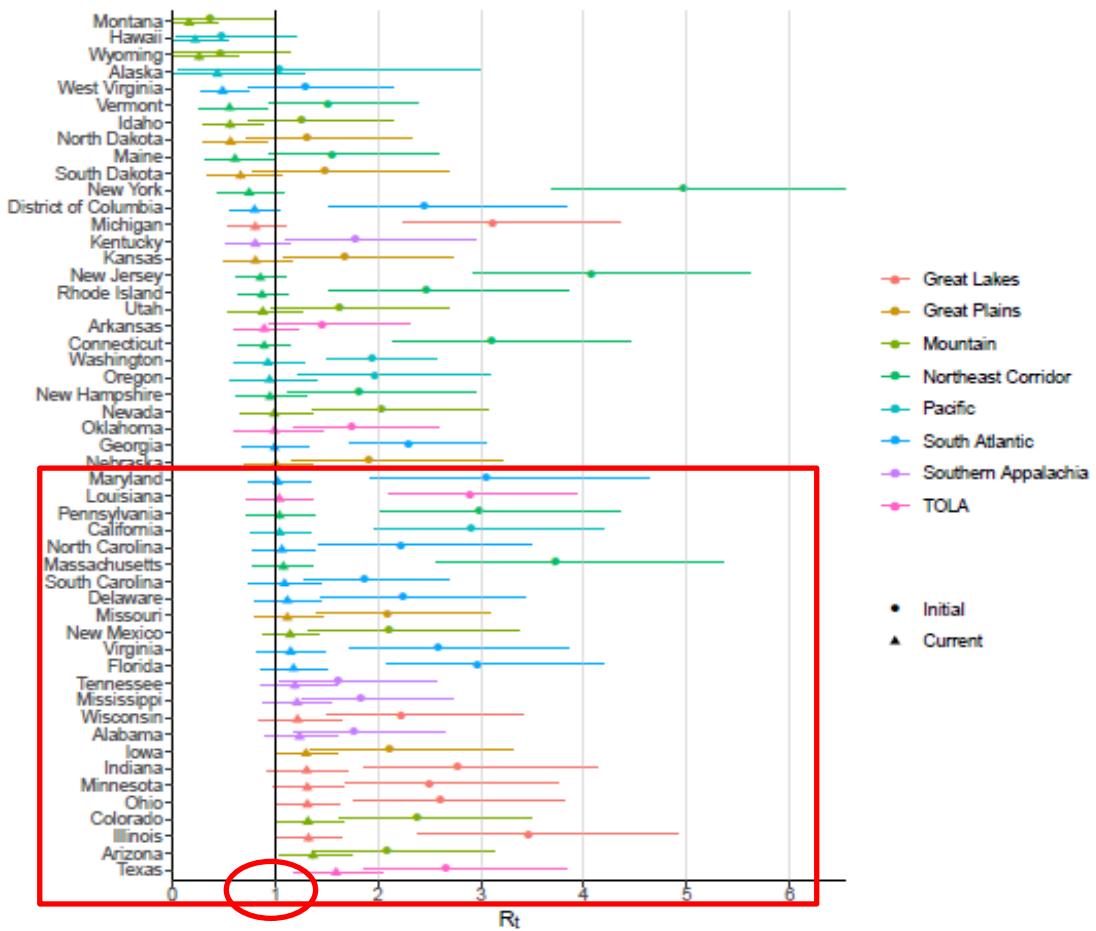


Figure 4: State-level estimates of initial R_t and the current average R_t over the past week. The colours indicate regional grouping as shown in Figure 1.

The new Imperial College model estimated the virus's reproduction number, known as R_0 , or R naught. This is the average number of infections generated by each infected person in a vulnerable population. The researchers found the reproduction number has dropped below 1 in the District and 26 states. In those places, as of May 17, the epidemic was waning.

In 24 states, however, the model shows a reproduction number $R_0 > 1$.

Texas “tops” (actually graphed at the bottom) the list, followed by Arizona, Illinois, Colorado, Ohio, Minnesota, Indiana, Iowa, Alabama, Wisconsin, Mississippi, Tennessee, Florida, Virginia, New Mexico, Missouri, Delaware, South Carolina, Massachusetts, North Carolina, California, Pennsylvania, Louisiana and Maryland.

How Many Infectious People In My State?

State	Number of infectious individuals (mean [95% credible interval])	State	Number of infectious individuals (mean [95% credible interval])
Alabama	15,000 [4,000-37,000]	Montana	0 [0-1,000]
Alaska	0 [0-2,000]	Nebraska	3,000 [0-10,000]
Arizona	40,000 [12,000-93,000]	Nevada	5,000 [0-14,000]
Arkansas	1,000 [0-4,000]	New Hampshire	4,000 [0-12,000]
California	92,000 [26,000-228,000]	New Jersey	94,000 [26,000-227,000]
Colorado	47,000 [15,000-110,000]	New Mexico	10,000 [2,000-24,000]
Connecticut	40,000 [11,000-93,000]	New York	84,000 [13,000-246,000]
Delaware	9,000 [2,000-22,000]	North Carolina	14,000 [3,000-35,000]
District of Columbia	7,000 [1,000-18,000]	North Dakota	0 [0-2,000]
Florida	39,000 [10,000-95,000]	Ohio	54,000 [17,000-125,000]
Georgia	28,000 [6,000-72,000]	Oklahoma	1,000 [0-5,000]
Hawaii	0 [0-1,000]	Oregon	1,000 [0-4,000]
Idaho	0 [0-1,000]	Pennsylvania	96,000 [23,000-251,000]
Illinois	176,000 [54,000-395,000]	Rhode Island	6,000 [1,000-16,000]
Indiana	52,000 [12,000-134,000]	South Carolina	7,000 [1,000-19,000]
Iowa	18,000 [5,000-41,000]	South Dakota	1,000 [0-5,000]
Kansas	1,000 [0-4,000]	Tennessee	6,000 [1,000-17,000]
Kentucky	2,000 [0-7,000]	Texas	90,000 [27,000-218,000]
Louisiana	29,000 [6,000-75,000]	Utah	1,000 [0-5,000]
Maine	0 [0-1,000]	Vermont	0 [0-1,000]
Maryland	37,000 [9,000-91,000]	Virginia	27,000 [6,000-66,000]
Massachusetts	96,000 [27,000-232,000]	Washington	9,000 [1,000-26,000]
Michigan	21,000 [4,000-59,000]	West Virginia	0 [0-1,000]
Minnesota	36,000 [10,000-88,000]	Wisconsin	7,000 [1,000-22,000]
Mississippi	22,000 [6,000-51,000]	Wyoming	0 [0-1,000]
Missouri	16,000 [4,000-41,000]	National	1344000 [368000 - 3320000]

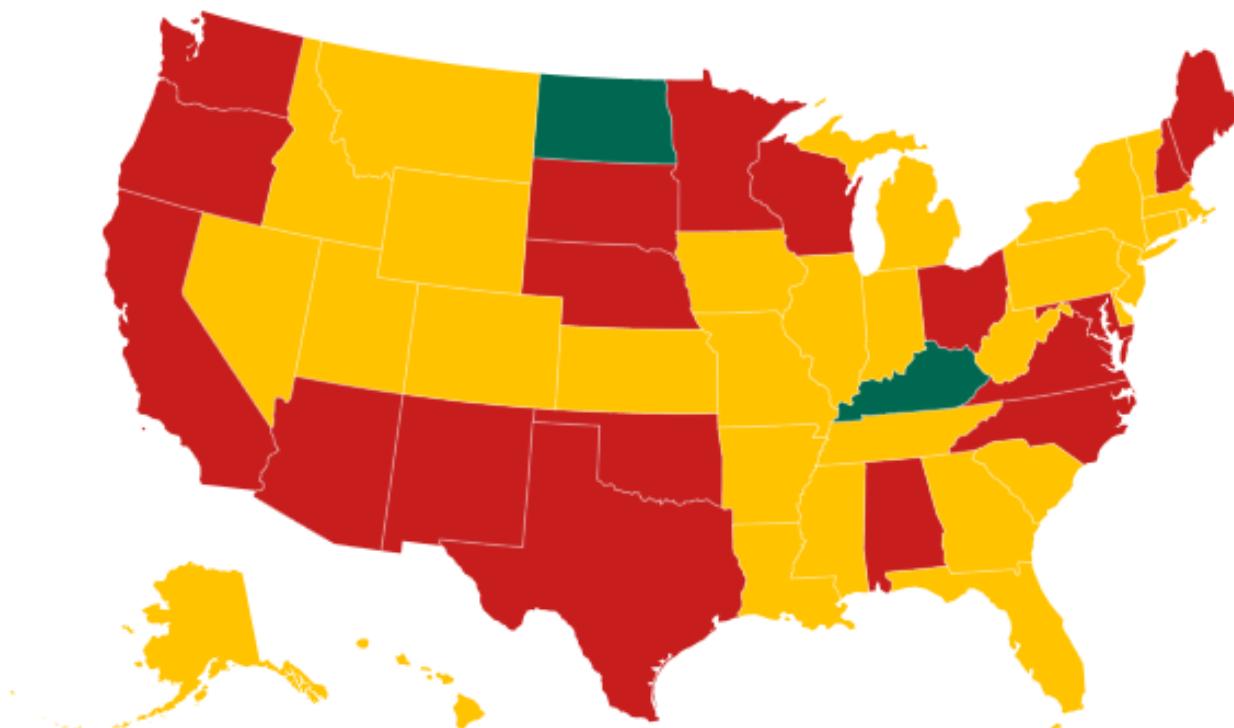
Posterior model estimates of the number of currently infectious individuals as of 17May2020.

A 95% Confidence Interval (CI) means that there is a 95% probability that the actual value is within the estimated bounds.

<https://www.imperial.ac.uk/media/imperial-college/medicine/mrc-gida/2020-05-21-COVID19-Report-23.pdf>

How We Reopen Safely? As of 14 May

Tracking states as they make progress towards gating criteria



[Get the data](#) • Created with Datawrapper

RED

Gating criteria not met

YELLOW

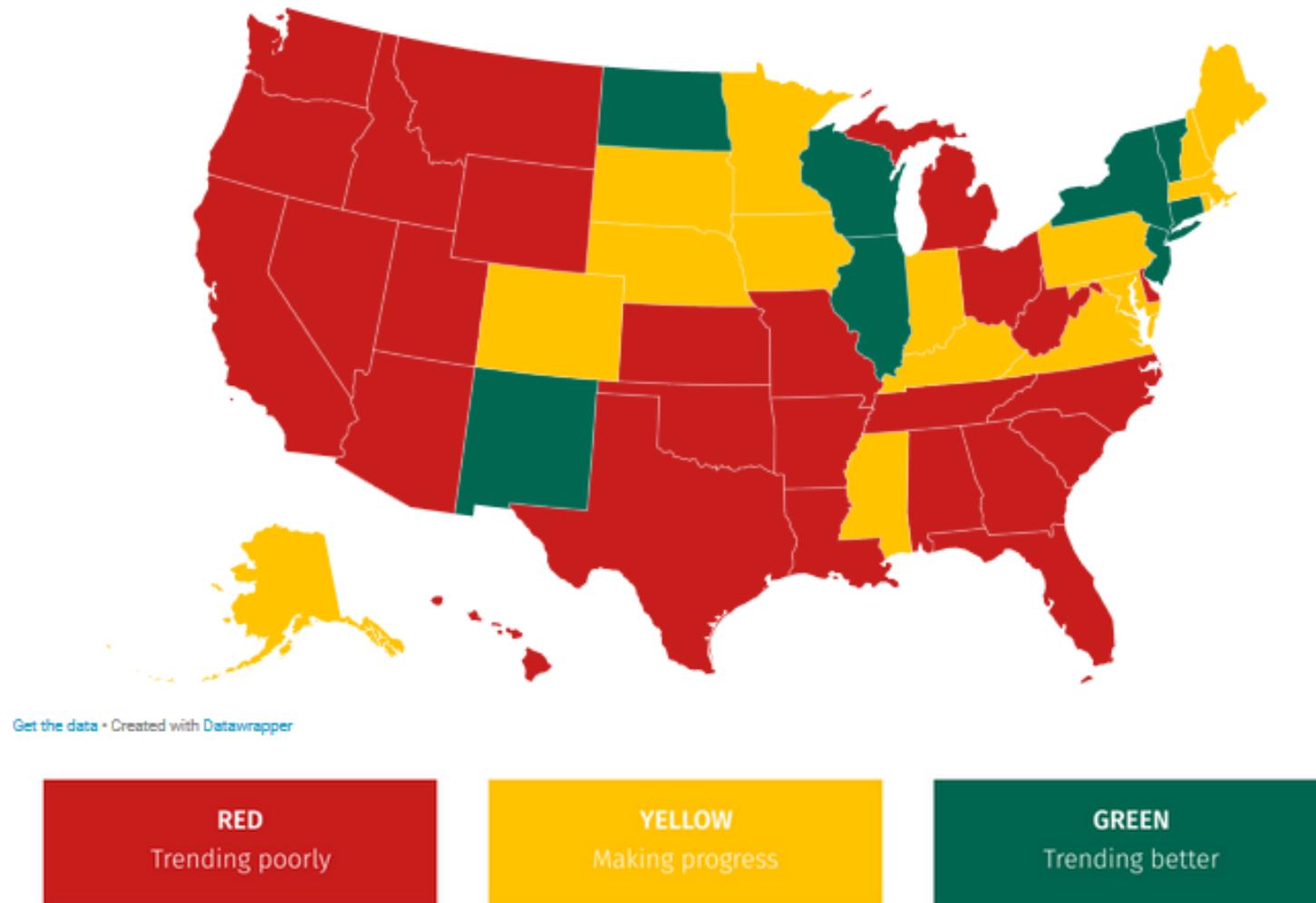
Making progress on measures

GREEN

Cleared gating criteria

How We Reopen Safely? As of 22Jun

Tracking states as they make progress towards a new normal

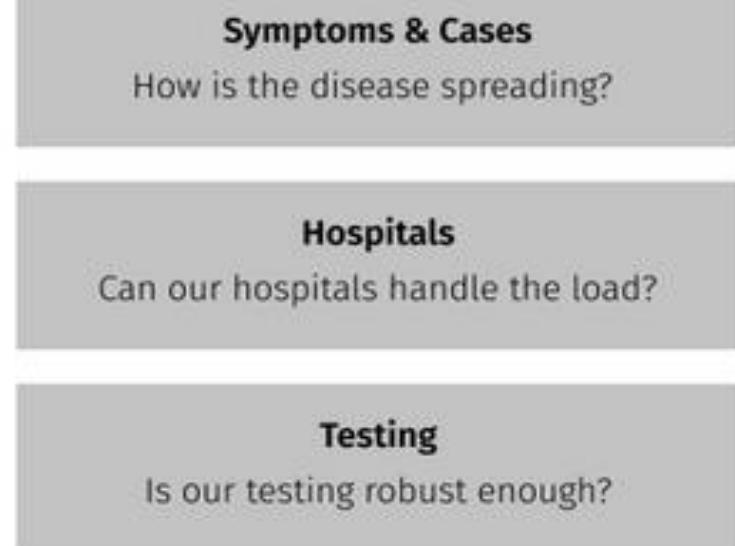


Where Is My State on the Road to Recovery?

Using the gating criteria provided by the [White House](#), we've tracked each state's progress towards its reduction in symptoms and cases, health system readiness, and increased test capacity.

The screenshot shows a web browser window with a dark blue header and a white content area. The title is "Proposed State or Regional Gating Criteria". Below it is a note: "Study before Proceeding to Phase 1 Checklist". The content is organized into three columns:

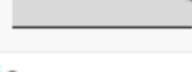
SYMPOMS	CASES	HOSPITALS
Downward trajectory of influenza-like illness (ILI) reported within a 14-day period	Downward trajectory of documented cases within a 14-day period	Treat all patients without crisis care
AND	OR	AND
Downward trajectory of covid-like syndrome cases reported within a 14-day period	Downward trajectory of positive tests as a percent of total tests within a 14-day period (but no increasing volume of tests)	Robust testing program in place for at-risk healthcare workers, including emerging antibody testing



What Data Is Missing?

- Using sources like the [COVID Tracking Project](#) and the [CDC](#) we are able to start measure how a state is controlling the epidemic. Some sources are more "real-time" like [case data](#), but others can lag a week like [influenza-like illness \(ILI\) data](#). *For the moment, this is the best representation of how a state is doing based on publicly available information.*
- Unfortunately, we cannot track how states are deploying contact tracing programs because that data is not reported yet. We also lack data sources for how states are implementing safe quarantine spaces.

How Are States Progressing on Reopening? 6June

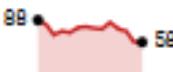
STATE	14-DAY TREND OF COVID+	LAST 14 DAYS OF COVID+ (ROLLING)	INFLUENZA-LIKE ILLNESS	ICU AVAILABILITY	NEW CASES PER MILLION PER DAY	% OF TEST TARGET (US: 500K/DAY)	% TEST POSITIVE
Alabama	18% Increasing	 335 → 395	Minimal Level 1	26% Low Availability	80	67%	7.9% Increasing
Alaska	450% Increasing	 2 → 13	Minimal Level 1	40% Low Availability	17	100%	0.7% Increasing
Arizona	105% Increasing	 348 → 713	Minimal Level 1	36% Low Availability	98	61%	10.7% Increasing
Arkansas	33% Increasing	 164 → 218	Minimal Level 1	43% Normal	72	74%	6.5% Increasing
California	34% Increasing	 1.9k → 2.6k	Minimal Level 1	36% Low Availability	65	94%	4.6% Increasing
Colorado	-3% Flat	 336 → 328	Minimal Level 1	38% Low Availability	57	56%	6.7% Decreasing
Connecticut	-53% Decreasing	 508 → 240	Minimal Level 1	44% Normal	67	100%	3.7% Decreasing
Delaware	-50% Decreasing	 165 → 82	Minimal Level 1	40% Normal	84	89%	6.3% Decreasing
District of Columbia	-39% Decreasing	 146 → 90	Minimal Level 1	25% Low Availability	127	100%	8.3% Decreasing

How Are States Progressing on Reopening? 22Jun

STATE	14-DAY TREND OF COVID+	LAST 14 DAYS OF COVID+ (ROLLING)	INFLUENZA-LIKE ILLNESS	% OF TEST TARGET	ICU AVAILABILITY	NEW CASES PER MILLION PER DAY	COVID+ RATE IS
Alabama	72% Increasing		Minimal Level 1	<div style="width: 91%;">91%</div>	23% Low Availability	128	9.3% Increasing
Alaska	-2% Flat		Minimal Level 1	<div style="width: 100%;">100%</div>	27% Low Availability	18	0.6% Decreasing
Arizona	121% Increasing		Minimal Level 1	<div style="width: 106%;">106%</div>	25% Low Availability	328	20.4% Increasing
Arkansas	15% Increasing		Minimal Level 1	<div style="width: 142%;">142%</div>	28% Low Availability	125	5.8% Decreasing
California	36% Increasing		Minimal Level 1	<div style="width: 124%;">124%</div>	33% Low Availability	90	4.8% Increasing
Colorado	-18% Decreasing		Minimal Level 1	<div style="width: 56%;">56%</div>	31% Low Availability	33	3.9% Decreasing
Connecticut	-51% Decreasing		Minimal Level 1	<div style="width: 123%;">123%</div>	45% Normal	27	1.4% Decreasing
Delaware	39% Increasing		Minimal Level 1	<div style="width: 128%;">128%</div>	46% Normal	75	3.9% Decreasing

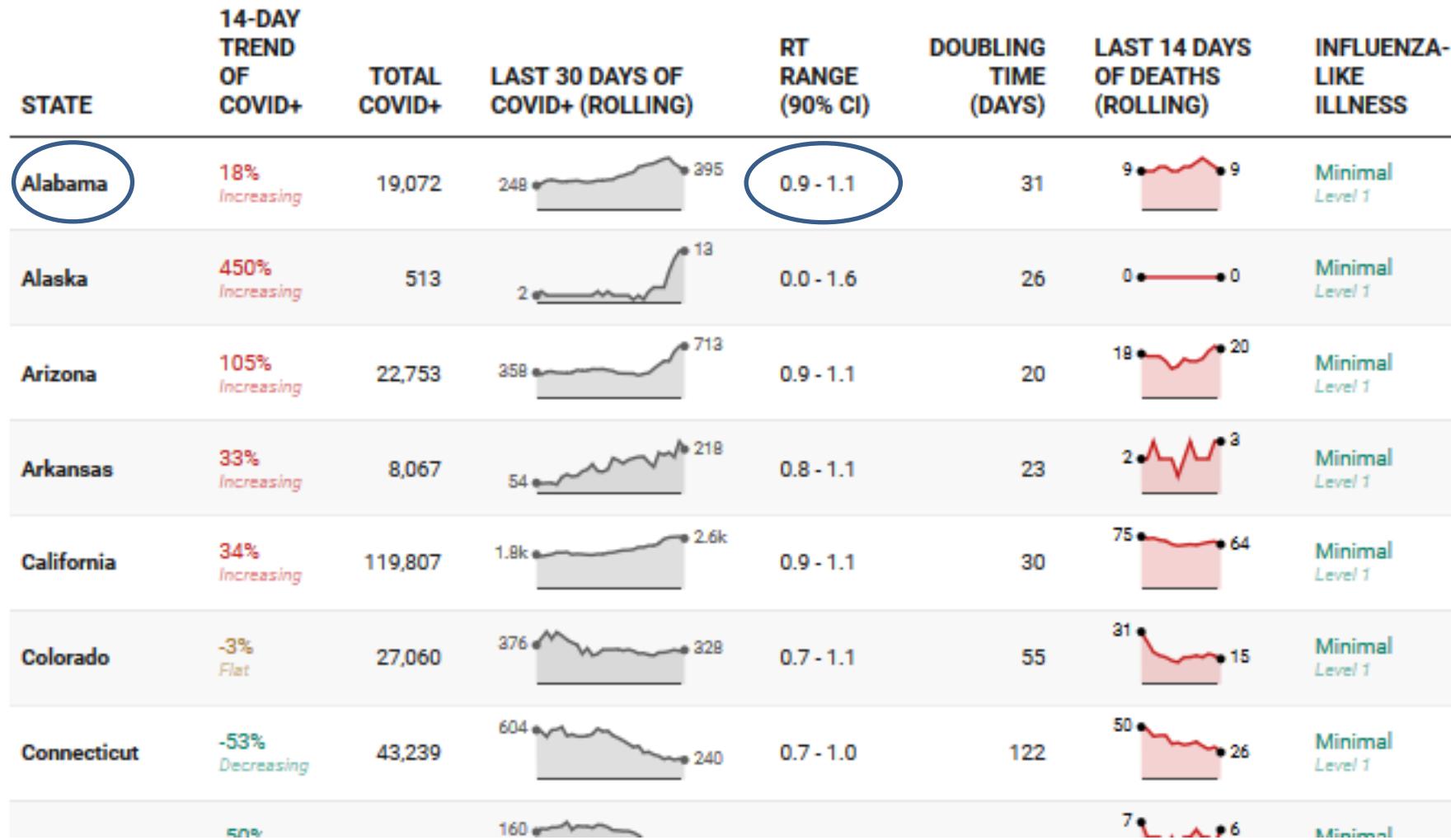
How is the Disease Spreading? 14May

What's critical is a downward trajectory of illness reported and documented cases.

STATE	14-DAY TREND OF COVID+	TOTAL COVID+	LAST 30 DAYS OF COVID+ (ROLLING)	RT RANGE (90% CI)	DOUBLING TIME (DAYS)	LAST 14 DAYS OF DEATHS (ROLLING)	ILI (5/2)
Alabama	64% Increasing	10,617		0.68 - 1.16	23		Minimal Level 1
Alaska	-39% Decreasing	383		-0.24 - 1.57	167		Minimal Level 1
Arizona	31% Increasing	12,176		0.61 - 1.09	21		Minimal Level 1
Arkansas	-25% Decreasing	4,164		0.50 - 1.20	31		Minimal Level 1
California	7% Increasing	71,141		0.65 - 1.01	26		Minimal Level 1
Colorado	-28% Decreasing	20,157		0.63 - 1.12	33		Minimal Level 1
Connecticut	-16% Decreasing	34,855		0.57 - 0.99	41		Minimal Level 3

How is the Disease Spreading? 6June

What's critical is a downward trajectory of illness reported and documented cases.



How is the Disease Spreading? 22June

What's critical is a downward trajectory of illness reported and documented cases.

STATE	14-DAY CHANGE IN COVID+	TOTAL COVID+	LAST 30 DAYS OF COVID+ (ROLLING)	RT RANGE (90% CI)	DOUBLING TIME (DAYS)	LAST 14 DAYS OF DEATHS (ROLLING)	INFLUENZA- LIKE ILLNESS
Alabama	72%	30,021	345 → 629	0.8 - 1.2	31	10 → 9	Minimal Level 1
Alaska	-2%	755	2 → 13	0.9 - 1.4	36	0 → 0	Minimal Level 1
Arizona	121%	52,390	344 → 2.4k	1.0 - 1.5	13	19 → 22	Minimal Level 1
Arkansas	15%	15,142	148 → 377	0.8 - 1.3	25	3 → 6	Minimal Level 1
California	36%	173,824	2k → 3.6k	0.8 - 1.2	31	57 → 62	Minimal Level 1
Colorado	-18%	30,349	322 → 190	0.7 - 1.1	108	12 → 7	Minimal Level 1
Connecticut	-51%	45,755	474 → 95	0.5 - 0.8	330	17 → 8	Minimal Level 1

What An Overwhelmed Medical System Looks Like 21 May

"They're (the local hospitals) at a capacity that is not sustainable," he said. "Our health-care system is maxed out."

Montgomery hospitals are down to 1 ICU bed and sending patients to Birmingham

Brad Harper, Montgomery Advertiser

Published 1:06 p.m. CT May 20, 2020 | Updated 1:48 p.m. CT May 20, 2020



Montgomery Mayor Steven Reed holds a coronavirus update briefing at the Emergency Operations Center in Montgomery, Ala., on Wednesday May 20, 2020. Montgomery Advertiser

<https://www.montgomeryadvertiser.com/story/news/2020/05/20/montgomery-down-one-icu-bed-sending-virus-patients-to-birmingham/5227449002/>

Montgomery mayor warns of strained hospitals due to recent spike in coronavirus patients

339
Shares



WVTM 13

Updated: 10:24 AM CDT May 21, 2020

WVTM 13 Digital



SHOW TRANSCRIPT

<https://www.wvtm13.com/article/montgomery-mayor-warns-of-strained-hospitals-due-to-recent-spike-in-coronavirus-patients/32619038#>

What An Overwhelmed Medical System Looks Like 26May

THE CORONAVIRUS CRISIS

Mayor Of Montgomery, Ala.: 'We Have Not Won The Battle With COVID-19 Yet'

May 26, 2020 · 3:34 PM ET

JAMES DOUBEK 



Montgomery's Capri Theatre, seen on March 22, was closed because of the coronavirus. Montgomery Mayor Steven Reed says the city health system's capacity to manage the crisis has hit unsustainable levels.

Taylor McGehee/Alamy

The number of new coronavirus cases has been going up in Alabama even as the state's governor relaxes restrictions.

Last week's number of new cases was up from the week before. Of the more than 15,000 confirmed cases across the state, about one-third have been confirmed within the last 14 days.

<https://www.npr.org/sections/coronavirus-live-updates/2020/05/26/862348495/mayor-of-montgomery-al-a-we-have-not-won-the-battle-with-covid-19-yet>

How Is My State Doing On Testing? 21May

We track our country's daily progress towards two goals: reaching 500K tests per day and 4 million tests per day. The targets for each state have been adjusted per capita.

STATE	TESTS CONDUCTED (7-DAY AVG)	LAST 14 DAYS OF TESTS (ROLLING)	% OF TEST TARGET (US: 500K/DAY)	% OF TARGET (US: 4M/DAY)	POSITIVITY TREND (LAST 14 DAYS ROLLING)	% TEST POSITIVE
Alabama	4,011	4.2k ● 4k	54%	7%	6.7% ● 7.6%	7.6% Increasing
Alaska	914	649 ● 914	83%	10%	0.4% ● 0.3%	0.3% Decreasing
Arizona	5,384	3.3k ● 5.4k	49%	6%	9.3% ● 7.2%	7.2% Decreasing
Arkansas	3,292	1.9k ● 3.3k	72%	9%	3.1% ● 3.6%	3.6% Increasing
California	44,933	29.4k ● 44.9k	75%	9%	5.4% ● 4.1%	4.1% Decreasing
Colorado	2,941	2.4k ● 2.9k	34%	4%	15.1% ● 11.3%	11.3% Decreasing
Connecticut	6,825	2.4k ● 6.8k	100%	16%	21.5% ● 8.7%	8.7% Decreasing

https://www.covidexitstrategy.org/?utm_source=quora&utm_medium=referral

How Is My State Doing On Testing? 22jUN

We track our country's daily progress towards two goals: reaching 500K tests per day and 4 million tests per day. The targets for each state have been adjusted per capita.

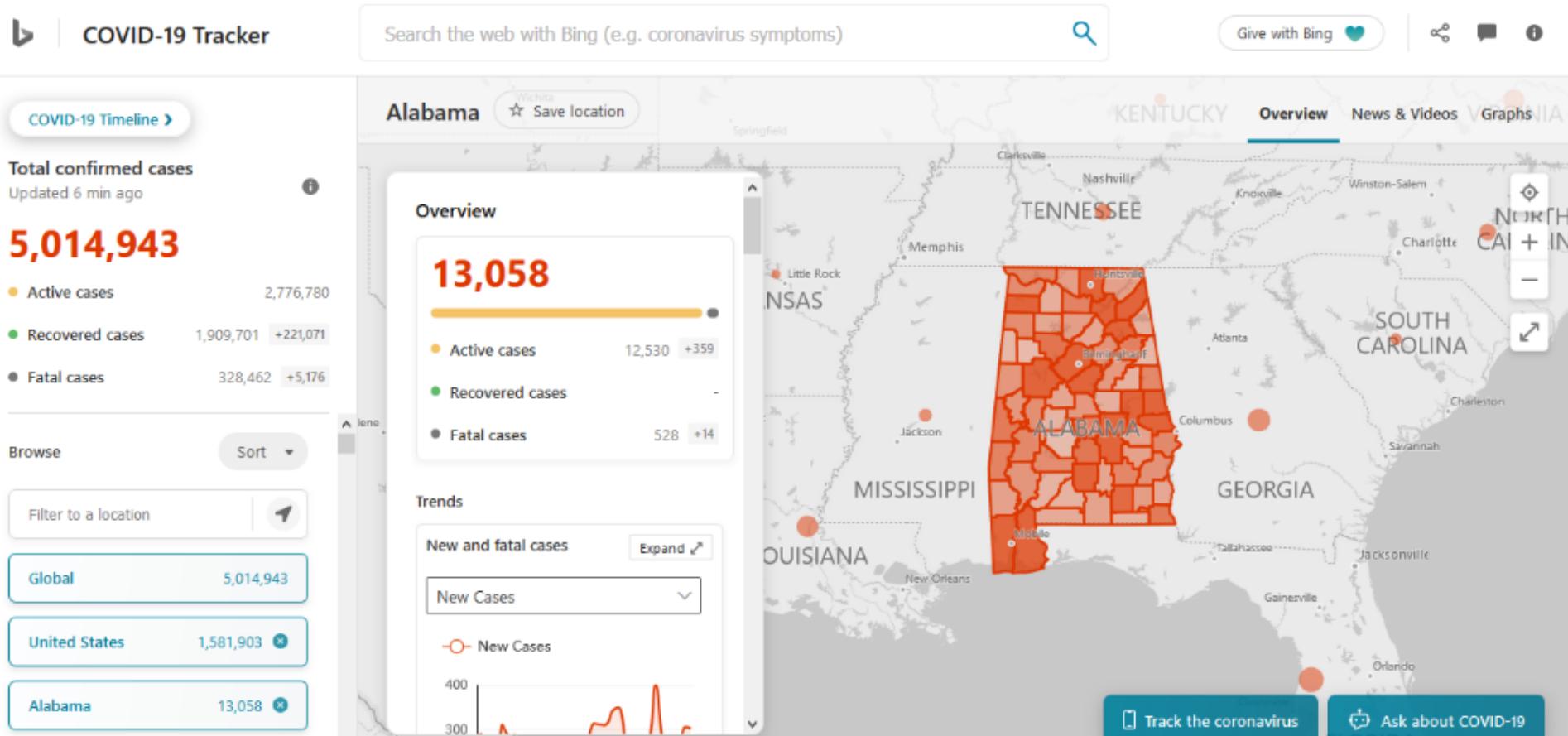
STATE	TESTS CONDUCTED (7-DAY AVG)	LAST 14 DAYS OF TESTS (ROLLING)	% OF TEST TARGET (US: 500K/DAY)	% OF TARGET (US: 4M/DAY)	POSITIVITY TREND (LAST 14 DAYS ROLLING)	COVID+ RATE IS
Alabama	6,746	6k ● 6.7k	91%	11%	7.0% ● 9.2%	9.3% Increasing
Alaska	2,083	1.9k ● 2.1k	189%	24%	0.8% ● 0.6%	0.6% Decreasing
Arizona	11,671	8.1k ● 11.7k	106%	13%	12.6% ● 20.4%	20.4% Increasing
Arkansas	6,464	4.4k ● 6.5k	142%	18%	8.4% ● 5.8%	5.8% Decreasing
California	73,894	59.6k ● 73.9k	124%	16%	4.4% ● 4.8%	4.8% Increasing
Colorado	4,820	4.6k ● 4.8k	56%	7%	5.2% ● 4.0%	3.9% Decreasing
Connecticut	6,617	7.5k ● 6.6k	123%	15%	2.9% ● 1.4%	1.4% Decreasing

https://www.covidexitstrategy.org/?utm_source=quora&utm_medium=referral

Data & Sources

- The data for each intervention comes from multiples sources: [NGA](#), [Kaiser Family Foundation](#), [COVIDTracking.com](#), [rt.live](#)
- [United States of Care](#), [Alliance for Connected Care](#), [Masks4All](#), Harvard Global Health Institute, and [Artis Ventures](#).
- *The data powering the charts can be found in this [Google Spreadsheet](#) (updated every 5 minutes).*

Do Your Own Research – AL 21May20



2558 more cases in since 14May.

<https://www.bing.com/covid/local/unitedstates?form=M401EC&OCID=M401E>

Do Your Own Research – AL 22JUN20

COVID-19 Tracker

Search the web with Bing

Related Searches: coronavirus testing prevention work from home jobs

Give with Bing

COVID-19 Timeline >

Total confirmed cases
Updated 2 min ago
8,546,919

- Active cases 3,894,919
- Recovered cases 4,195,274
- Fatal cases 456,726

Browse Sort ▾

Filter to a location

Global	8,546,919
United States	2,342,572
Alabama	30,031

Alabama Overview News & Videos Graphs

Overview

30,031 +433

- Active cases 29,192
- Recovered cases -
- Fatal cases 839 +1

Trends

New and fatal cases

New Cases

New Cases 1.8K

Little Rock NSAS Memphis Huntsville Birmingham Jackson Columbus Mobile Tallahassee Gainesville Orlando

Track with extension

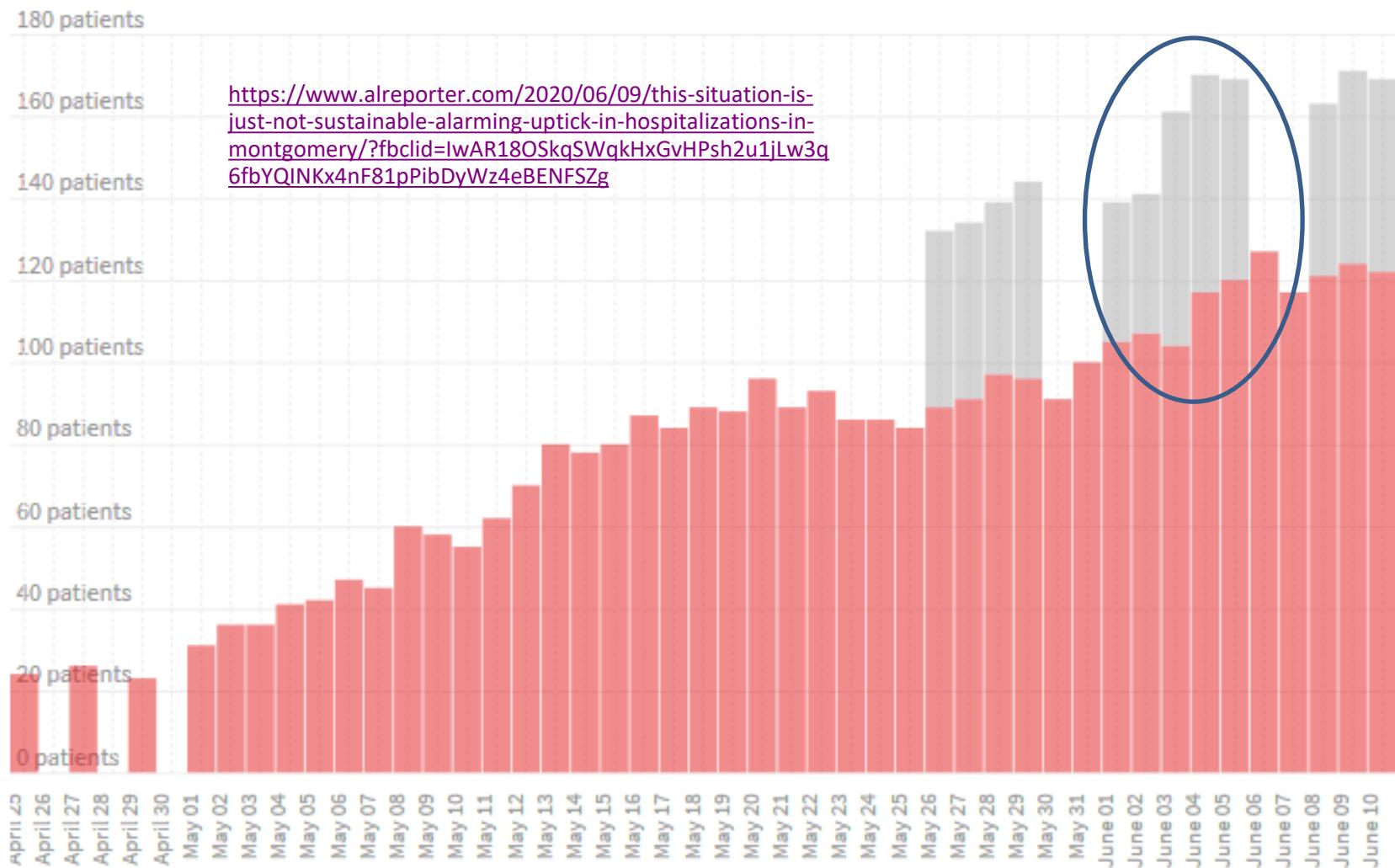
Ask about COVID-19

© 2020 HERE | © 2020 Microsoft Corporation [Terms](#)

Hospitalizations in Montgomery County Thru 10Jun2020

Note: Jackson Hospital data is only available beginning May 26 and not available for weekends. Does not include pending cases.

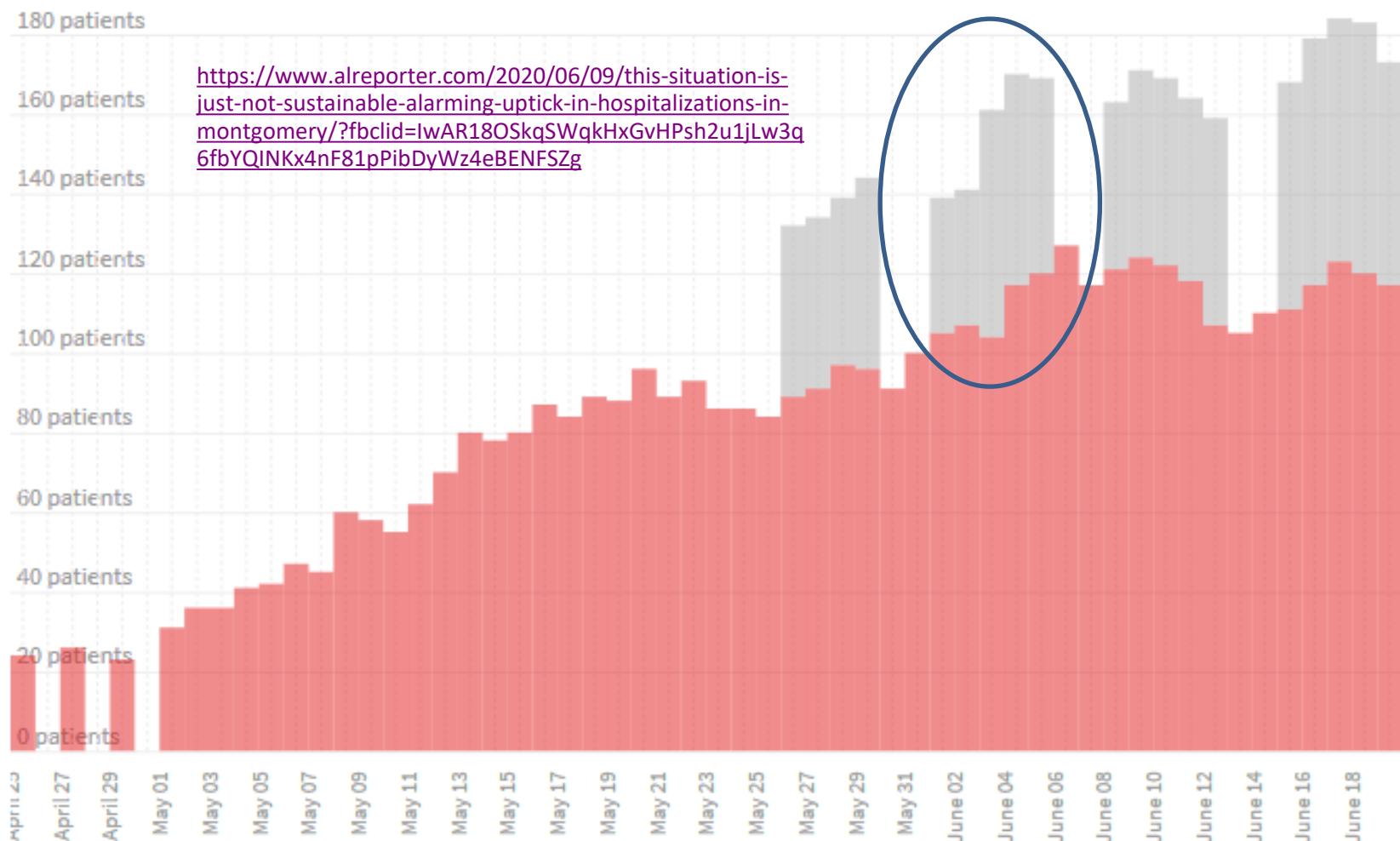
Positive patients at Baptist hospitals Positive patients at Jackson Hospital



Hospitalizations in Montgomery County Thru 22Jun2020

Note: Jackson Hospital data is only available beginning May 26 and not available for weekends. Does not include pending cases.

Positive patients at Baptist hospitals Positive patients at Jackson Hospital



How the disease is spread...

- One [London School of Hygiene analysis](#) suggested that 80% of the secondary transmissions were caused by just 10% of infected people. In other words, if you want to avoid getting COVID-19, one of your major focuses should be avoiding a superspreading event.
- So as people leave their homes and reengage with society, it seems like now is a good time to scour the research to note where these events have been documented and where they haven't.
- We can also learn about the circumstances that led to each superspreading event, and do our best to avoid them.

<https://www.sltrib.com/news/2020/05/23/your-guide-how/>

Bars and clubs

- A 29-year-old South Korean man who didn't know he had the virus went barhopping on April 30, after the country loosened restrictions. He and a friend went to five bars and clubs in Seoul. To date, 187 positive cases have been tied to this night on the town, including 93 people who visited the same nightspots as the pair.
- For example, a 25-year-old teacher got the virus at one of those clubs and later infected 11 people, including five students at the school. As a result, 1,000 members of the church that those students attend have been told to stay home and monitor for symptoms.

<https://www.sltrib.com/news/2020/05/23/your-guide-how/>

Buffets

- Japanese public broadcaster NHK, in consultation with local health experts, got 10 people to dine at a buffet. They put fluorescent paint on the hands of one person to simulate the virus after a sneeze or cough. After 30 minutes, they turned the black light on to see where the virus had gotten.
- The answer: everywhere. People's hands, faces, plates, napkins, and more were covered with the virus-simulating paint.
- Salad bar restaurants like Souplantation and Sweet Tomatoes have decided to permanently close.



Spoon & Tamago @Johnny_suputama · May 8

NHK conducted an experiment to see how germs spread at a cruise buffet.

They applied fluorescent paint to the hands of 1 person and then had a group of 10 people dine.

In 30 min the paint had transferred to every individual and was on the faces of 3.



From NHKニュース

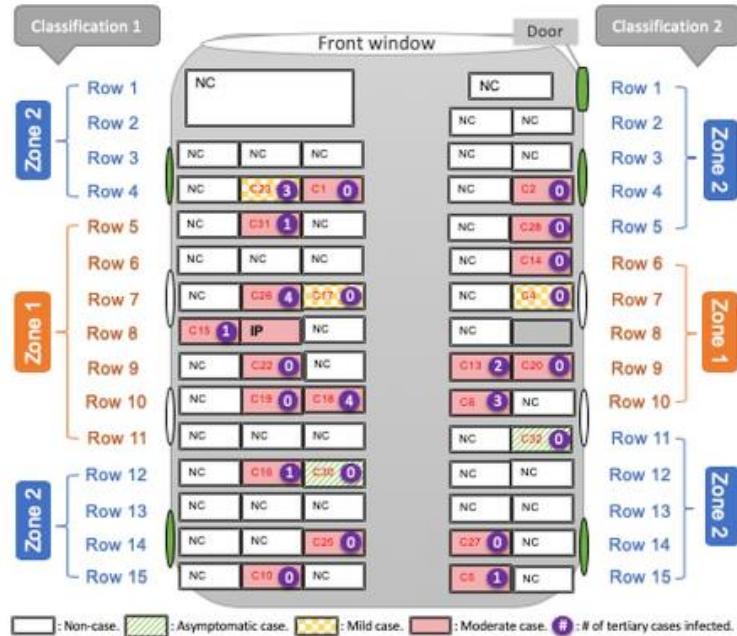
1.1K

45.6K

72.8K

Buses

- In January, an asymptomatic woman who had recently been to Wuhan took a bus with 66 other passengers to a worship event at a Buddhist temple. She felt sick after returning home.
- The ride was 50 minutes each way and passengers stayed in the same seats on both legs of the trip. Of the 66 passengers, 24 were infected. There was no statistically significant correlation between how close the passengers sat to the woman — labeled IP below — and whether or not they got the disease. Many further than 6 feet away caught it.
- The bus' air-conditioning was set to recirculation mode. The study's authors note that all passengers who sat next to a window on the left side of the bus — where the air-conditioning vents were — remained healthy other than the one person who sat next to the sick woman, but they don't know if that's by chance or due to air circulation patterns.



The initial infected passenger in row 8 seemed to spread the virus to many others on her bus, designated by the pink, green, and yellow shading. (https://www.researchgate.net/publication/340418430_Airborne_transmission_of_COVID-19_in_a_chinese_bus)

Choirs

- It may be the single most famous outbreak in the U.S.: the Skagit County, Wash., choir practice. Last week, [the Centers for Disease Control and Prevention compiled the results](#) of its contact tracing.
- The choir met every Tuesday evening until March 10. At that last meeting, 61 members were present and chairs were arranged close together in six rows of 20 with many empty chairs. They practiced for 40 minutes together, for 50 minutes separated into two smaller groups, and then for 45 minutes sang together again. There was a 15-minute break between the second and third session for oranges and cookies, but many didn't eat.
- In the end, 53 of the 61 contracted the coronavirus. Three were hospitalized, two died. Interestingly, the CDC did find someone who had coldlike symptoms in the choir beginning March 7 — that person is the most likely Patient Zero in this case, but it's not certain that person was responsible for the spread.

Church

- On Tuesday, the [CDC released a report](#) about a rural Arkansas church. The pastor and his wife began feeling sick March 10 and 11 after hosting a three-day children's event a few days earlier.
- The event included 1.5 to 2 hours of indoor church services on each day. The children also competed each day to collect offerings from adults. There was some singing, in which most children and some adults took part. On one day, the church hosted a buffet.
- After an investigation, another husband and wife said they were symptomatic during the children's event. On March 11, the church hosted a Bible study, though the pastor said people followed social distancing procedures.
- In all, 92 people attended the church between March 6 and 11, and of the 45 tested, 35 became infected, seven were hospitalized, three died.

Family gatherings

- In February, a man who had recently traveled out of state attended a close family friend's funeral in Chicago. He was experiencing minor symptoms at the time. The night before, he attended a potluck-style meal with the family of the deceased, and reported hugging some of them. Four of those he hugged would contract the virus. One died.
- Three days after the funeral, the same condolence-giving, out-of-state-traveling man went to a birthday party for a member of his own family, which nine people attended. The man embraced others and shared food. Seven of the nine became infected; two of them died.
- Some of the people this man infected passed the virus on to others, including a fellow churchgoer and health care professionals.
- This one poor guy went to a funeral and birthday party and it led to the infection of 16 people and three deaths. We know more about the disease than we did in February. Don't be that guy.

Grocery stores

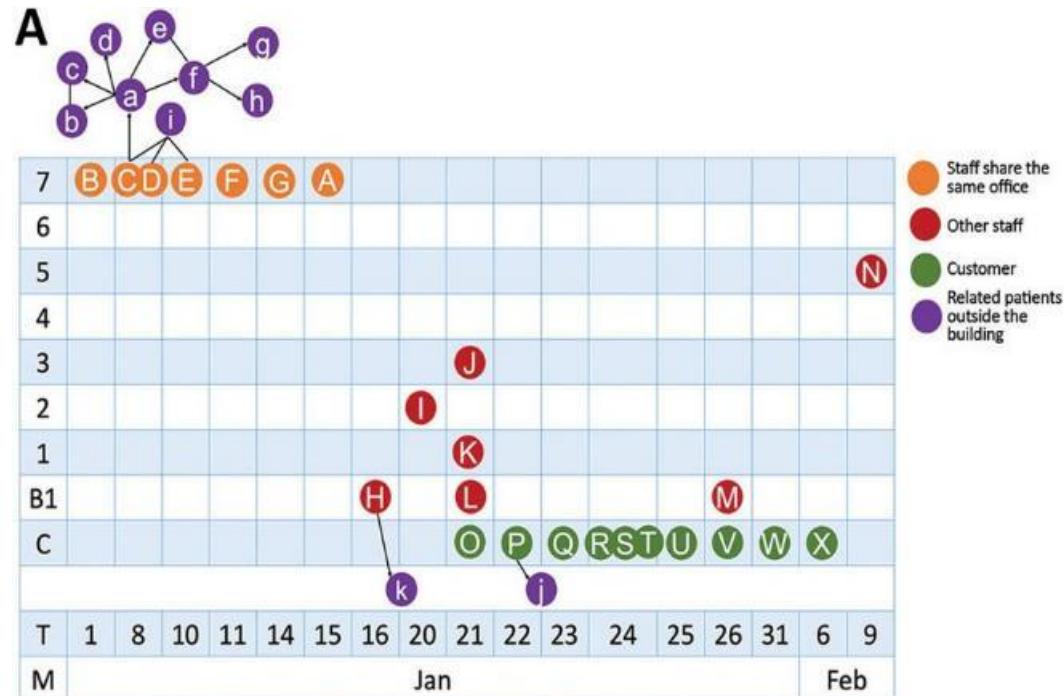
- One manager [concealed a report](#) of coronavirus in his store in the Shandong province of China. Later, 17 people tested positive.
- The United Food and Commercial Workers union [released a report Wednesday](#) saying that 68 grocery workers have died of the virus.
- But there's relatively little evidence that says grocery stores are the site of superspreading events, and given that they have stayed open throughout the crisis, you'd think we'd know by now. There was one study that used a computer model for how airborne particles would spread in a [grocery store](#), but a computer model isn't reality.

Gyms

- In Cheonan, South Korea, a workshop for Zumba fitness instructors — Zumba is surprisingly big in Korea — was held Feb. 15. Of the 27 instructors in attendance, eight eventually tested positive.
- These instructors then went to their communities and taught two 50-minute Zumba classes each week. By March 9, less than a month later, there were 112 cases tied to this Zumba workshop; 57 were students of the positive instructors, the rest secondary infections from those students. In all, those classes had 217 students attend, for an infection rate of about 26%.
- Of the eight positive instructors, there were two who led most of the classes where people got sick. One held a class in a gym that had five students — but three got infected. Later, another COVID-19 positive instructor taught Pilates and yoga to 25 people in that same room. None got the virus.

Malls

- In Wenzhou, China, [34 people were infected](#) in a shopping mall. The cluster's first recorded case involved a person who worked on the mall's seventh floor, where it quickly spread to other nearby employees.
- A few days later, staff who worked on lower floors started getting the disease, and a few days after that, customers started getting infected.
- However, the staff with the virus on the floors below No. 7 and the customers who tested positive all denied knowingly coming into contact with one another. It's possible they all brought the disease to the mall separately, but given that they all developed symptoms at nearly the same time and the high number of cases associated with this mall, it's unlikely. Everyone did share restrooms and elevators, which could explain spread from floor to floor or store to store.
- In another case in Tianjin, China, [21 people were infected](#) in a mall department store: six staff, and 15 customers over the course of five days.



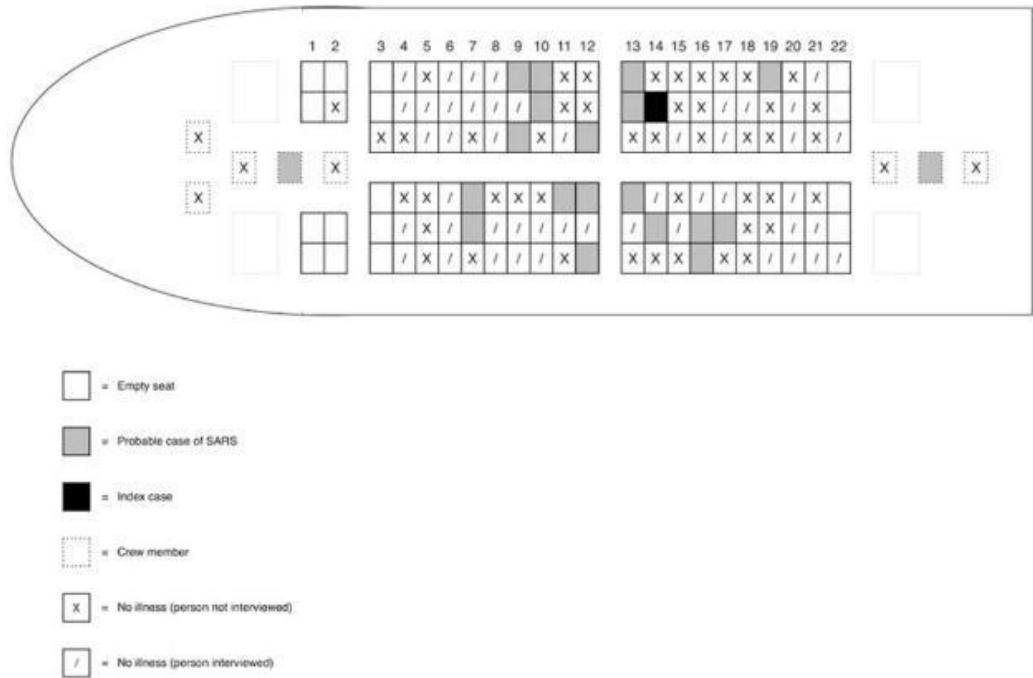
Offices

- In early March, the South Korean version of the CDC was informed about an outbreak in a call center in a 19-story building. The first 11 floors are commercial offices — the call center is on floors 7-9 and 11. Residents in apartments live on the floors above that.
- In response, South Korea just started testing everyone. That included 811 people at the call center, 111 people who work in the floors below, 203 people who live in the apartments above, and 20 visitors.
- Of those 1,145 people, 97 tested positive and 94 of them worked on the 11th floor in the call center. The other three worked on the 10th or ninth floor. In fact, 89 of the 97 worked on the same side of the same floor of the call center. Positive cases are in blue.



Planes

- We don't have any direct studies on COVID-19's transmission on airplanes, but we do have some on a related coronavirus: SARS-CoV-1.
- On [one plane](#), a 72-year-old infected man with a cough in seat 14-E of a flight from Hong Kong to Beijing ended up passing SARS to 18 passengers and two flight attendants. The flight was about three hours long. While those seated at the very front and very back of the plane were safe, those infected included those within several rows of the man, including on the other side of the aisle.



Polling places

- In Wisconsin, 400,000 people went to various polling locations to vote in the April 7 primary election. Since then, people have wanted to know whether the in-person voting led to a spike in coronavirus cases.
- At the end of April, the Wisconsin Department of Health announced that 52 voters or poll workers had tested positive so far. However, it wasn't clear if that was more than the normal number of cases you'd expect.
- A second study released a day later from researchers at Stanford looked at hospitalization rates as well, and also didn't find any increase after the election.
- However, a third study released May 11 found that counties with higher numbers of in-person voting per location did have higher coronavirus rates after the election. Researchers estimated that when the number of voters per location increased by 100, a 3.5% increase in coronavirus rates was found.

Schools

- The [New South Wales district of Australia looked at 15 schools](#) that were open between March 5 and April 3. That included 10 high schools and five primary schools.
- There were 18 coronavirus cases split evenly, nine students and nine staff. But out of 863 close contacts with those people — of which 384 were tested — only two secondary cases were discovered: one in a high school, and one in a primary school. That's a tiny transmission rate.
- However, the schools weren't necessarily operating as normal. Many kids chose to stay home, which may have made social distancing more feasible. Large assemblies were avoided, and more outdoor classes were held.
- Another study looked at a [9-year-old from Britain](#) who attended school while symptomatic. The 73 students he came into close contact with all tested negative. For whatever reason, [coronavirus transmission to and from kids](#) just doesn't happen as often as you'd think.

Sports venues and stadiums

- It was a great day for Atalanta. On Feb. 19, the Italian soccer team from Bergamo defeated Spain's Valencia 4-1 in the Champions League, the pinnacle of European soccer. About 40,000 people from Bergamo went to watch the match in the San Siro stadium in Milan.
- It also led to a virus explosion in Bergamo a week later.
- "It's very probable that 40,000 Bergamo citizens in the stands of San Siro, all together, exchanged the virus between them," Bergamo Mayor Giorgio Gori [said on Facebook](#). "So many Bergamaschi that night got together in houses, bars to watch the match and did the same."



Basic Rules for the Pandemic

1. Check the health of your state and community

- To gauge your risk of coming into contact with an infected person, pay attention to two important indicators of Covid-19 in your area: the percentage of tests that are positive, and the trend in overall case rates.
- Start by learning the percentage of positive Covid-19 tests in your state, which tells you if testing and contact tracing are finding mild and asymptomatic cases. When positive test rates stay at **5 percent or lower for two weeks**, that suggests there's adequate testing in your state to get virus transmission under control, and you're less likely to cross paths with the virus. The closer the number is to 2 percent, the better.
- To find out whether your state is meeting the testing criteria, go to your state health department website. Or you can use [this chart from Johns Hopkins University](#). The website [Covid Act Now](#) allows you to see positive test rates by county.
- Next, use our [maps and case count pages](#) to stay informed of the Covid-19 trends in your area. When **the number of overall cases is low or falling**, you should feel safer, but you still need to be vigilant. Be **more cautious when case counts start rising**.
https://www.nytimes.com/2020/06/09/web/live/coronavirus/rules-pandemic-infection-prevention.html?utm_campaign_id=98&utm_creative_id=202006098instance_id=19201&utm_medium=the-morning®i_id=91189262&segment_id=30421&te=1&user_id=c03ebd2535967aea636faf6a3c7e5f1d

Basic Rules for the Pandemic

2. Limit the number of your close contacts

- Keep the number of close contacts as low and as consistent as possible. One way to do this is to form a “corona bubble,” which happens when two households form an exclusive social circle, agreeing on safety guidelines and to see only each other.
- Keep communication open and without judgment, so people feel comfortable disclosing new exposure risks and potential “leaks” in the bubble

https://www.nytimes.com/2020/06/09/well/live/coronavirus-rules-pandemic-infection-prevention.html?campaign_id=9&emc=edit_nn_20200609&instance_id=19201&nlt=the-morning®i_id=91189262&segment_id=30421&te=1&user_id=c03ebd2535967aea636faf6a3c7e5f1d

Basic Rules for the Pandemic

3. Manage your exposure budget

- Risk is cumulative. Going forward, you'll need to make trade-offs, choosing activities that are most important to you (like seeing an aging parent) and skipping things that might matter less (an office going-away party). Think about managing virus risk just as you might manage a diet: If you want dessert, eat a little less for dinner.
- During a pandemic, every member of the household should manage their own exposure budget. (Think Weight Watchers points for virus risk.) You spend very few budget points for low-risk choices like a once-a-week grocery trip or exercising outdoors. You spend more budget points when you attend an indoor dinner party, get a haircut or go to the office. You blow your budget completely if you spend time in a crowd.
- Unfortunately, there's no magic number to determine your personal exposure budget and the exposure "costs" of different actions. But think about your overall exposure budget when you make decisions to spend time with other people, particularly older people and those with high-risk conditions.
https://www.nytimes.com/2020/06/09/well/live/coronavirus-rules-pandemic-infection-prevention.html?campaign_id=9&emc=edit_pn_20200609&instance_id=19201&nl=the-morning®i_id=91189262&segment_id=30421&te=1&user_id=c03ebd2535967aea636faf6a3c7e5f1

Basic Rules for the Pandemic

4. Keep higher risk activities as short as possible

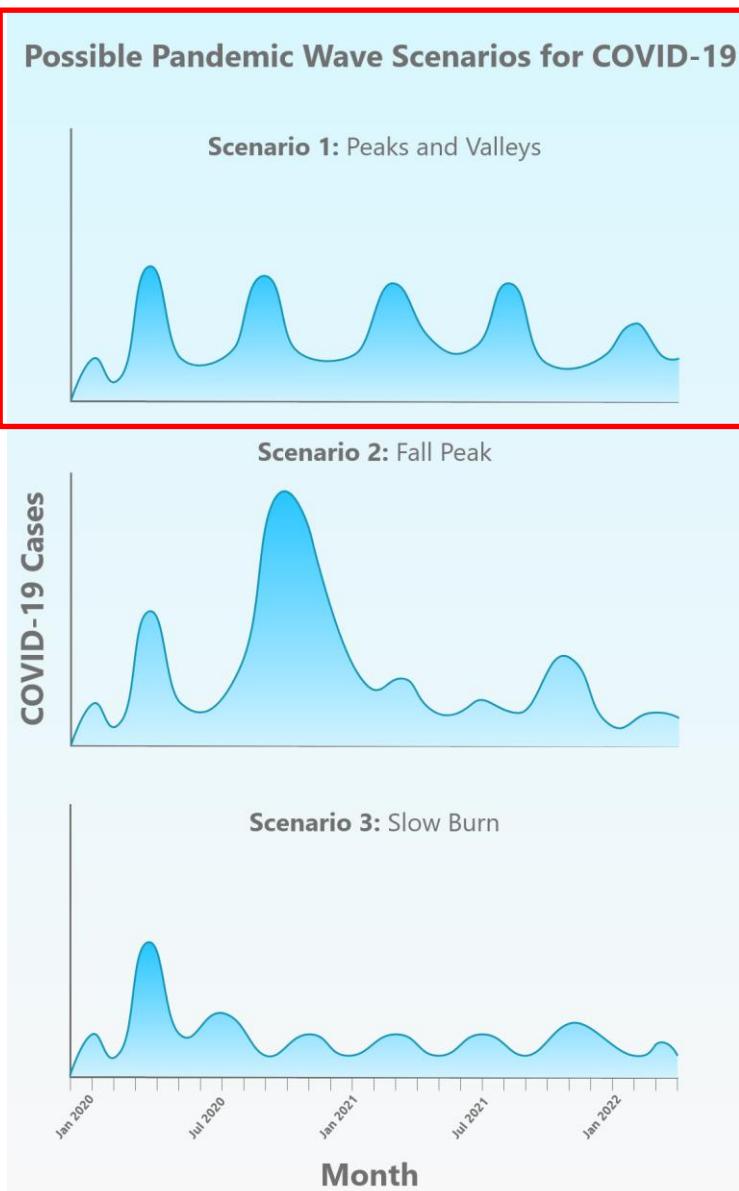
- Every time you make plans, ask yourself, “If an infected person happens to be nearby, how much time could I be spending with them?” It takes an extended period of close contact with an infected person, or extended time in a poorly ventilated room with an infected person, to have a substantial risk of catching the virus through the air, said [Linsey Marr](#), an aerosol scientist at Virginia Tech.
- ***Brief exposure:*** Brief encounters, particularly those outside — like passing someone on the sidewalk or a runner who huffs and puffs past your picnic — are unlikely to make you sick.
- ***Face-to-face contact:*** Wear a mask, and keep close conversations short. We don’t know the level of exposure required [to make you sick](#), but estimates range from a few hundred to 1,000 copies of the virus.
- ***Indoor exposure:*** In an enclosed space, like an office, at a birthday party, in a restaurant or in a church, you can still become infected from a person across the room if you share the same air for an extended period of time.
https://www.nytimes.com/2020/06/09/well/live/coronavirus-rules-pandemic-infection-prevention.html?campagn_id=98&emc=edit_mn_20200609&instance_id=192041&nl=the-morning®i_id=91189262&segment_id=30421&te=1&user_id=c03ebd2535967aea636faf6a3c7e5f1

Basic Rules for the Pandemic

5. Keep taking pandemic precautions

- Keep a mask handy. Wear a mask in enclosed spaces, when you shop or go to the office and anytime you are in close contact with people outside your household.
- Practice social distancing — staying six feet apart — when you are with people who live outside your household. Keep social activities outdoors.
- Wash hands frequently, and be mindful about touching public surfaces (elevator buttons, hand rails, subway poles, and other high-touch areas)
- Adopt stricter quarantine practices if you or someone in your circle is at higher risk.
https://www.nytimes.com/2020/06/09/well/live/coronavirus-rules-pandemic-infection-prevention.html?campaign_id=9&emc=edit_nn_20200609&instance_id=19201&nlt=themorning®id=91189262&segment_id=30421&te=1&user_id=c03ebd2535967aea636faf6a3c7e5f1

BLUF

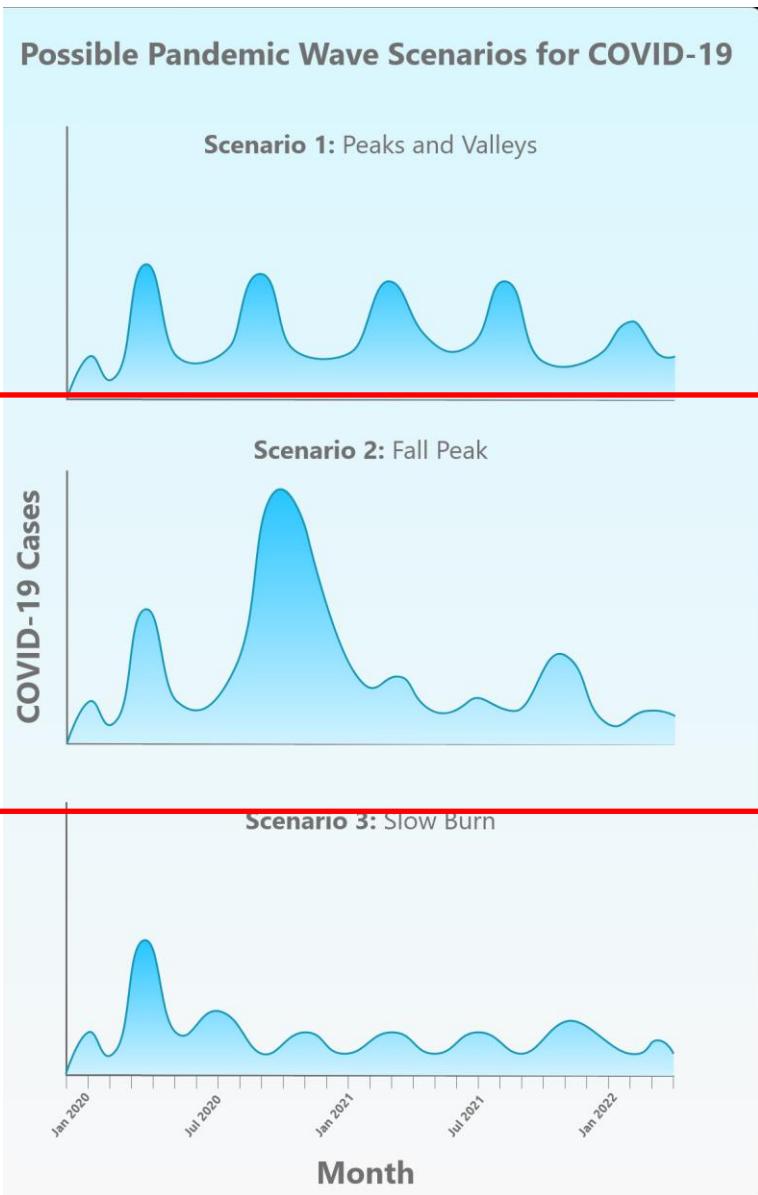


Scenario 1: The first wave of COVID-19 in spring 2020 is followed by a series of repetitive smaller waves that occur through the summer and then consistently over a 1- to 2-year period, gradually diminishing sometime in 2021. The occurrence of these waves may vary geographically and may depend on what mitigation measures are in place and how they are eased. Depending on the height of the wave peaks, this scenario could require periodic reinstitution and subsequent relaxation of mitigation measures over the next 1 to 2 years.

https://www.cidrap.umn.edu/sites/default/files/public/downloads/cidrap-covid19-viewpoint-part1_0.pdf

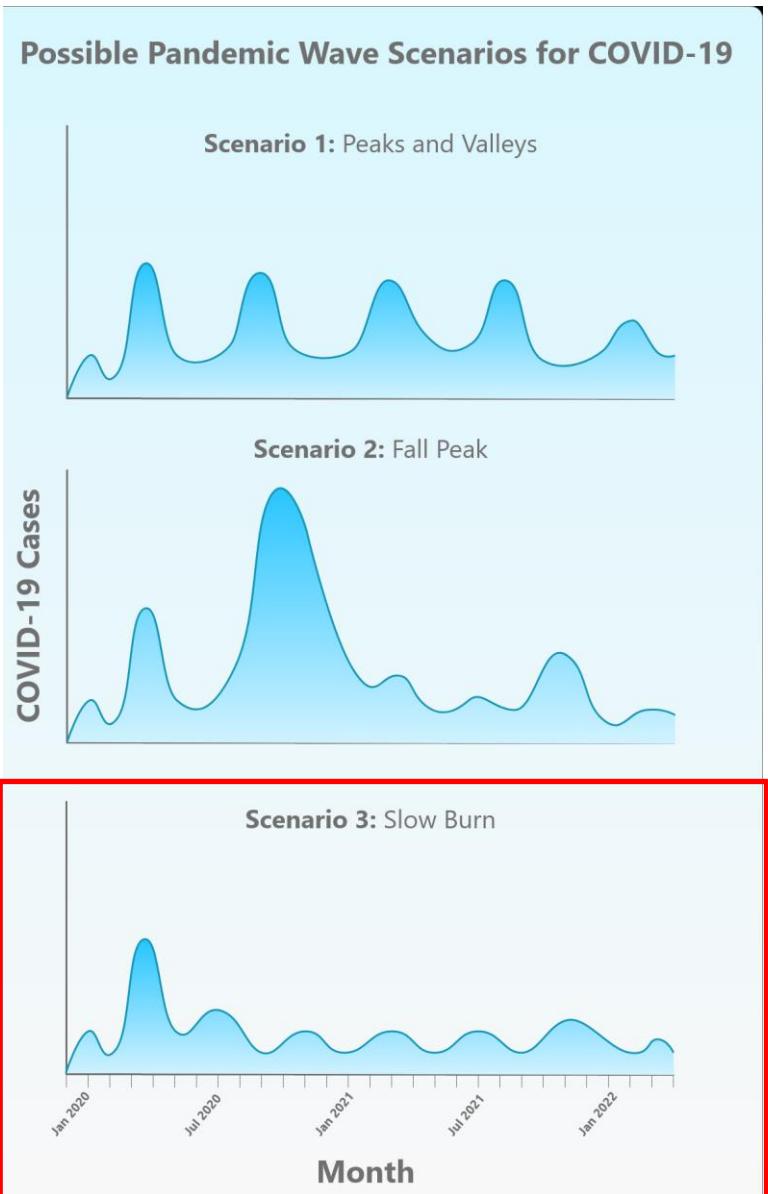
BLUF

Scenario 2: The first wave of COVID-19 in spring 2020 is followed by a larger wave in the fall or winter of 2020 and one or more smaller subsequent waves in 2021. This pattern will require the reinstitution of mitigation measures in the fall in an attempt to drive down spread of infection and prevent healthcare systems from being overwhelmed. This pattern is similar to what was seen with the 1918-19 pandemic ([CDC 2018](#)).



During that pandemic, a small wave began in March 1918 and subsided during the summer months. A much larger peak then occurred in the fall of 1918. A third peak occurred during the winter and spring of 1919; that wave subsided in the summer of 1919, signaling the end of the pandemic. The 1957-58 pandemic followed a similar pattern, with a smaller spring wave followed by a much larger fall wave ([Saunders-Hastings 2016](#)). Successive smaller waves continued to occur for several years ([Miller 2009](#)). The 2009-10 pandemic also followed a pattern of a spring wave followed by a larger fall wave ([Saunders-Hastings 2016](#)).

BLUF



Scenario 3: The first wave of COVID-19 in spring 2020 is followed by a “slow burn” of ongoing transmission and case occurrence, but without a clear wave pattern. Again, this pattern may vary somewhat geographically and may be influenced by the degree of mitigation measures in place in various areas. While this third pattern was not seen with past influenza pandemics, it remains a possibility for COVID-19. This third scenario likely would not require the reinstitution of mitigation measures, although cases and deaths will continue to occur.

Not Quite Ready...

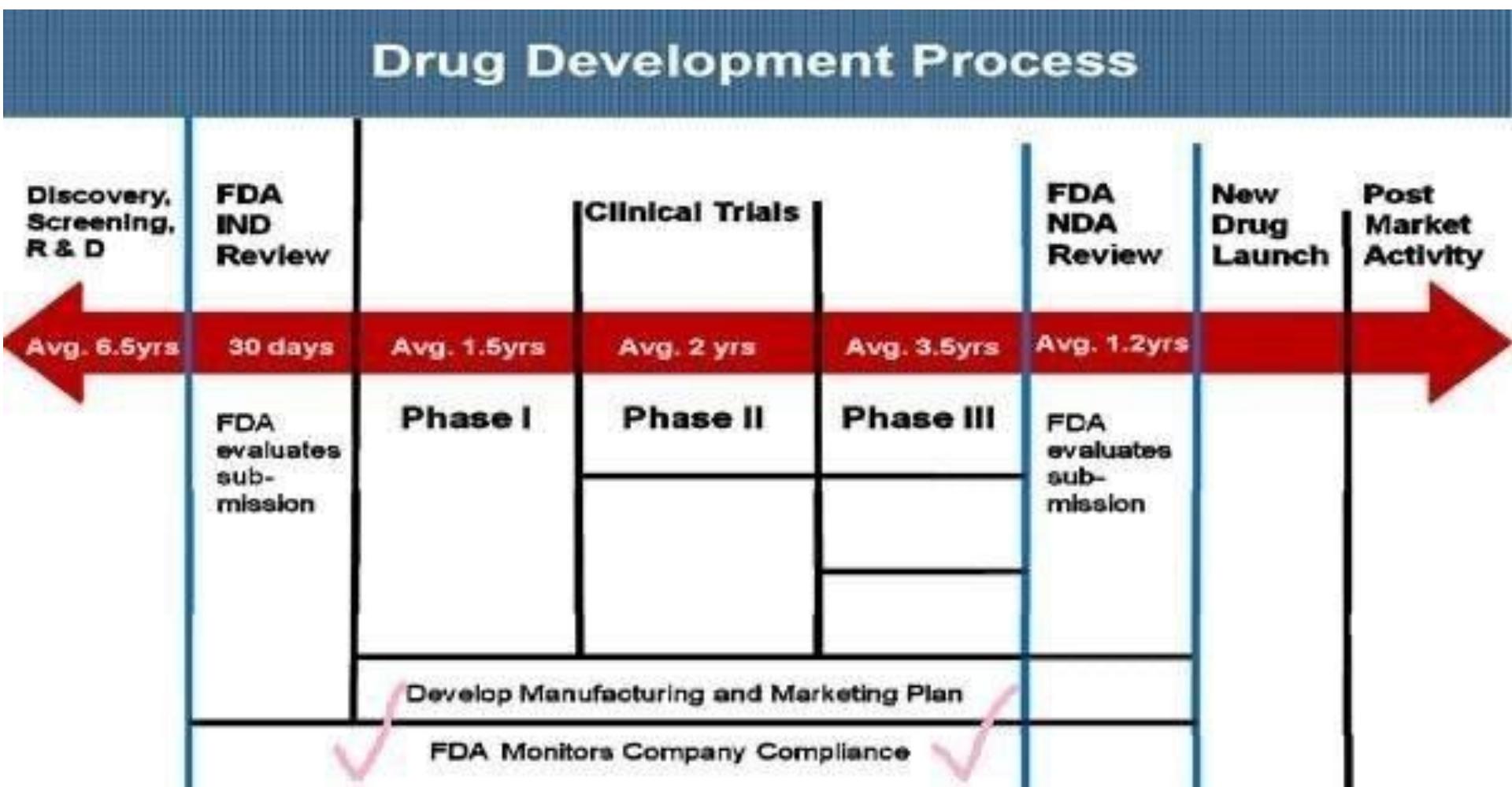


PLANTE TULSAWORLD
CAGLECARICARTONS.COM
4-21-2020

Federal Long Term Planning is Required - Period

- First, keep as many people as possible at home until the rate of infections is well under control.
 - Massively ramp up testing capacity, so that anybody who asks for a test—and some who don't—can take one and get the result within hours or, ideally, minutes.
 - Must be BOTH types of tests
 - People who test positive for antibodies might be granted "[immunity passports](#),"
- Second, by some estimates, millions of virus tests a day, promptly performed, may be required to properly keep tabs on the pandemic in the US.
- Third, testing for antibodies is still in its infancy, and most of the tests currently in development still return fairly high rates of both [false positives and false negatives](#),
- Fourth, the US in particular has precious little coordinated national strategy.
- A miracle may still happen. Perhaps a readily available drug will work. Perhaps testing will show that the virus is far more widespread and less deadly than we thought. It's worth hoping for these things.
- ***Hope is NOT a plan.***

Typical FDA Cycle - Needs Acceleration



FDA Drug Approval Timelines

Typical vs Typical “Fast Track”

Figure 2: Approval Times



Source: Chart created by Simon-Kucher & Partners; Data for “Standard” review adapted from Dimasi, Hansen, and Grabowski (2003), “The Price of Innovation: New Estimates of Drug Development Costs”, Journal of Health Economics 22: 151-85

NOTE: Priority review is not guaranteed for all breakthrough drugs - it will be on a case-by-case basis

As of April 2020, none of the vaccine candidates have been fast tracked. The FDA is willing to fast track infectious disease programs based only on pre-clinical data.

Fast tracking has typically been shown to save much more than 3 months. Programs with breakthrough designation (one of the fast-track statuses) saw approvals 34 months earlier than standard programs at a shocking 4.4 years from the start of Phase I.

Potential risks associated with vaccine development for COVID-19

Potential risks associated with vaccine development for COVID-19

Antibodies that bind virus without neutralizing infectivity can cause disease through increased viral replication or formation of immune complexes that deposit in tissue and activate complement pathways associated with inflammation. T helper 2 cell (T_H2)–biased responses have also been associated with ineffective vaccines that lead to enhanced disease after subsequent infection. Antibody-dependent enhancement (ADE) of viral replication has occurred in viruses with innate macrophage tropism. Virus-antibody immune complexes and T_H2 -biased responses can both occur in vaccine-associated enhanced respiratory disease (VAERD).

Antibody-mediated		T cell–mediated
	ADE	VAERD
Mechanism	Fc-mediated increase in viral entry	Immune complex formation and complement deposition
Effectors	Macrophage activation and inflammatory cytokines	Complement activation and inflammatory cytokines
Mitigation	Conformationally correct antigens and high-quality neutralizing antibody	T_H1 -biasing immunization and CD8 $^+$ T cells

Barney S. Graham Science 2020;368:945-946

Vaccine Development

- More than 90 vaccines are being developed against SARS-CoV-2 by research teams in companies and universities across the world. Researchers are trialing different technologies, some of which haven't been used in a licensed vaccine before. At least six groups have already begun injecting formulations into volunteers in safety trials; others have started testing in animals. *Nature's* graphical guide explains each vaccine design.

Vaccine Development (cont)

- Health officials and scientists across the world are working to develop vaccines and discover effective treatments against the coronavirus.
- There are no proven, knockout treatments and U.S. health officials say a vaccine could take at least a year to 18 months.
- A list is available at the link.

<https://www.cnbc.com/2020/05/13/coronavirus-scientists-race-to-find-a-cure-or-vaccine-here-are-the-top-drugs-in-development.html>

Should You Use Hydroxyquinone?

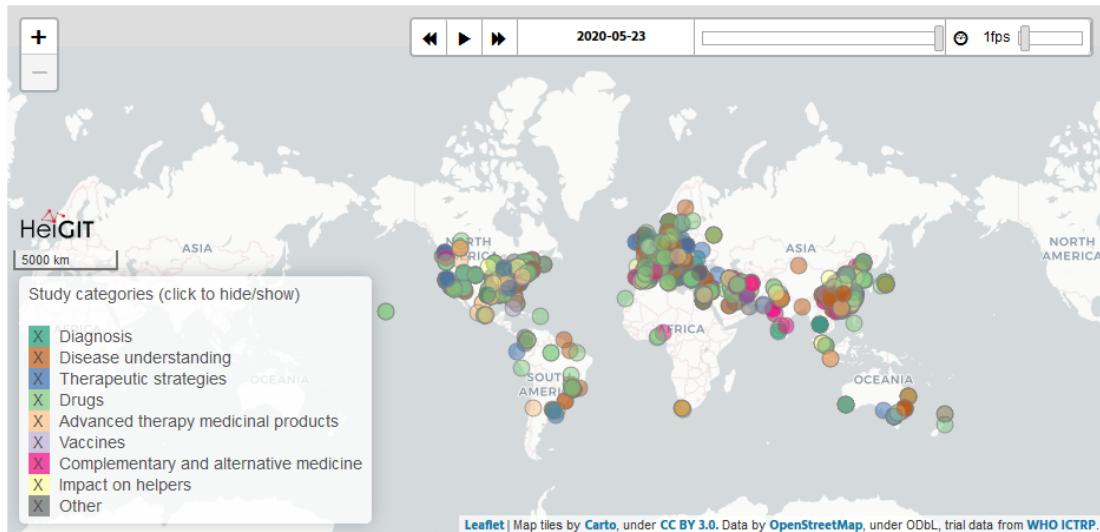


1. There is anecdotal evidence only it's effective. Trump loves it.
2. What type of the 4 patients do you give it to?
3. What doses do you use?
4. How often do you use it?
5. Where in the progress of the disease is it effective?
6. Should it be palliative or a treatment once testing has confirmed disease onset?
7. Who gets it? Who doesn't? There's not enough currently for everyone.
8. Patients who actually use it and require to maintain health can't get it. ***Do we let them die in order to treat COVID patients with all the questions unanswered?***
9. ***Some drug combinations with it are fatal and we don't know them all.***
10. ***Only double blind studies can answer 2-7.***
11. ***That's why just "trying it" is irresponsible.***

The “Lifeline Pipeline”

- While a safe, effective vaccine is still more than a year away, researchers are rushing to:
 - Repurpose existing drugs and non-drug therapies as well as
 - Testing promising experimental drugs that were already in clinical trials.
- More than 70 vaccine candidates are also in development around the world, with at least five in preliminary testing in people.
- The list is viewable [here](#).
- Logistics such as TYPE of treatment, STATUS (Repurposed or Experimental) and when EARLY RESULTS (in months) may be expected for delivery.

How Many Trials Are Being Done?



The information on clinical trials is based on data from the [WHO Clinical Trials Search Portal](#) for COVID-19 related clinical trials. The Clinical Trials Search Portal provides access to a central database containing the trial registration data sets provided by many international registries

The WHO portal gets updated every Friday by six important registries and every 4 weeks by additional registries. We aim at updating our maps without too much delay.

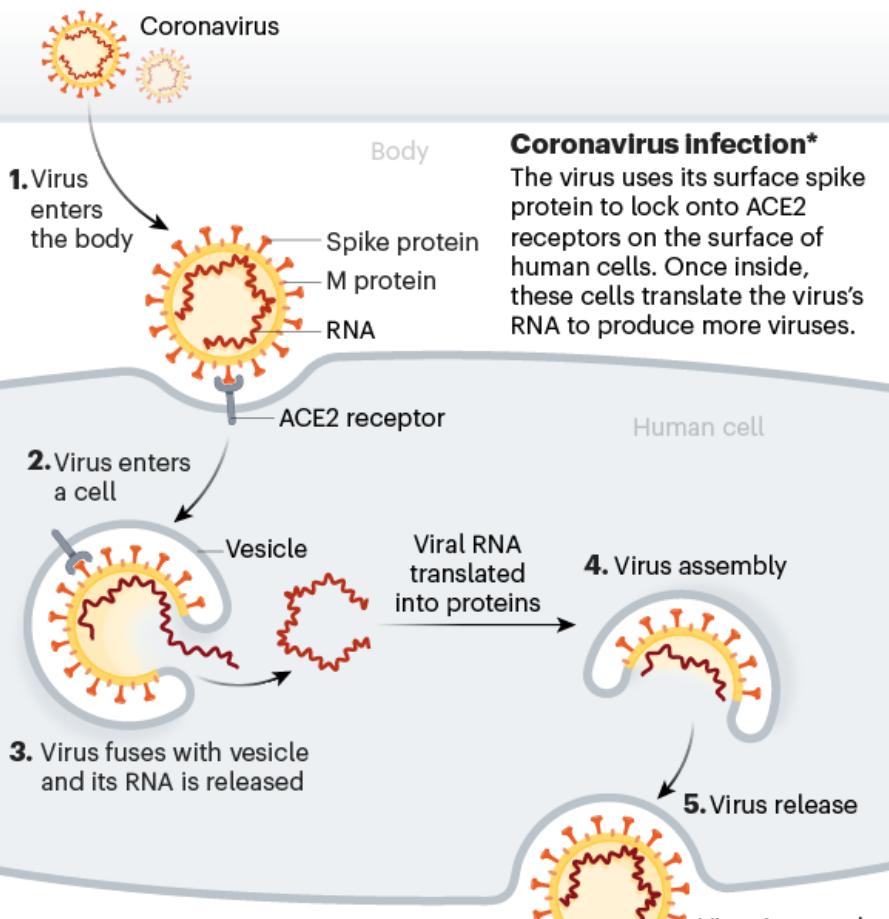
The data shown reflects the WHO portal updated at **2020-05-11** and contains 2356 clinical trials.

https://covid-19.heigit.org/clinical_trials.html

Immune Response

VACCINE BASICS: HOW WE DEVELOP IMMUNITY

The body's adaptive immune system can learn to recognize new, invading pathogens, such as the coronavirus SARS-CoV-2.



Coronavirus infection*
The virus uses its surface spike protein to lock onto ACE2 receptors on the surface of human cells. Once inside, these cells translate the virus's RNA to produce more viruses.

Immune response*

Specialized 'antigen presenting cells' (APCs) engulf the virus and display portions of it to activate T-helper cells.

T-helper cells enable other immune responses:

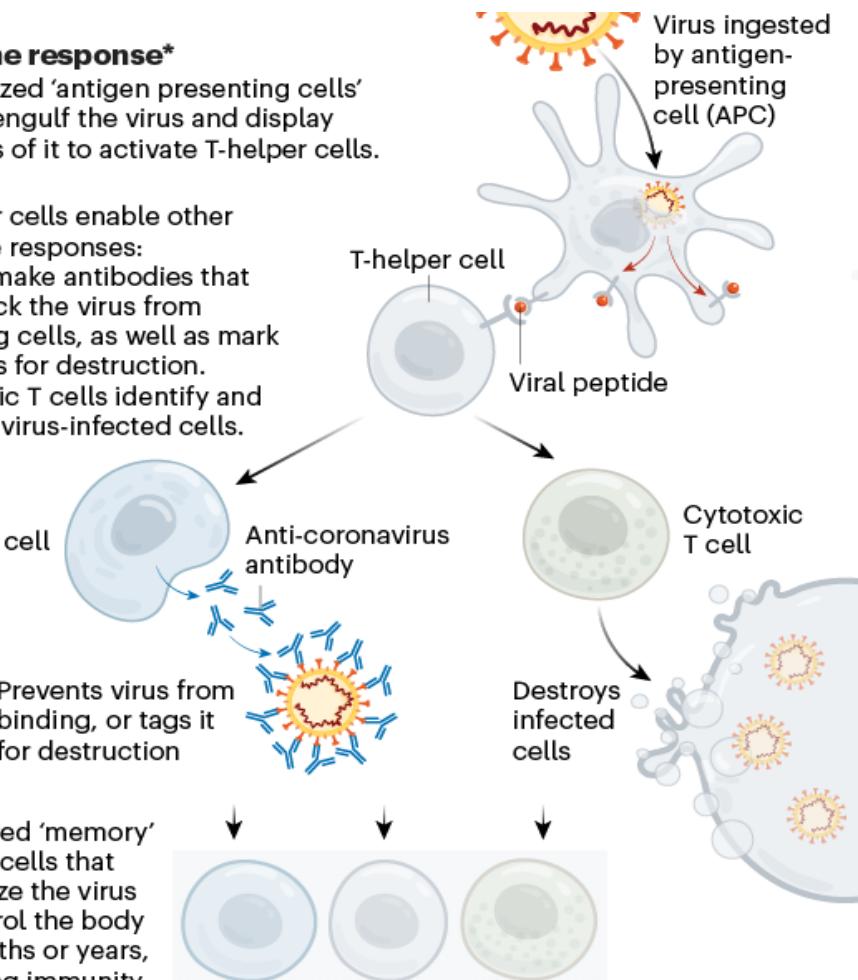
B cells make antibodies that can block the virus from infecting cells, as well as mark the virus for destruction.
Cytotoxic T cells identify and destroy virus-infected cells.



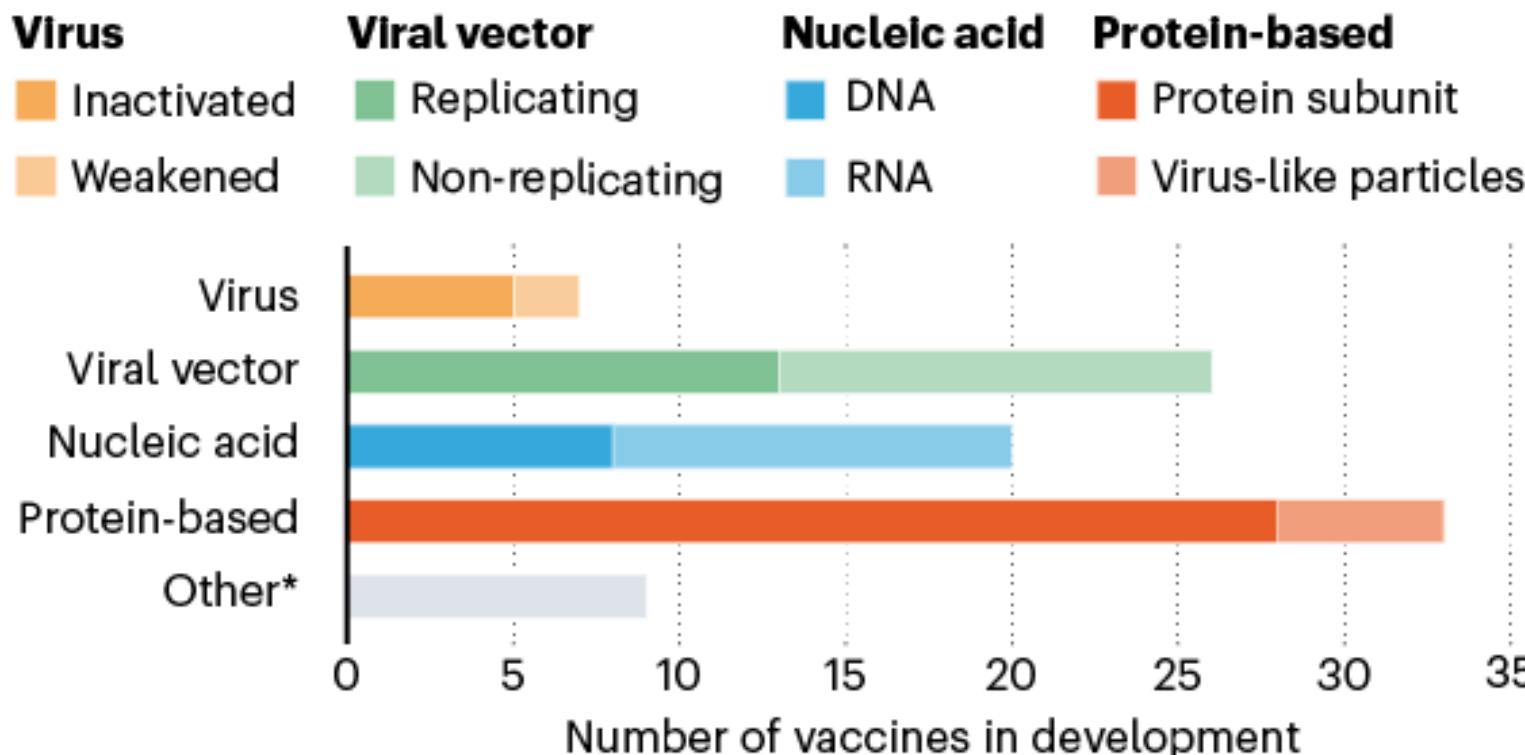
Long-lived 'memory' B and T cells that recognize the virus can patrol the body for months or years, providing immunity

*Simplified

©nature
https://www.nature.com/articles/d41586-020-01221-y?utm_source=quora&utm_medium=referral



AN ARRAY OF VACCINES



* Other efforts include testing whether existing vaccines against poliovirus or tuberculosis could help to fight SARS-CoV-2 by eliciting a general immune response (rather than specific adaptive immunity), or whether certain immune cells could be genetically modified to target the virus.

All vaccines aim to expose the body to an antigen that won't cause disease, but will provoke an immune response that can block or kill the virus if a person becomes infected. There are at least eight types being tried against the coronavirus, and they rely on different viruses or viral parts.

Virus vaccines

At least seven teams are developing vaccines using the virus itself, in a weakened or inactivated form.

Many existing vaccines are made in this way, such as those against measles and polio, but they require extensive safety testing.

Sinovac Biotech in Beijing has started to test an inactivated version of SARS-CoV-2 in humans.

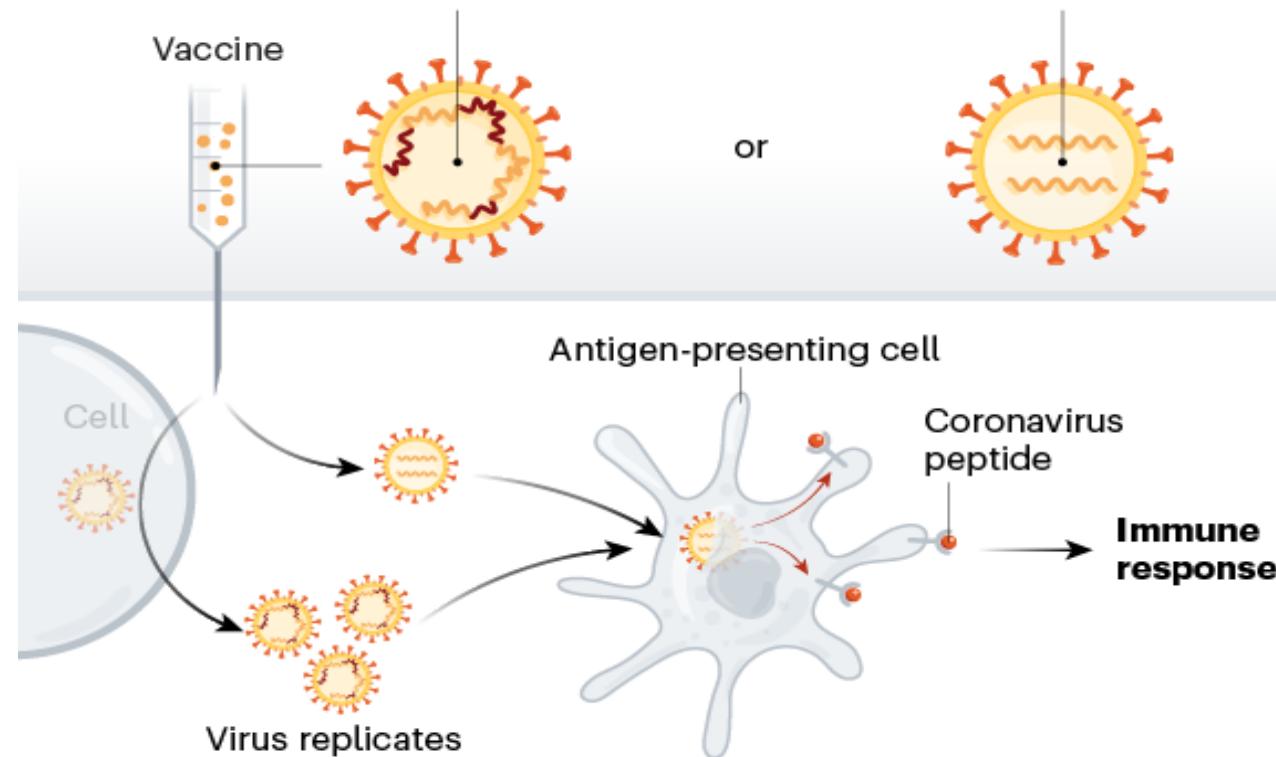
VIRUS VACCINES

Weakened virus

A virus is conventionally weakened for a vaccine by being passed through animal or human cells until it picks up mutations that make it less able to cause disease. Codagenix in Farmingdale, New York, is working with the Serum Institute of India, a vaccine manufacturer in Pune, to weaken SARS-CoV-2 by altering its genetic code so that viral proteins are produced less efficiently.

Inactivated virus

In these vaccines, the virus is rendered uninfecitios using chemicals, such as formaldehyde, or heat. Making them, however, requires starting with large quantities of infectious virus.



©nature

https://www.nature.com/articles/d41586-020-01221-y?utm_source=quora&utm_medium=referral

VIRAL-VECTOR VACCINES

Viral-vector vaccines

Around 25 groups say they are working on viral-vector vaccines. A virus such as measles or adenovirus is genetically engineered so that it can produce coronavirus proteins in the body. These viruses are weakened so they cannot cause disease. There are two types: those that can still replicate within cells and those that cannot because key genes have been disabled.

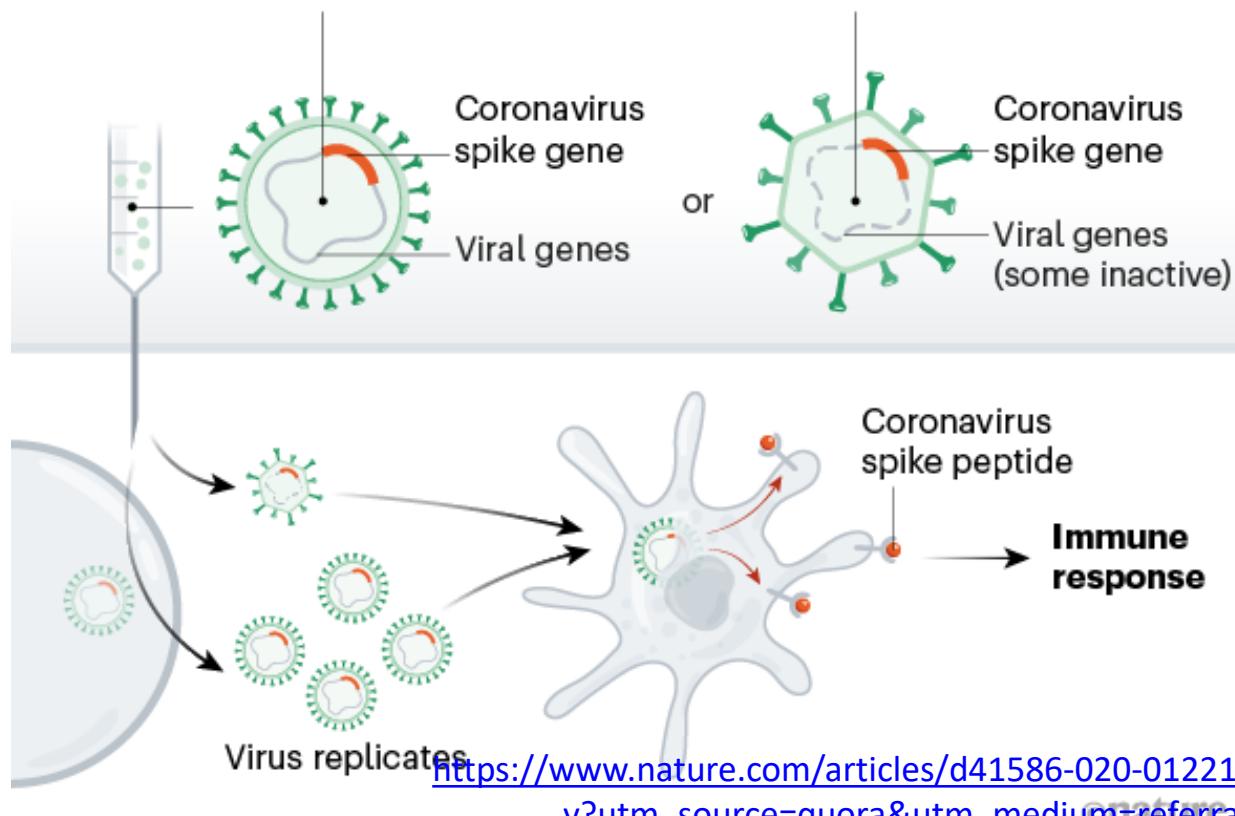
Replicating viral vector (such as weakened measles)

The newly approved Ebola vaccine is an example of a viral-vector vaccine that replicates within cells. Such vaccines tend to be safe and provoke a strong immune response. Existing immunity to the vector could blunt the vaccine's effectiveness, however.

Non-replicating viral vector (such as adenovirus)

No licensed vaccines use this method, but they have a long history in gene therapy.

Booster shots can be needed to induce long-lasting immunity. US-based drug giant Johnson & Johnson is working on this approach.

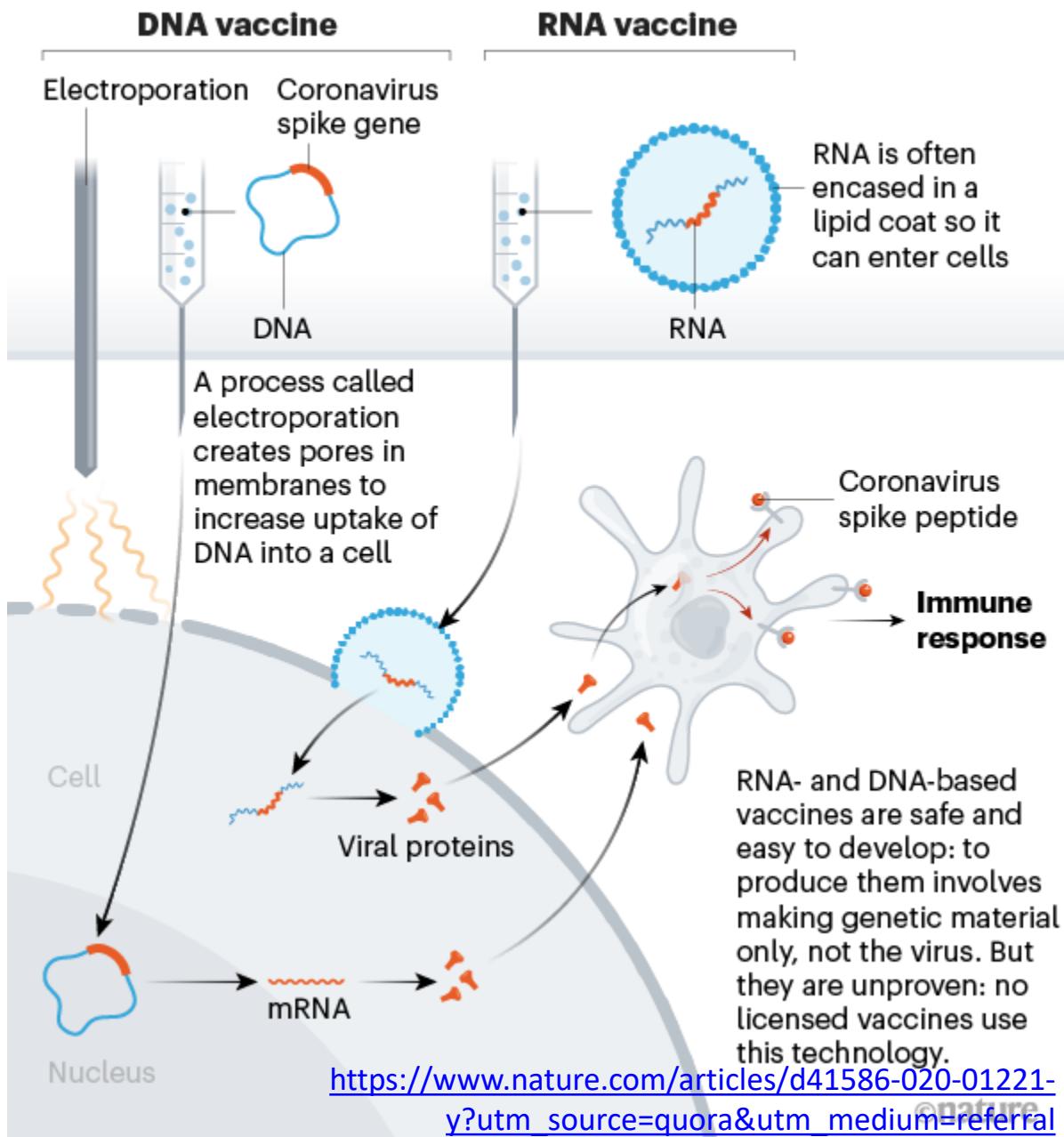


NUCLEIC-ACID VACCINES

Nucleic-acid vaccines

At least 20 teams are aiming to use genetic instructions (in the form of DNA or RNA) for a coronavirus protein that prompts an immune response.

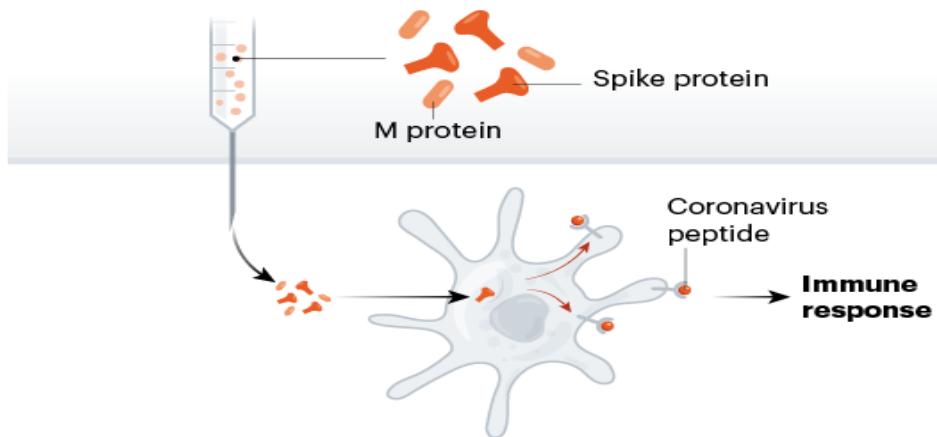
The nucleic acid is inserted into human cells, which then churn out copies of the virus protein; most of these vaccines encode the virus's spike protein.



PROTEIN-BASED VACCINES

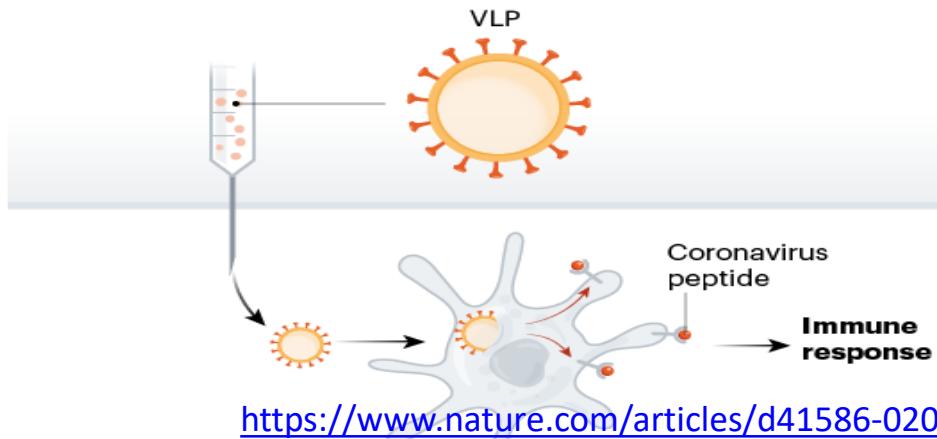
Protein subunits

Twenty-eight teams are working on vaccines with viral protein subunits — most are focusing on the virus's spike protein or a key part of it called the receptor binding domain. Similar vaccines against the SARS virus protected monkeys against infection but haven't been tested in people. To work, these vaccines might require adjuvants — immune-stimulating molecules delivered alongside the vaccine — as well as multiple doses.



Virus-like particles

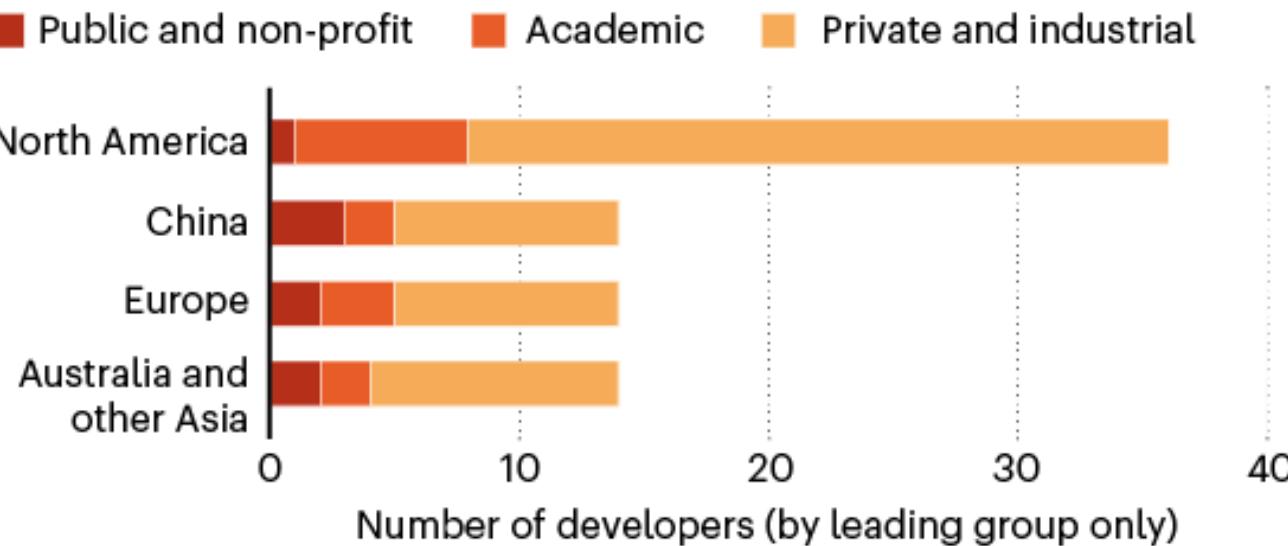
Empty virus shells mimic the coronavirus structure, but aren't infectious because they lack genetic material. Five teams are working on 'virus-like particle' (VLP) vaccines, which can trigger a strong immune response, but can be difficult to manufacture.



Industry trials

More than 70% of the groups leading vaccine research efforts are from industrial or private firms. Clinical trials start with small safety studies in animals and people, followed by much larger trials to determine whether a vaccine generates an immune response. Researchers are accelerating these steps and hope to have a vaccine ready in 18 months.

PUBLIC AND PRIVATE DEVELOPMENT LANDSCAPE



Quest for COVID-19 drugs: the llama connection

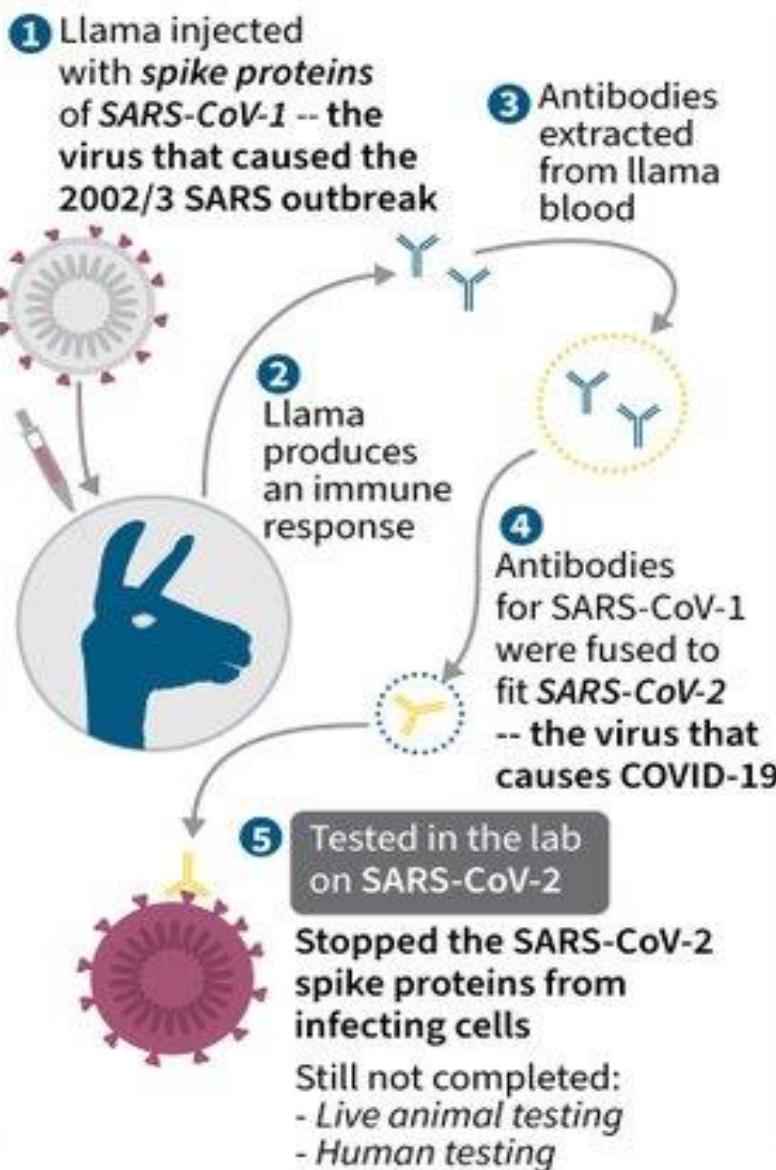
Researchers are looking at a special feature of llama immunity that could help in the battle against SARS-CoV-2



Winter

4-year-old llama in Belgium, has been providing antibodies for testing since 2016

Picture: VIB-UGent Center for Medical Biotechnology



Why llamas?

Size of antibody

Llamas (*lama glama*) -- along with other *camelids* -- produce a type of antibody that is a quarter of the size of human antibodies

 These small *nanobodies* bind tightly to virus proteins

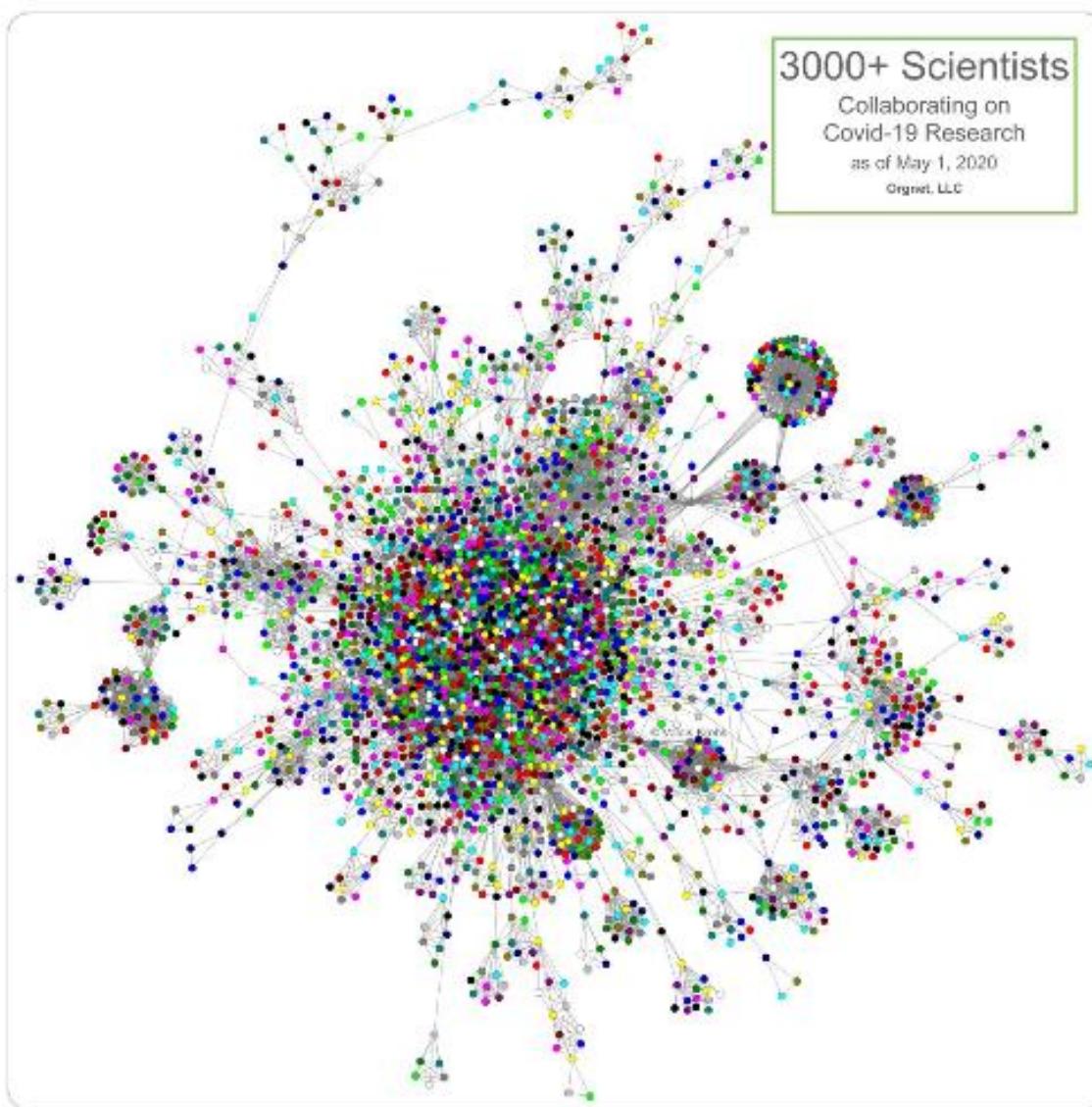
They are small enough to be *nebulised* for therapeutic use

Research head start

Nanobodies, discovered in *camels* in the 1980s were already a subject of research before the COVID-19 outbreak

The new findings on COVID-19 are built on work already taking place for the SARS and MERS viruses

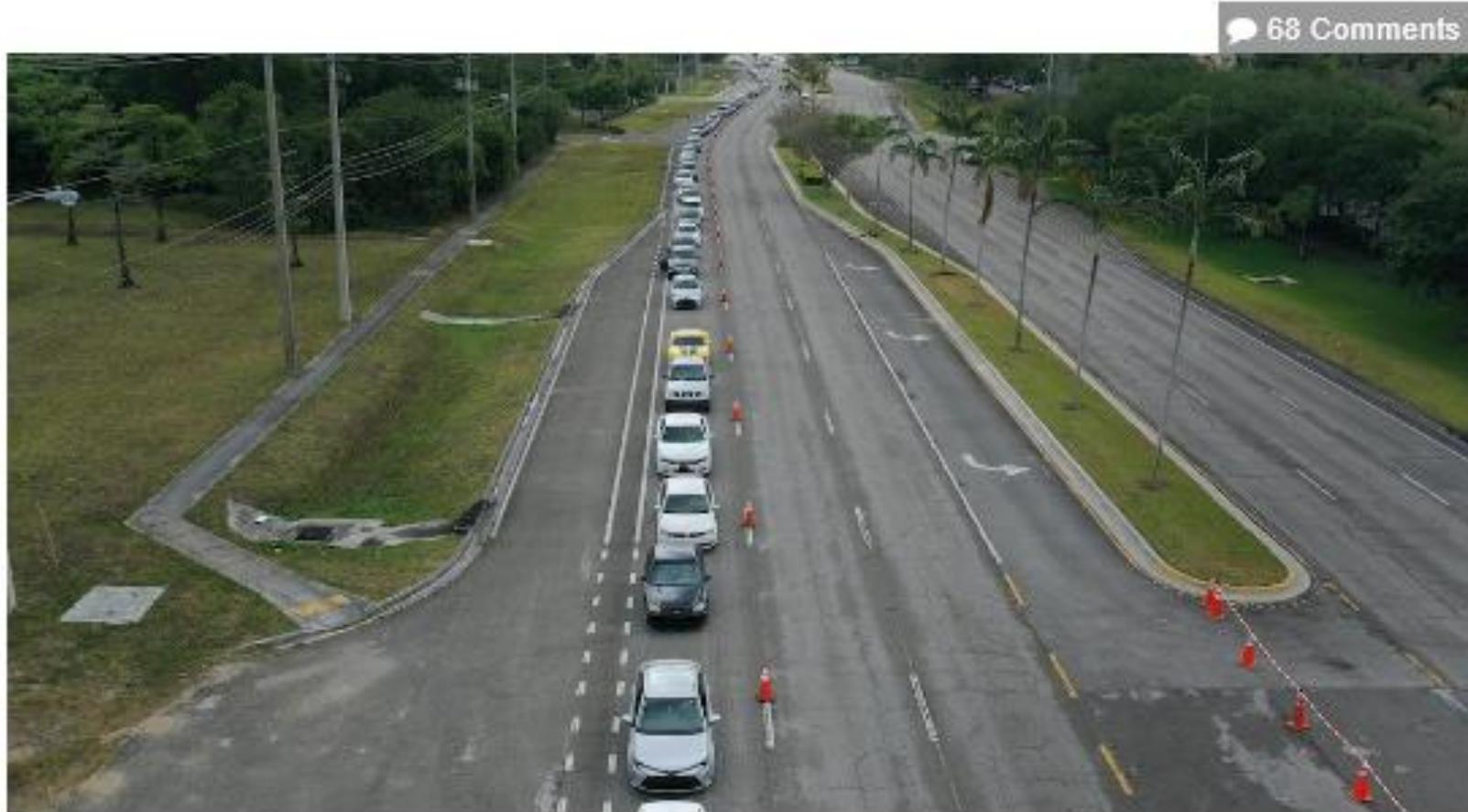
Collaboration Is Key



This map is just a subset of all of the co-pubs and then there is the data in pre-pub websites like medRxiv. These are a subset of the Global scientific community trying to solve this pandemic.

pic.twitter.com/LrApD0ccgN

Not Just Numbers



Vehicles lined up to receive food provided by the food bank Feeding South Florida and being given away by the City of Sunrise on April 06, 2020. (Photo: Joe Raedle/Getty Images)

<https://www.commondreams.org/news/2020/04/10/unforgettable-footage-endless-line-cars-food-banks-stark-illustration-coronavirus>

Social Media Exploding on the Topic



Andrew Rush
@andrewrush

Hundreds of cars wait to receive food from the Greater Community Food Bank in Duquesne. Collection begins at noon.
@PghFoodBank @PittsburghPG



Nick Knudsen #DemCast
@DemWhite

This report from Pittsburgh shows the miles-long line to get to the local food bank.

5,848 11:07 AM - Mar 17 Trump's America, 2020.

Watch. Share. Donate to your local food bank if you can.
#DemCast



2,387 12:53 PM - Apr 4, 2020



theGrio.com @theGrio

A drone captured aerial images of the long line of cars in Sunrise, Florida, where motorists hoped to receive food from Feeding South Florida, a local food bank. t.cn/37vQn



Miles-long row of cars wait outside Florida food bank amid co...
The novel coronavirus outbreak has left millions of people across the country unemployed, and the Feeding South Florida food bank has theGrio.com

24 12:30 PM - Apr 10, 2020



Newsradio 1020 KDKA @KDKARadio

Over 1,000 vehicles received food today at PPG Paints Arena thanks to the Greater Pittsburgh Community Food Bank #stayconnectedtogether bit.ly/3c9MI2Y



Over 1,000 Cars Lined Up For Food Distribution At PPG Paint...
Over 1,000 estimated cars were lined up on the Fullerton Street and in the PPG Paints Arena parking lot Friday morning to pick up food kdkaradio.radio.com

<https://www.commondreams.org/news/2020/04/10/unforgettable-footage-endless-line-cars-food-banks-stark-illustration-coronavirus>

What The Numbers Really Mean

More Coming? We Need to Reopen the Economy Carefully...



https://www.youtube.com/watch?v=FwP1LW_MKOGo

Mass Graves in Brazil



<https://www.theguardian.com/world/2020/apr/30/brazil-manaus-coronavirus-mass-graves>

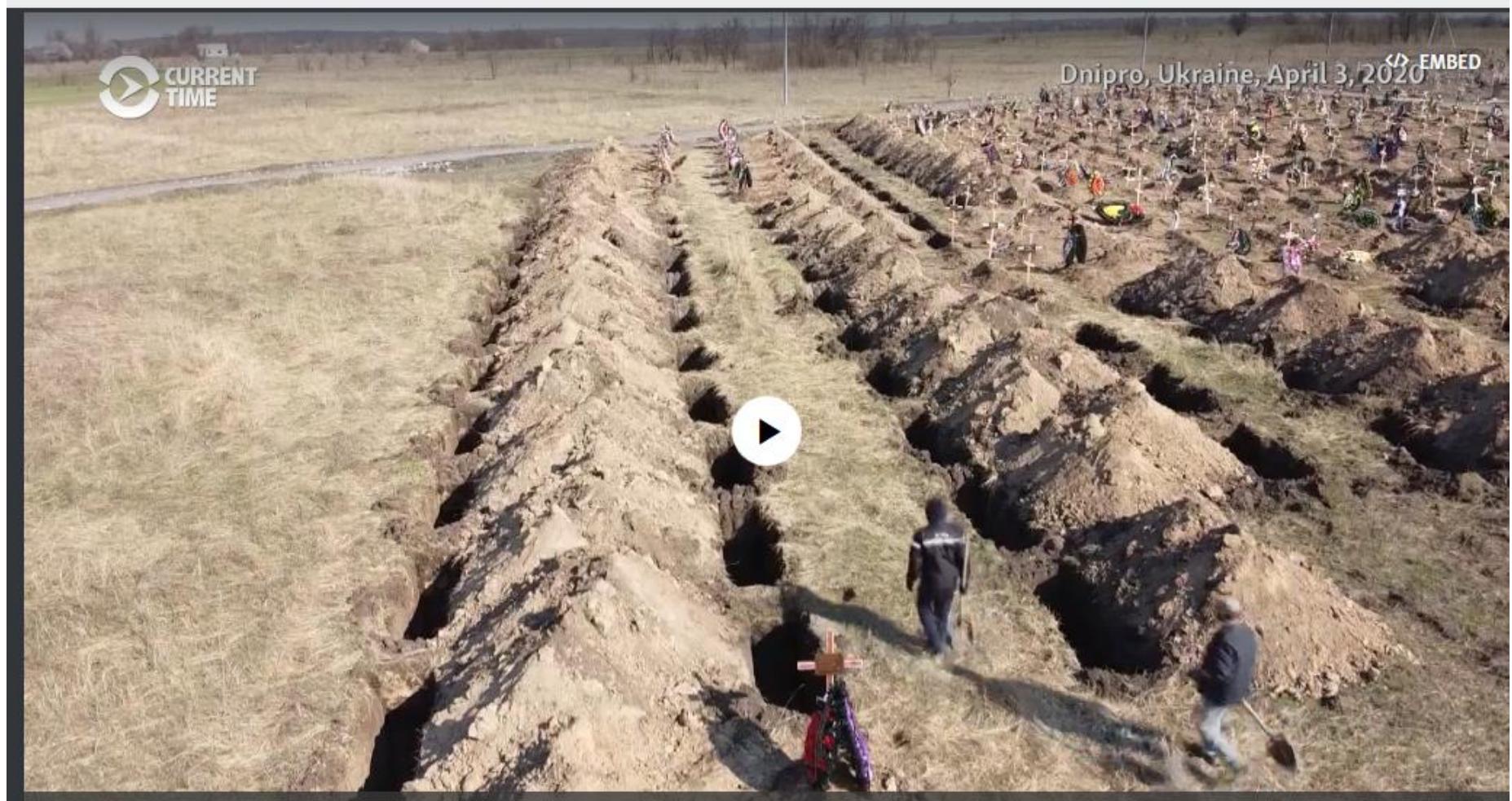
Mass Graves in Iran



▲ Satellite images show Behesht Masoumeh cemetery, including what is believed to be newly-dug grave trenches in the Iranian city of Qom. Photograph: ©2020 Maxar Technologies

<https://www.theguardian.com/world/2020/mar/12/coronavirus-iran-mass-graves-qom311>

Mass Graves in Ukraine



<https://www.rferl.org/a/ukraine-dnipro-coronavirus-mass-graves/30530147.html>

NEW PSYCHOLOGY WILL DRIVE NEW PRIORITIES

BEFORE COVID

EFFICIENCY



RESILIENCE

Supply Chains

*Health System Capacity, Innovation > Cost
Inventories*

INTERDEPENDENCE



SELF-SUFFICIENCY

Less Global Integration

*Stronger National Industrial Base
Tighter Migration Controls*

LEVERAGE / RISK



MARGIN / SAFETY

More Regulation, Bigger Safety Nets

Rent > Own; Big Employer > Startup

Major New Liability Considerations

ABUNDANCE



AUSTERITY

Less Gov't Debt (Super, Duper Committee?)

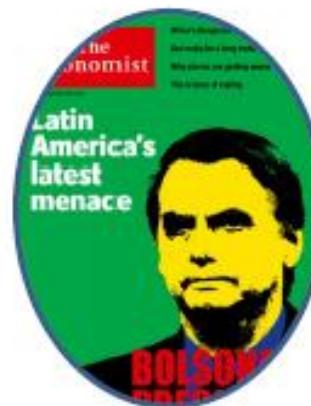
More Gov't Revenue (VAT, carbon, trading, wealth?)

Consumers Twice-Bitten, Now a lot Cheaper

AFTER COVID

POPULISM WILL KEEP RISING, BUT 2020 POPULISTS AT RISK

What Did They Know and When Did They Know It?



Xi “was leading the epidemic response when Wuhan went ahead with New Year celebrations despite the risk of wider infections... let some 5M people leave Wuhan without screening and... waited until Jan. 20 to announce the virus was spreading between humans.” (WSJ)

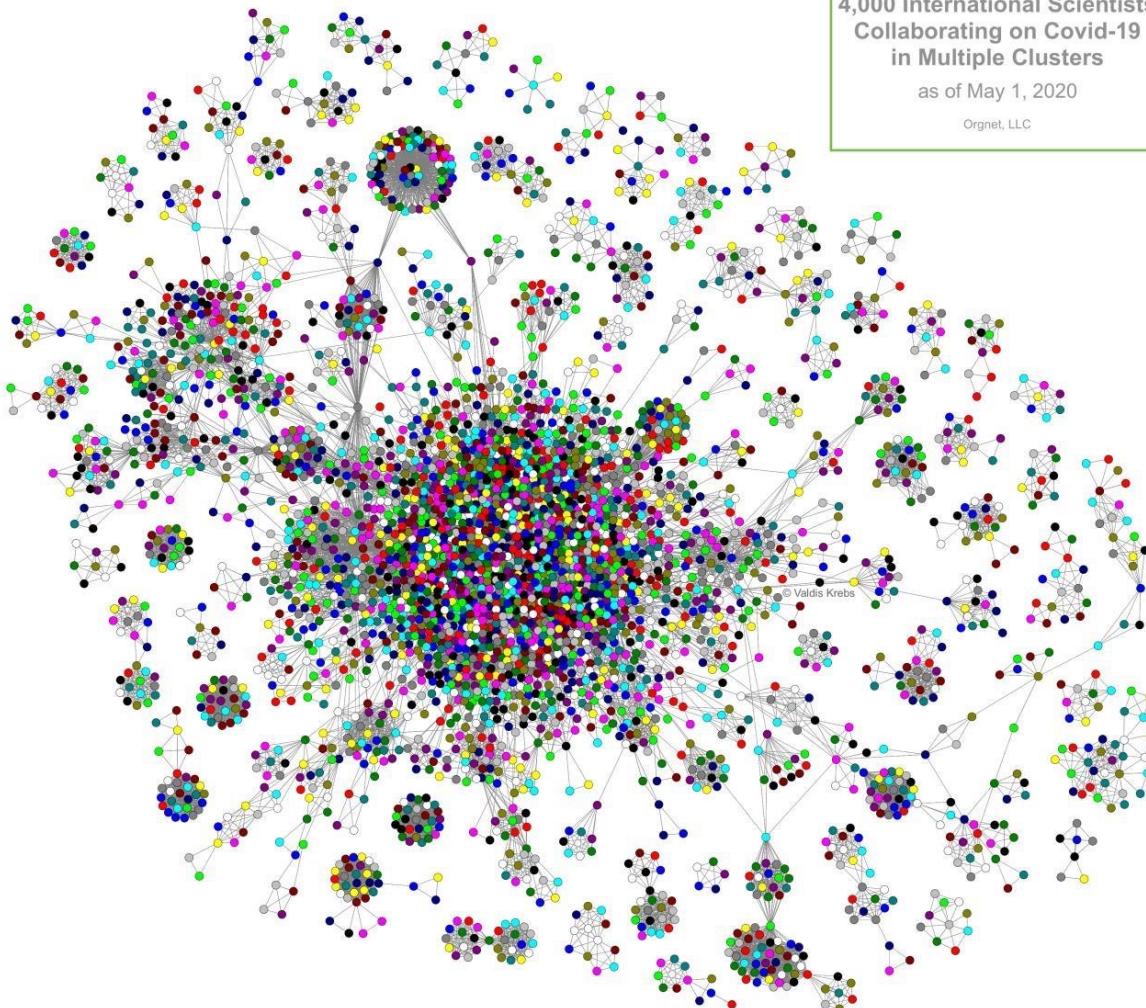
“The risk to the American people remains very low... within a couple of days is going to be down to close to zero. That’s a pretty good job we’ve done.”
(CNBC)

“Johnson’s government is under growing pressure to explain why it has failed to mirror other European countries in implementing widespread coronavirus testing...” (Business Intelligence)

Brazilians “never catch anything. You see some bloke jumping into the sewage, he gets out, has a dive, right? And nothing happens to him.”
(Guardian)

“Criticism has mounted over the lack of planning ahead of the shutdown, which was introduced with less than 4 hours’ notice. Many of India’s 1.3 billion citizens have been left jobless and hungry. Tens of thousands of migrant labourers have been forced to walk hundreds of kilometres to their native villages.” (BBC)

COVID Collaboration



The COVID Collaboration network -- 4000 international medical researchers. Here we see the dense center plus many of the smaller components (clusters/communities) that are not all interconnected. Clusters/Communities form around local knowledge, abilities, goals, and people. Yet, everyone on this map is united by the fight against Covid19.

Conclusions

- Initially, their confidence on the numbers from the previous slides will be low. But that's still how decision makers are thinking—and *should* be thinking about it.
- What they need to do is formalize the process: Understand that this is a numbers game in which we need to learn as fast as possible where we are on R₀, the impact of every measure on reducing R₀, and their social and economic costs.
- Only then will they be able to make a rational decision on what measures they should take.

Conclusion: Buy Us Time

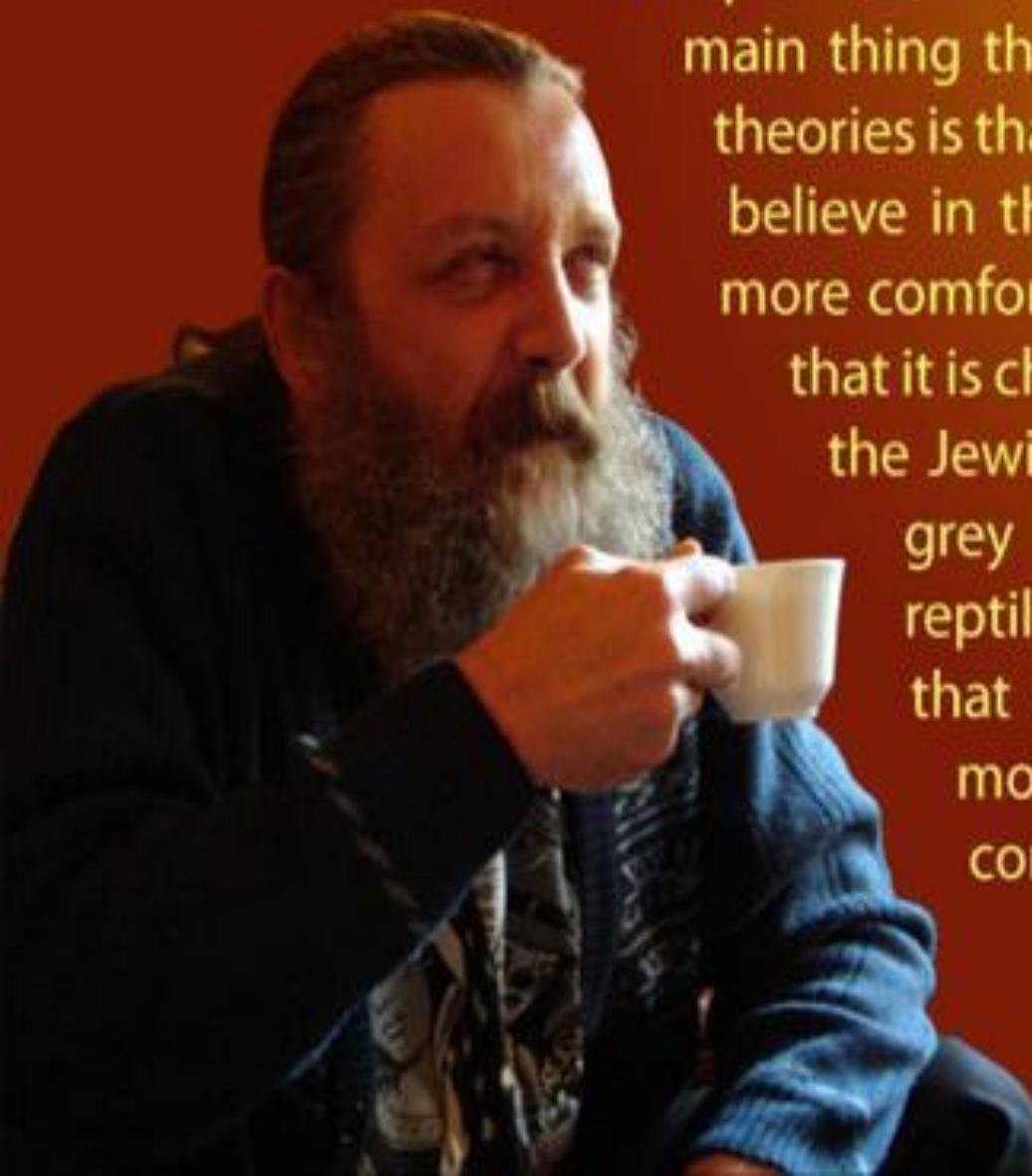
- On one side, countries can go the mitigation route: create a massive epidemic, overwhelm the healthcare system, drive the death of millions of people, and release new mutations of this virus in the wild.
- On the other, countries can **fight**. They can lock down for a few weeks to buy us time, create an educated action plan, and control this virus until we have a vaccine. (*If one can be developed, remember mutation rate*)
- Governments around the world today, including some such as the US, the UK, Switzerland or Netherlands have so far chosen the mitigation path.
- That means they're giving up without a fight.
- Unfortunately, millions of lives are still at stake. Share these slides if you think it can change people's opinion.
- Leaders need to understand this to avert a catastrophe. The moment to act is now.

Useful Visualizations

- Johns Hopkins Corona GIS Dashboard
 - <https://www.arcgis.com/apps/opsdashboard/index.html?fbclid=IwAR01Qxrt3VPSrbCX4Th1aTcI088LVthFicXEOLhOpeZCkOMNfeeVctDRts#/bda7594740fd40299423467b48e9ecf6>
- Epoch Times Updates by State
 - <https://www.theepochtimes.com/coronavirus>
- List of Vaccines under development
 - <https://coronawiki.org/page/coronavirus-sars-cov-2-list-of-vaccines-under-development>
- Simulations explaining “social distancing”.
 - <https://www.washingtonpost.com/graphics/2020/world/corona-simulator/>
- Corona Wiki
 - <https://www.coronawiki.org/>
- Corona on Map Creator
 - https://corona.mapcreator.io/?utm_campaign=Coronavirus%20mailing%201%20-%203%2F20&utm_medium=email&hs_mi=85036558&hsenc=p2ANqtz-TQRxjNQ-WBINMTxMiF2OXIsobGT7IS5CGM4wuLIL22YyTITQRiA0LurdbYDkktPqraC3g&utm_content=85036558&utm_source=hs_email
- National Health Map based on Smart Thermometer data
 - <https://healthweather.us/>
- State and National Projections of Resources and Mortality to 4Aug
 - <https://covid19.healthdata.org/projections>

Useful Visualizations (cont)

- Video on How to Estimate Cases
 - <https://www.youtube.com/watch?v=mCa0JXEwDEk>
- CORONA EPIDEMIC CALCULATOR
 - <http://gabgoh.github.io/COVID/index.html>
- South Korea Approach (video)
 - <https://www.bbc.com/news/av/world-asia-51897979/coronavirus-south-korea-seeing-a-stabilising-trend>
- Open Source COVID19: Our Intent, Needs, and Your Role
 - https://docs.google.com/document/u/0/d/1-71FJTmI1Q1kjSDLPOEegMERjg_0kk_7UfaRE4r66Mg/mobilebasic
- Corona Dashboard
 - <https://avatorl.org/covid-19/>
- Financial Times
 - <https://www.ft.com/coronavirus-latest>
- Virus Growing over time worldwide
 - https://corona.mapcreator.io/?utm_campaign=Coronavirus%20mailing%201%20-%203%2F20&utm_medium=email&_hsmi=85036558&_hsenc=p2ANqtz-TQRxjNQ-WBINMTxMiF2OXIsobGT7IS5CGM4wuLIL22YyTITQRiA0LurdbYDkktPgraC3g&utm_content=85036558&utm_source=hs_email
- Virus Growing world wide – bar chart by John Scudder
 - https://covid19viz.azurewebsites.net/covid19barchartrace.html?fbclid=IwAR1_3YZsul-Nya4noRRQ7AnlyAjFvamaDulUH7naLNuaKUI1EULv3RCbVD8
- Graph by Cases
 - http://91-divoc.com/pages/covid-visualization/?fbclid=IwAR0_sB-rjFVFovJfwY40ijeHbtD5wbCeX2_CqXY1n9zGK97LSXpjh_oDTnc



Yes, there is a conspiracy, indeed there are a great number of conspiracies, all tripping each other up... the main thing that I learned about conspiracy theories is that conspiracy theorists actually believe in the conspiracy because that is more comforting. The truth of the world is that it is chaotic. The truth is, that it is not the Jewish banking conspiracy, or the grey aliens, or the twelve-foot reptilioids from another dimension that are in control, the truth is far more frightening; no-one is in control, the world is rudderless.

-Alan Moore

Cyber in the Time of Corona

Curated & Complied by Dr. Michael L.
Thomas

USAF Cyber College

29Apr2020

Part II - Corona AND Cyber

- As of March 19, 2020, COVID-19 has been primarily used by cybercriminals as a theme for phishing lures. It has been observed at least three cases where reference to COVID-19 has been leveraged by possible nation-state actors.
 - As the number of COVID-19 cases, as well as publicity around the virus, rises globally, both cybercriminals and nation-state actors will increasingly exploit the crisis as a cyberattack vector.
- Cybercriminals will often use the branding of “trusted” organizations in these phishing attacks, especially the World Health Organization and U.S. Centers for Disease Control and Prevention, in order to build credibility and get users to open attachments or click on the link.
- The number of references to COVID-19 in relation to cyberattacks has increased over the last two months, including country-specific phishing lures as the virus becomes more prevalent in that country.
 - For the duration of the outbreak, COVID-19 will continue to be used as a lure, and that new versions of these lures targeting new countries will emerge.
- The number of newly registered domains related to coronavirus has increased since the outbreak has become more widespread, with threat actors creating infrastructure to support malicious campaigns referring to COVID-19. The initial spike in domain registrations coincided with a large spike in reported COVID-19 cases in mid-February — a possible indicator that attackers have begun to realize the utility of COVID-19 as a cyberattack vector.

It's An Information Jungle



Agenda

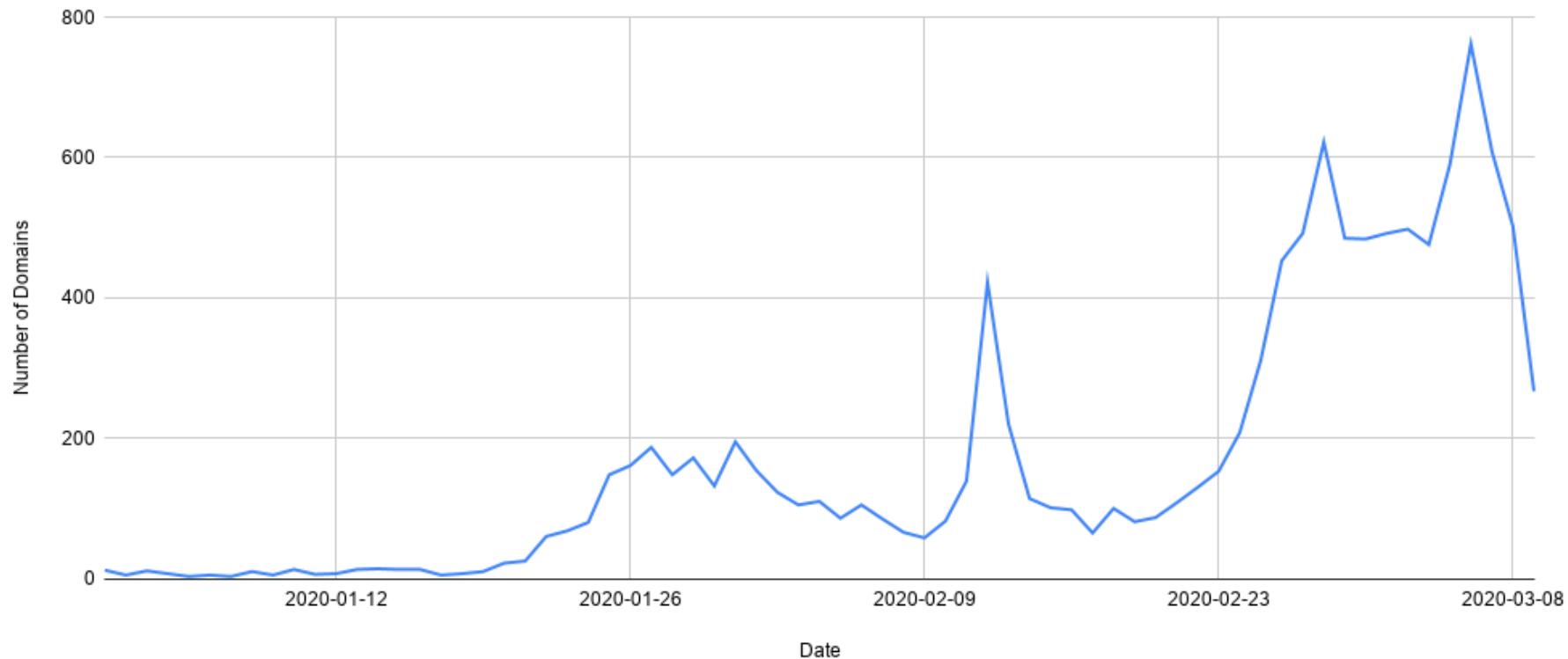
- Cyber Bad Guys
- The Bad Guy Spectrum – the Usual Suspects
- Disinformation Operations From Strategic Adversaries
- Contact Tracing
- Dangers of Large Gatherings
- Dangers of Loss of Privacy
- Vetting Data and Information Sources



"For health and safety reasons, we'll be transitioning to cyber crime."

Corona AND Cyber

COVID-19-related Domains Created per Day



https://www.recordedfuture.com/coronavirus-panic-exploit/?utm_content=121174780&utm_medium=social&utm_source=linkedin&hss_channel=lcp-678036&d_utk=e45348d7-947b-4dfc-a11c-6cdead94d70a&_om=569514

Plethora of Bad Actors

The screenshot shows a news article from Cointelegraph. At the top, there's a header with various crypto currency prices: BTC (\$10,715), ETH (\$139), XRP (\$0.16), DOT (\$2.25), and LTC (\$39.76). Below the header, there's a navigation bar with links like News, Markets, Magazine, People, Cryptomedia, Industry, and Consensus. A banner below the navigation bar says "One secure wallet for all your crypto". The main article title is "Using Ransomware, Hackers Steal and Publish Medical Data of Firm Researching Coronavirus". It includes a photo of hands typing on a keyboard. A sidebar on the left contains a video thumbnail titled "The hack of medical information" and a caption: "Black hat hacker group Maze has infected the infrastructure of a firm researching the coronavirus with ransomware, managing to steal and publish sensitive data." The author's name is Adrian Zmednicki, and the publication date is 28 hours ago.

Hoax CDC Calls Asking People to Reserve COVID-19 Vaccines

The Daly City Police Department in California recently learned of a call-based scam abusing COVID-19 as a lure. In a tweet posted on Twitter, they warned that people impersonating the Centers for Disease Control and Prevention (CDC) had begun calling people and urging them to "reserve a vaccine for the COVID-19" with a credit card. Some of these individuals even went so far as to ask their targets to provide them with their Social Security Number.

A screenshot of a tweet from the Daly City Police Department (@DalyCityPD). The tweet reads: "New scam: People are claiming to be from the CDC offering to let people "reserve a vaccine for the COVID-19" with a credit card and/or social security number. There is no vaccine reserve program, and the CDC is not offering anything of the sort. Do not fall prey!" The tweet has 442 likes and was posted at 5:38 PM - Mar 17, 2020. There are 504 people talking about this. The tweet includes a link to the official CDC website: <https://www.cdc.gov/coronavirus/2019-novel-coronavirus/information-on-the-cdc-s-scams-and-fraud.html>.

Red Cross Impersonators Selling COVID-19 Home Tests

[Snopes.com](#) learned of a scam in which fraudsters impersonated Red Cross volunteers in an attempt to victimize concerned individuals. These attackers said that they were working for Red Cross and that they were offering COVID-19 home tests door-to-door.

In the case someone fell for the ruse, these malicious actors could have fraudulently charged their victims for a test that they never administered. They could have also simply robbed their victims upon gaining entry to their homes.

The Red Cross confirmed to Snopes.com that it is not instructing victims to visit people door-to-door:

The Red Cross is not going to people's homes to offer coronavirus tests. If someone comes to your house claiming that they work for the Red Cross and that they're authorizing testing, do not allow them in your home. Our most important guidance is to stay home if you're sick. Should such an incident occur, we ask that you call the police a safe distance away.

Extortion Emails that Threaten to Infect You with Coronavirus

The [Sophos Security team](#) learned about a phishing email scam in which digital attackers claimed to know "every dirty little secret" about their recipients. They tried to prove it by sharing one of the recipient's passwords that no doubt appeared in a data dump pasted from a recent breach on an underground web forum. They then demanded that the recipients pay \$4000 in bitcoin to have the attackers delete their data.

Subject: [YOUR NAME] : [YOUR PASSWORD]

I know every dirty little secret about your life. To prove my point, tell me, does [REDACTED] ring any bell to you? It was one of your passwords.

What do I know about you?

To start with, I know all of your passwords. I am aware of your whereabouts, what you eat, with whom you talk, every little thing you do in a day.

What am I capable of doing?

If I want, I could even infect your whole family with the CoronaVirus, reveal all of your secrets. There are countless things I can do.

What should you do?

You need to pay me \$4000. You'll make the payment via Bitcoin to the below-mentioned address. If you don't know how to do this, search 'how to buy bitcoin' in Google.
Bitcoin Address:
[REDACTED]
(It is CASE sensitive, so copy and paste it)

You have 24 hours to make the payment. I have a unique pixel within this email message, and right now, I know that you have read this email.

If I do not get the payment:

<https://www.tripwire.com/state-of-security/security-awareness/covid-19-scam-roundup-week-of-3-16-20/>

Spectrum of Bad Actors

The Disinformation Outbreak About the Coronavirus Outbreak Wide Spectrum of Disinformation with Different Purposes

Actor	Objective(s)	Methods	Output	Sophistication	Near-Term Risk	Long-Term Risk
Fraudsters & Pranksters <small>(Financial)</small>	<ul style="list-style-type: none"> Influence Audiences <ul style="list-style-type: none"> Shape opinions Sell products Generate ad revenue Incite Fear <ul style="list-style-type: none"> Grow following 	<ul style="list-style-type: none"> Fringe websites Pop-up ads Computational propaganda Digital forgeries Advance pseudoscience 	Extremely High	Low	High	Low
Companies & Their Competitors <small>(Financial)</small>	<ul style="list-style-type: none"> Influence Audiences <ul style="list-style-type: none"> Sell products Generate ad revenue Discredit Adversaries <ul style="list-style-type: none"> Harm competitor sales, services & reputations 	<ul style="list-style-type: none"> Fringe websites Pop-up ads Computational propaganda Stage provocations/events 	Low	Medium	Medium	Low
Political & Social Groups <small>(Ideological)</small>	<ul style="list-style-type: none"> Influence Audiences Discredit Adversaries Incite Fear & Provoke Conflict Distort Reality 	<ul style="list-style-type: none"> Fringe websites Pop-up ads Computational propaganda Stage provocations/events 	Medium	Medium	Medium	High
Nation States	<ul style="list-style-type: none"> Influence Audiences Discredit Adversaries Incite Fear & Provoke Conflict Distort Reality 	<ul style="list-style-type: none"> Fringe website amplification Computational propaganda State sponsored news Advance pseudoscience, revised histories 	Medium	High	Low	High

Source: C. Watts (Foreign Policy Research Institute & Alliance For Securing Democracy)

Figure 1

Multiple Campaigns by Multiple Actors

- AZORult malware was observed being delivered by phishing documents that used COVID-19 as a lure in early February 2020. [Researchers at Proofpoint observed](#) a COVID-19-themed phishing campaign targeting the manufacturing, industrial, finance, transportation, pharmaceutical, and cosmetic industries.
- January 2020, [researchers](#) at IBM X-Force [observed](#) cybercriminals using coronavirus as a phishing lure to distribute Emotet in a campaign primarily targeting Japan.
- Kaspersky [published](#) an article about phishing emails that emulated the CDC, in particular from emails containing the domains cdc-gov[.]org and cdgov[.]org.
- The security firm Cofense [identified](#) a similar, though more sophisticated, phishing campaign using the subject line “COVID-19 — Now Airborne, Increased Community Transmission” that appears to originate from the address CDC-Covid19[@]cdc[.]gov.
- Cofense also identified a phishing campaign using the subject line “Attention: List Of Companies Affected With Coronavirus March 02, 2020.” that contained a malicious attachment that dropped Agent Tesla Keylogger.
- Phishing emails primarily [targeting](#) Italian email addresses contained malicious Microsoft Office documents with embedded VBA macros that were used to drop Trickbot.

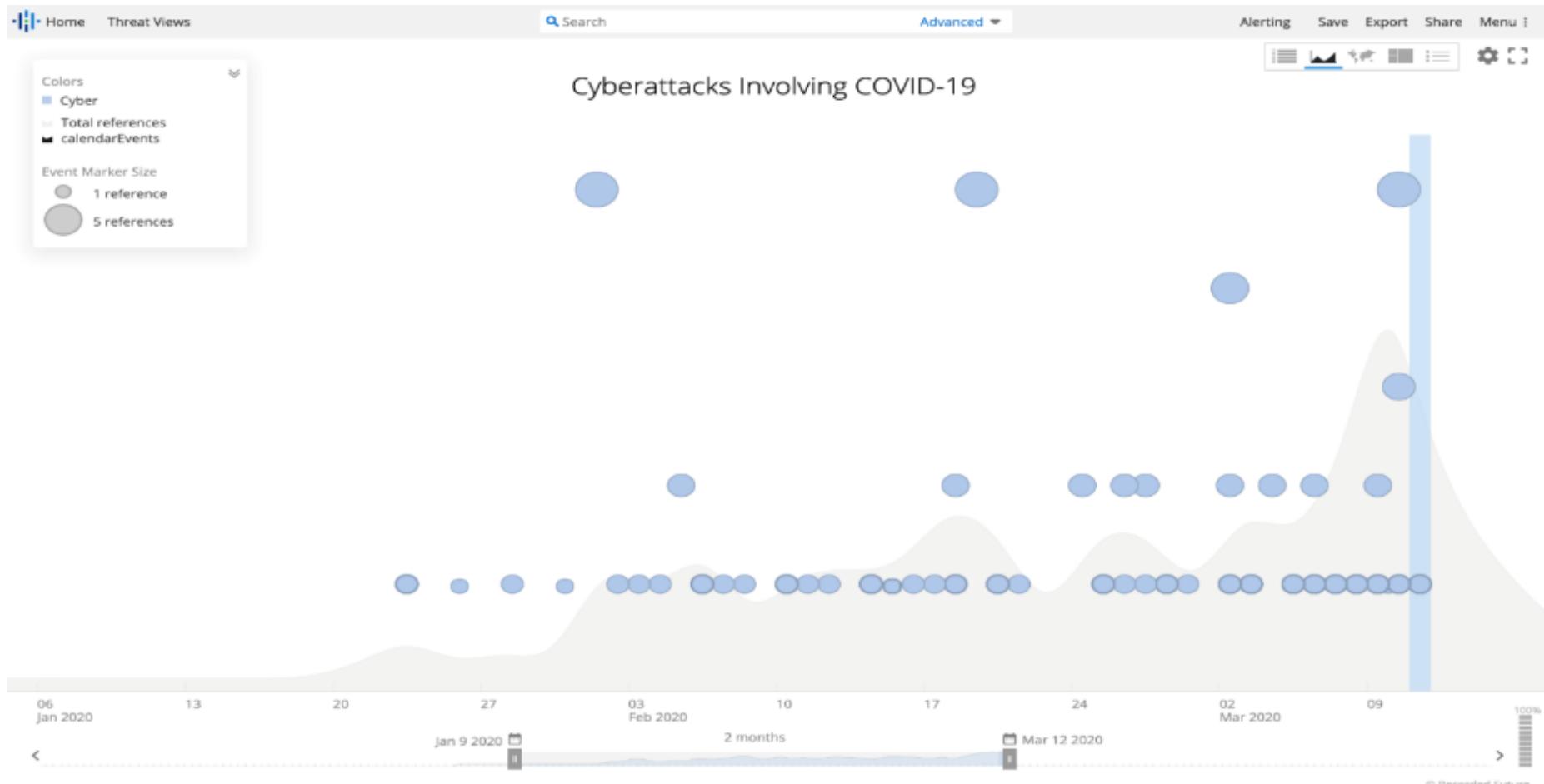
https://www.recordedfuture.com/coronavirus-panic-exploit/?utm_content=121174780&&utm_medium=social&utm_source=linkedin&hss_channel=lcp-678036&d_utm=e45348d7-947b-4dfc-a11c-6cdead94d70a&_om=569514

Multiple Campaigns by Multiple Actors (cont)

- The security research team @issuemakerslab observed a malicious Microsoft Word document dropping the North Korean BabyShark malware that claimed to contain information on South Korea's response to the COVID-19 virus.
- The security research team @reddrip7 identified a malicious Word document attachment called “Коронавірусна інфекція COVID-19.doc” that contained a C# backdoor.
- @reddrip7 also identified a COVID-19-themed phishing campaign that used a decoy document containing Nanocore RAT targeting the South Korean chemicals manufacturing company Dongwoo Fine-Chem Corporation.
- Another campaign used the FedEx trademark in a phishing attack, claiming to provide victims with information on global FedEx operations while the COVID-19 outbreak continues.
- Lokibot was additionally distributed in a phishing campaign that used COVID-19 as a lure, claiming to be sent by the Ministry of Health in the People's Republic of China.
- The Grandoreiro banking trojan was observed being distributed via malicious sites that use the ongoing coronavirus epidemic as a lure. Twitter user @JAMESWT_MHT shared an instance of the trojan used as part of this campaign.
- COVID-19 was also used as a lure in what researchers suspect is a MUSTANG PANDA campaign. MUSTANG PANDA is a suspected Chinese government-linked threat actor group.

https://www.recordedfuture.com/coronavirus-panic-exploit/?utm_content=121174780&utm_medium=social&utm_source=linkedin&hss_channel=lcp-678036&d_utk=e45348d7-947b-4dfc-a11c-6cdead94d70a&_om=569514

Cyber Attacks Using Corona Theme



https://www.recordedfuture.com/coronavirus-panic-exploit/?utm_content=121174780&utm_medium=social&utm_source=linkedin&hss_channel=lcp-678036&d_utk=e45348d7-947b-4dfc-a11c-6cdead94d70a&om=569514 331

How Criminals Profit From the COVID-19 Pandemic

- Factors that prompt changes in crime and terrorism include:
 - High demand for certain goods, protective gear and pharmaceutical products;
 - Decreased mobility and flow of people across borders;
 - Citizens remain at home and are increasingly teleworking, relying on digital solutions;
 - Limitations to public life will make some criminal activities less visible and displace them to home or online settings;
 - Increased anxiety and fear that may create vulnerability to exploitation;
 - Decreased supply of certain illicit goods.



CYBERCRIME

- Criminals have used the COVID-19 crisis to carry out social engineering attacks themed around the pandemic to distribute various malware packages.
- **Example:** The Czech Republic reported a cyberattack on Brno University Hospital which forced the hospital to shut down its entire IT network, postpone urgent surgical interventions and re-route new acute patients to a nearby hospital.



<https://www.europol.europa.eu/newsroom/news/how-criminals-profit-covid-19-pandemic>

FRAUD

- Fraudsters have been very quick to adapt well-known fraud schemes to capitalize on the anxieties and fears of victims throughout the crisis. These include various types of adapted versions of telephone fraud schemes, supply scams and decontamination scams.
- **Example:** An investigation supported by Europol focuses on the transfer of €6.6 million by a company to a company in Singapore in order to purchase alcohol gels and FFP3/2 masks. The goods were never received.



COUNTERFEIT AND SUBSTANDARD GOODS

- The sale of counterfeit healthcare and sanitary products as well as personal protective equipment and counterfeit pharmaceutical products has increased manifold since the outbreak of the crisis.
- **Example:** Between 3-10 March 2020, over 34 000 counterfeit surgical masks were seized by law enforcement authorities worldwide as part of Operation PANGEA supported by Europol.



<https://www.europol.europa.eu/newsroom/news/how-criminals-profit-covid-19-pandemic>

ORGANIZED PROPERTY CRIME

- This includes the well-known scams involving the impersonation of representatives of public authorities. Commercial premises and medical facilities are expected to be increasingly targeted for organized burglaries.
- **Example:** Multiple EU Member States have reported on a similar modus operandi for theft. The perpetrators gain access to private homes by impersonating medical staff providing information material or hygiene products or conducting a "Corona test".



GCHQ in the UK and DHS in US

- (GCHQ) Announced on 20Apr it had taken down more than 2,000 scams in a single month.
- The swindles included:
 - 471 stores selling fraudulent coronavirus related items,
 - 555 websites trying to launch malware on visitors,
 - 200 phishing sites seeking personal information such as passwords or credit card details, and
 - 832 “advance-fee frauds” where victims are duped into handing over a “set-up” payment in the belief they’ll get a large sum in return.
- DHS and NCSC have published a non-exhaustive list of COVID-19 related IOCs via the following links:
 - [CSV file](#) (*external link*)
 - [Stix file](#) (*external link*)
 - **The full advisory is available for [download here](#)**

<https://www.ncsc.gov.uk/news/covid-19-exploited-by-cyber-actors-advisory>

https://www.forbes.com/sites/thomasbrewster/2020/04/20/2000-covid-19-scams-killed-by-british-spy-unit-in-just-one-month/?utm_source=newsletter&utm_medium=email&utm_campaign=dailydozen&cdlid=5d127e2f1802c8c5242db6c1#6956883534e4

Options

- Cybercriminals and other threat actors employing references to COVID-19 primarily in phishing attacks designed to obtain victims' personal information or to drop additional malware.
- Be especially wary of any email or other communications purporting to come from the CDC or WHO, even if it appears to come from a legitimate address on the official domains (cdc[.]gov and who[.]int).
 - Many of the phishing emails used the branding and trademarks of these two organizations as part of the lure, and this trend will likely continue as the outbreak grows in the United States.
- While many legitimate organizations will send emails regarding precautions that they are taking to minimize the threat of COVID-19, the use of legitimate corporate branding has been used to send malware to victims.
- As with all phishing attacks, it is recommended that users disable macros in Microsoft Office for any users that do not absolutely require it.
- Many of the malicious attachments observed by analysts in association with COVID-19 used VBA macros as an initial part of the infection of victims.

Russian, Chinese and Iranian Disinformation Narratives Echo Each Other

- PRC, IR and RU are using the COVID crisis to launch a disinformation onslaught against the US.
- Pushing a host of matching messages:
 - the novel coronavirus is an American bioweapon
 - the U.S. is scoring political points off the crisis
 - the virus didn't come from China
 - U.S. troops spread it
 - America's sanctions are killing Iranians
 - that China's response was great while the U.S.' was negligent
 - all three governments are managing the crisis well
 - the U.S. economy can't bear the toll of the virus.
 - A website run by RU MOD highlights the conspiracy theory that billionaire Bill Gates played a role in creating the virus.

RU, IR & PRC Disinformation Opportunity

РИА НОВОСТИ

Распространение коронавируса могло быть диверсией, считает эксперт

Медицинские работники измеряют температуру у посетителей в зале ожидания аэропорта в китайском городе Чанчунь.

ФОНД СТРАТЕГИЧЕСКОЙ КУЛЬТУРЫ

Confirmed cases of coronavirus in China

No cases ■ 1 to 5 ■ 6 to 20 ■ 21 to 100 ■ More than 100

More than 1,000 cases recorded in Hubei Province

Source: China National Health Commission, BBC Research, 26 Jan

Откуда взялся этот коронавирус?

Некоторые эксперты считают, что коронавирус, поднявшийся в Китае, может быть создан в лаборатории.

© Изображение: BBC

КОМСОМОЛЬСКАЯ ПРАВДА

Правительство РФ 2020 Политика Общество Экономика В мире Спорт Звезды Наши гости

НОВОСТИ 24 09:27

11:26 Новость часа
«Очередной раунд атаки!» В Госдуме проанализировали новые санкции ЕС

11:02 «Поддержка должна быть эффективной». Володин обсудил вопросы конкурентоспособности российского кино

10:44 В СК Армении назвали причину смерти экс-директора службы нацибезопасности

Китайцы уверены, что смертельный коронавирус создан американцами

Несмотря на карантин в 13 городах, жители Поднебесной не унывают и шутят над напастями в соцсетях.

МАРИЯ БЕРК НИКА ИВАНОВА

Поделиться + 4

Федеральный выпуск
Переводчики по другим регионам

Подпишись на е-mail рассылку Комсомолки!

МК

МК в регионах 28 января 2020 время 19:32

Свежий номер Подписка на МК Вход

Новости Политика Экономика Происшествия Общество Спорт Культура Авто 100 лет «МК»

Наши открытия Космос Технологии Экология и климат

Срочная новость Правительство РФ увеличит ряд пособий военнослужащим и полицейским

Новости

18:20 Нидерландские депутаты отменили визит в Россию

17:38 В Ростовской области убили местного депутата с супругой

17:13 Один из обвиняемых по делу MH17 будет участвовать в процессе

16:55 Запертый в Китае россиянин

Эксперт увидел признаки американского биотerrorизма в распространении коронавируса

Под подозрением 400 лабораторий

вчера в 14:06, просмотров: 7164

Масштаб распространения коронавирусной инфекции в Китае увеличивается. Счет инфицированных идет на тысячи. Пекин предпринимает чрезвычайные меры, чтобы уменьшить последствия беды. Между тем, ряд экспертов отмечает странные совпадения в обстоятельствах появления новой заразы, против которой пока у нас нет вакцины, и не исключает ее искусственного происхождения. «МК» попросил прокомментировать ситуацию бывшего члена комиссии ООН по биологическому и химическому оружию (1998-2003) Игоря Никулина.

Правда-TV.ru

новости СИРИЯ УКРАИНА РОССИЯ МИР

«Непростые совпадения»: Китайский коронавирус – летальная разработка ученых, вырвавшаяся из защищенной лаборатории?

Поклонская: китайский коронавирус «могли запустить специально»

Депутат Госдумы Наталья Поклонская прокомментировала ситуацию с распространением нового коронавируса. По ее мнению, опасную болезнь «могли запустить специально».

RU Disinformation Opportunity

- Pro-Kremlin media outlets are actively spreading disinformation about coronavirus in an attempt to "***undermine public trust***" in Western countries
- Pro-Kremlin media outlets "have been prominent in spreading disinformation about the coronavirus, with the aim to aggravate the public health crisis in Western countries, specifically by undermining public trust in national health-care systems."
- The coronavirus pandemic "is a constant and daily topic in pro-Kremlin media."
- The Kremlin denies it....but
 - *During the AIDS epidemic in the 1980s, the Soviet Union undertook "Operation Infektion," a propaganda campaign that falsely accused the U.S. of intentionally engineering the virus as a weapon*
 - Thus far, the chosen narrative appears to be that the U.S. created the coronavirus as a biological weapon. Russia has gotten a good deal of attention thus far for advancing such conspiracies, but I'd assess Iran has advanced this false narrative to a higher degree and the Russian disinformation ecosystem elevates it even further.
- ***Kremlin& PRC aligned websites aimed at Western audiences have trafficked in conspiracy theories to spread fear in Europe and political division in the United States.***

<https://www.rferl.org/a/eu-monitors-say-pro-kremlin-media-spread-coronavirus-disinformation/30495695.html>

<https://www.motherjones.com/politics/2020/03/russia-iran-coronavirus-bioweapon/>

Russian Media Has Been Pushing US Origins

- There are links in late-February to a Foreign Policy article that highlights Russian conspiracy theories pushing for a US origin to the virus

ARGUMENT

Russia Knows Just Who to Blame for the Coronavirus: America

Conspiracy theories are all over state media, following past patterns of disinformation.

BY AMY MACKINNON | FEBRUARY 14, 2020, 10:28 AM



A municipal worker wearing a medical face mask cleans the snow in front of a model of St. Basil's Cathedral in Moscow on Feb. 7. ALEXANDER NEMENOV / AFP VIA GETTY IMAGES

<https://foreignpolicy.com/2020/02/14/russia-blame-america-coronavirus-conspiracy-theories-disinformation/>

China & Iran

- Both secretive societies
- Chinese Foreign Minister is deflecting from PRC's mishandling of the pandemic.
 - Calling it the “Trump virus”
 - Counter to US players calling it Chinese virus, CCP virus
- Accusations have been floated by Iran and China both that the US is actually the origin of the virus.
 - One has US soldiers sick with in present in Wuhan in December
 - One version has it being engineered as a bioweapon in a US lab.
 - “Operation Infeckted” (USSR during the HIV pandemic)
- Motivations?
 - Deny, Deflect etc.
- Speculation
 - Display of Chinese soft power intended to replace US?
 - Display of Russia soft power intended for the same?

PRC Disinformation Opportunity

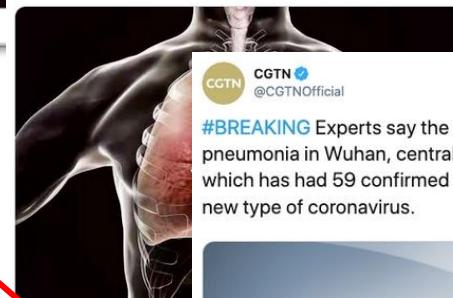
- China has been overtly aggressive.
- It has used a network of government-linked social media accounts to spread discredited, and sometimes contradictory, theories.
- China has adopted Russia's playbook for more covert operations, mimicking Kremlin disinformation campaigns and even using and amplifying some of the same conspiracy sites.
- Chinese officials and institutions have spread talking points centered on two narratives: that the United States is to blame for the origins of the virus and that the Communist Party has successfully contained the virus after a hard-fought campaign, affirming the superiority of its system.

Experts say the previously unidentified pneumonia in Wuhan, central China's Hubei Province, which has had 59 confirmed cases, is believed to be a new type of coronavirus.



7:44 PM - Jan 8, 2020

Experts say the previously unidentified pneumonia in Wuhan, central China's Hubei Province, which has had 59 confirmed cases, is believed to be a new type of coronavirus.



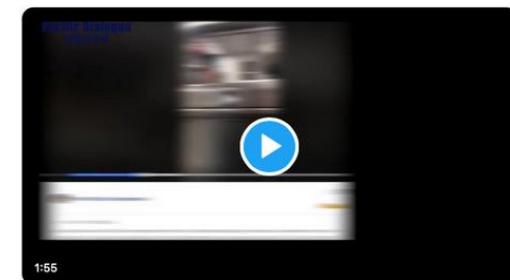
7:44 PM - Jan 8, 2020

#BREAKING Experts say the previously unidentified pneumonia in Wuhan, central China's Hubei Province, which has had 59 confirmed cases, is believed to be a new type of coronavirus.



7:38 PM - Jan 8, 2020

Truth about Dr. Li Wenliang's death: Did Dr. Li die of whistle-blowing? Don't disgrace him and his fellow doctors who have risked their own lives to save Li and other #COVID19 patients.



1:55

10:58 PM - Feb 13, 2020



5:47 AM - Jan 13, 2020

This article is very much important to each and every one of us. Please read and retweet it. COVID-19: Further Evidence that the Virus Originated in the US. globalresearch.ca/covid-19-furth...

8:02 PM - Mar 12, 2020 · Twitter Web App

12.6K Retweets 20K Likes

<https://www.recordedfuture.com/covid-19-chinese-media-influence/>

Initial optimistic messages eventually gave way to an unpleasant truth.

China is using social media to blame the US and divert attention away from the CCP.

Chinese Embassy Releases On Twitter



Lijian Zhao 赵立坚
@zlj517

This article is very much important to each and every one of us. Please read and retweet it. COVID-19: Further evidence that the Virus Originated in the US.
[globalresearch.ca/covid-19-further-evidence-that-the-virus-originated-in-the-us.](http://globalresearch.ca/covid-19-further-evidence-that-the-virus-originated-in-the-us/)

8:02 PM · Mar 12, 2020 · Twitter Web App

12.6K Retweets 20K Likes

Zhao Lijian is a Chinese politician and the current deputy director of Foreign Ministry Information Department. He is the 31st spokesperson since the position was established in the ministry back in 1983.



Sense Hofstede @sehof · Mar 9

The Chinese embassy in Australia now emails journalists telling them that sharing the fact that covid-19 originated in China is 'politicising' the virus.



China changes virus narrative in bid to salvage soft power
China's propaganda machine has changed tack in the past two weeks, suggesting the coronavirus might have originated from outside the ...
afr.com

240

1.1K

1.6K



Chinese Embassy in South Africa @ChineseEmbSA · Mar 7

Although the epidemic first broke out in China, it did not necessarily mean that the virus is originated from China, let alone "made in China".



895

153

297



Example of peripheral introduction of the US-origin conspiracy by Chinese embassies. There does not seem to be a long-term Chinese involvement in pushing the conspiracy narrative. Six retweets of **Lijian Zhao's** tweet, by the Chinese Ambassador to Botswana, the Chinese Ambassador to Egypt, the Chinese Embassy in Manila, the Chinese Embassy in Panama, the Press Officer of the Chinese Embassy in Pakistan, the Chinese Ambassador to Maldives, and the Chinese Ambassador to Egypt. All nine tweets were made on March 12th. There is no further evidence of official Chinese presence in the discussion. That said, this small amount of effort does seem to have been effective. There has been a large dissemination of the information provided by the Chinese.

Chinese Messaging Getting Into Japanese Media

Popular Chinese uptake occurs after a late-February Japanese TV news show questions the Chinese origin for the disease and this speculation is promoted within China by official government sources.



aa-之鋒革命鴉片黃



@market_said

"Japanese TV report sparks speculations in China that COVID-19 may have originated in US..

..The Military World Games were held in Wuhan in Oct. "Perhaps the US .. brought the ..virus to Wuhan, and some mutation occurred ..." a user posted on China's Weibo"

3 3:29 AM - Feb 23, 2020



[See aa-之鋒革命鴉片黃's other Tweets](#)

Press Statement From The Office of ODNI

30Apr2020



Intelligence Community Statement on Origins of COVID-19

“The entire Intelligence Community has been consistently providing critical support to U.S. policymakers and those responding to the COVID-19 virus, which originated in China. The Intelligence Community also concurs with the wide scientific consensus that the COVID-19 virus was not manmade or genetically modified.

“As we do in all crises, the Community’s experts respond by surging resources and producing critical intelligence on issues vital to U.S. national security. The IC will continue to rigorously examine emerging information and intelligence to determine whether the outbreak began through contact with infected animals or if it was the result of an accident at a laboratory in Wuhan.”

###

<https://www.dni.gov/index.php/newsroom/press-releases/item/2112-intelligence-community-statement-on-origins-of-covid-19>

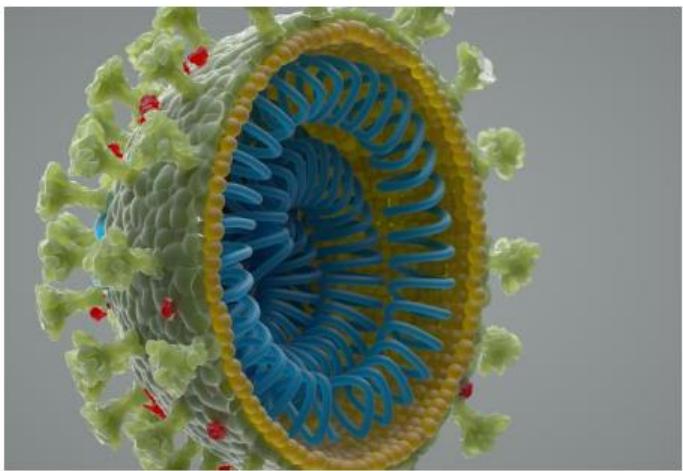
The coronavirus was not engineered in a lab. Here's how we know.

By Jeanna Bryner - Live Science Editor-in-Chief 21 March 2020

The persistent myth can be put to bed.



Comments (240)



Editor's note: On April 16, news came out that the U.S. government said it was investigating the possibility that the novel coronavirus may have somehow escaped from a lab, though experts still think the possibility that it was engineered is unlikely. This [Live Science report explores the origin of SARS-CoV-2](#).

As the novel coronavirus causing [COVID-19 spreads across the globe](#), with cases surpassing 284,000 worldwide today (March 20), misinformation is spreading almost as fast.

One persistent myth is that this virus, called SARS-CoV-2, was made by scientists and escaped from a lab in Wuhan, China, where the outbreak began.

A new analysis of SARS-CoV-2 may finally put that latter idea to bed. A group of researchers compared the genome of this novel coronavirus with the seven [other coronaviruses](#) known to infect humans: SARS, MERS and SARS-CoV-2, which can cause severe disease; along with HKU1, NL63, OC43 and 229E, which typically cause just mild symptoms, the researchers wrote March 17 in the journal [Nature Medicine](#).

"Our analyses clearly show that SARS-CoV-2 is not a laboratory construct or a purposefully manipulated virus," they write in the journal article.

Timeline of DIS-information

January 26
The conservative *Washington Times* publishes a report with the menacing headline “Coronavirus may have originated in lab linked to China's biowarfare program,” which immediately gets global pickup.

February 16
The *Washington Post* finds experts who quickly dismiss Cotton's suggestion, like Richard Ebright, a professor of chemical biology at Rutgers University, who says, “The possibility this was a deliberately released bioweapon can be firmly excluded.”

February 18
A group of 27 prominent scientists outside China publishes a statement in *The Lancet* to “condemn conspiracy theories suggesting that COVID-19 does not have a natural origin” and point out the research “overwhelmingly” concludes the “coronavirus originated in wildlife.”

March 25
The *Washington Times* adds an update to its original story, noting that “scientists outside of China have had a chance to study the SARS-CoV-2 virus” and have “concluded it does not show signs of having been manufactured or purposefully manipulated in a lab.”

April 18
The director of the Wuhan lab, Yuan Zhiming, denies any link between the virus and the lab in an interview with the state-run China Global Television Network.

February 16
Sen. Tom Cotton, R-Ark., becomes the first high-profile U.S. politician to raise the possibility that the outbreak “originated”—or, presumably, was created—in the Wuhan lab — while admitting there was no evidence to suggest there was.

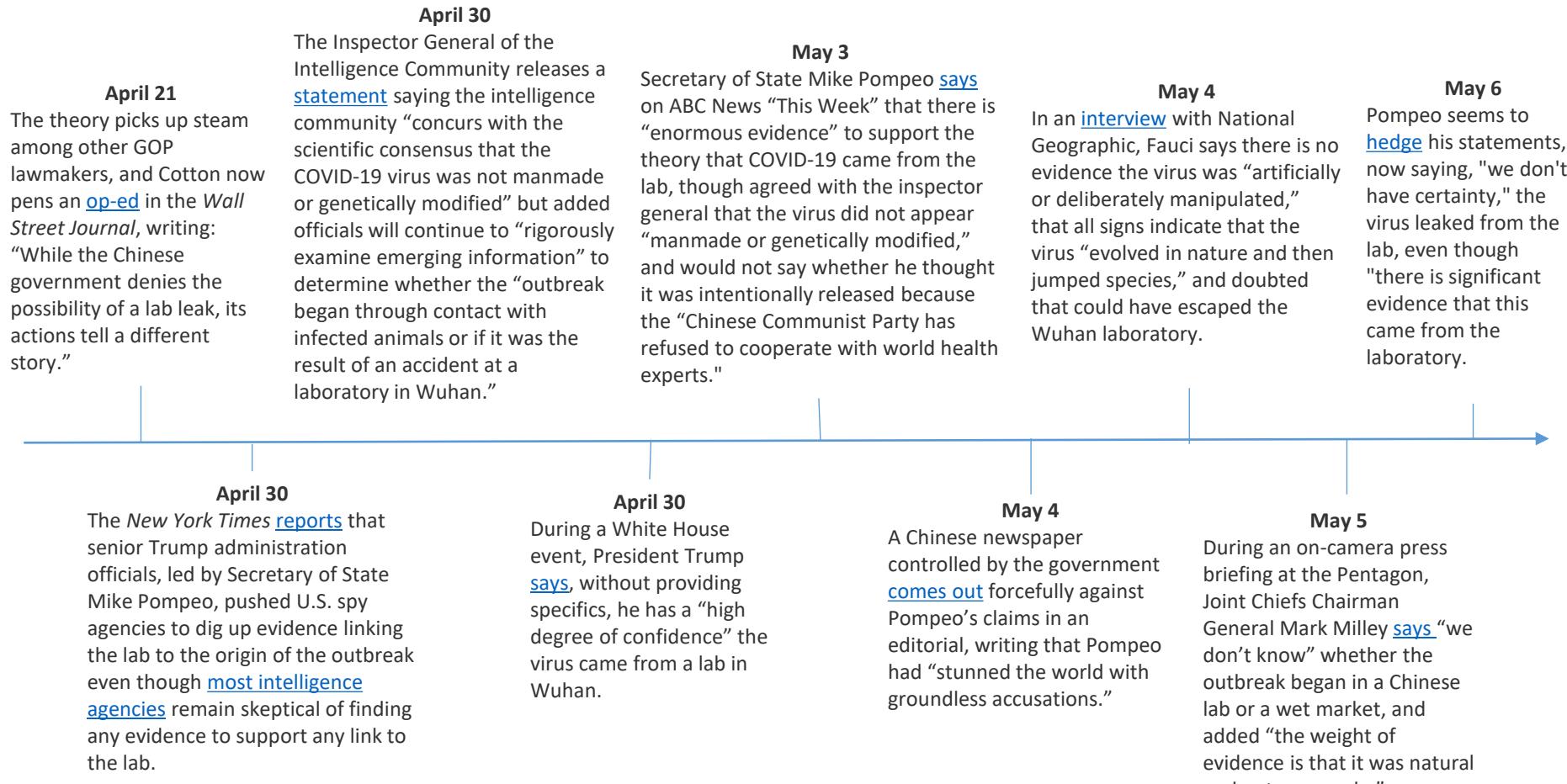
February 16
Cotton clarifies his earlier remarks in a series of tweets—noting different possible scenarios, from a man-made virus theory to a lab accident—though concedes that the virus originating naturally is “still the most likely” theory.

March 17
“We do not believe any type of laboratory-based scenario is plausible,” five prominent scientists write in a report published in *Nature Medicine*.

April 16
CNN and Fox News report officials inside the government are investigating the claim the virus was released from the lab accidentally as scientists were studying infectious diseases (the reports indicate the intelligence officials do not believe the virus is man-made or developed as a bioweapon)

April 18
President Trump says during a White House briefing that the U.S. government was looking into the claim the virus spread as a result of a lab accident and that it made “sense,” without citing evidence; during the same briefing, Dr. Anthony Fauci throws cold water on the claim, citing a study that found the virus’s “mutations” are “totally consistent with a jump of a species from an animal to a human.”

Timeline of Disinformation



On April 25, Politico [reported](#) that a [memo](#) from the National Republican Senatorial Committee instructed GOP campaigns to say China caused the virus "by covering it up" and that Democrats are "soft on China."

False Rhetoric Abounds... *PRC Rumor vs US “Plandemic”*

Your Army

Conspiracies falsely accuse an Army reservist of being ‘patient zero’ of coronavirus pandemic

Kyle Rempfer



April 28



The U.S. armed forces team marches during opening ceremonies for the 2019 Military World Games in Wuhan, China Oct. 18, 2019. (DoD)

<https://www.armytimes.com/news/your-army/2020/04/28/conspiracies-falsely-accuse-an-army-reservist-of-being-patient-zero-of-coronavirus-pandemic/>

Why It's Important To Push Back On 'Plandemic'—And How To Do It



Tara Haelle Senior Contributor

Healthcare

I offer straight talk on science, medicine, health and vaccines.

vs



Members of the clinical staff wearing Personal Protective Equipment PPE care for a patient with ... [+] ASSOCIATED PRESS

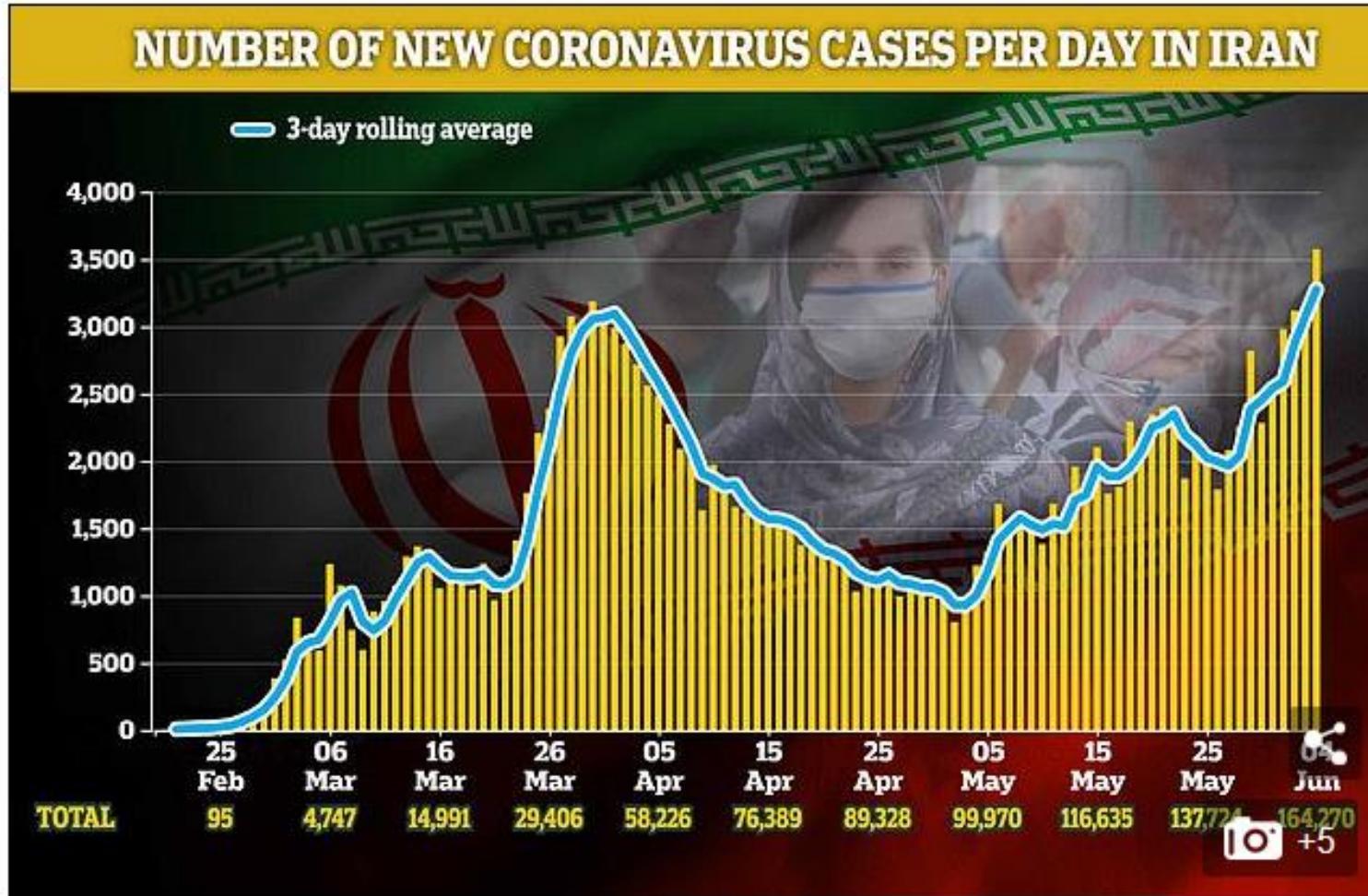
By now you've probably heard about or even seen the video "Plandemic" that's been spreading like wildfire through social media networks. This article is not the one you should give to your friend or relative or coworker who shared the video. (If you want that article,

https://www.forbes.com/sites/tarahaelle/2020/05/08/why-its-important-to-push-back-on-plandemic-and-how-to-do-it/?fbclid=IwAR0xtlt9z5Xz2_bWLQL1Na6IU55kytBMZxSkAF0cQsUjNcVvWo1cbPxuJM#5d6a7b295fa3

IR Disinformation Opportunity

- More than [ten percent](#) of Iran's senior leadership tested positive for the virus by mid-March.
- Top Iranian leaders have stated the conspiracy theory that COVID-19 is a bio-weapon introduced by the US.
- *Setting off a global pandemic that will cripple the world economy and lead to millions of fatalities is a really terrible strategy for any country. Way beyond "drain the swamp".*
- The Chinese news media seized on this notion, with the China Youth Daily speculating that SARS was a genetic weapon developed by the NIH in the United States.
 - *Such claims are easily dispelled by looking at the data.* The CDC [reported](#) that of 166 SARS patients in the United States in 2003, 58 percent were white and 32 percent were Asian.

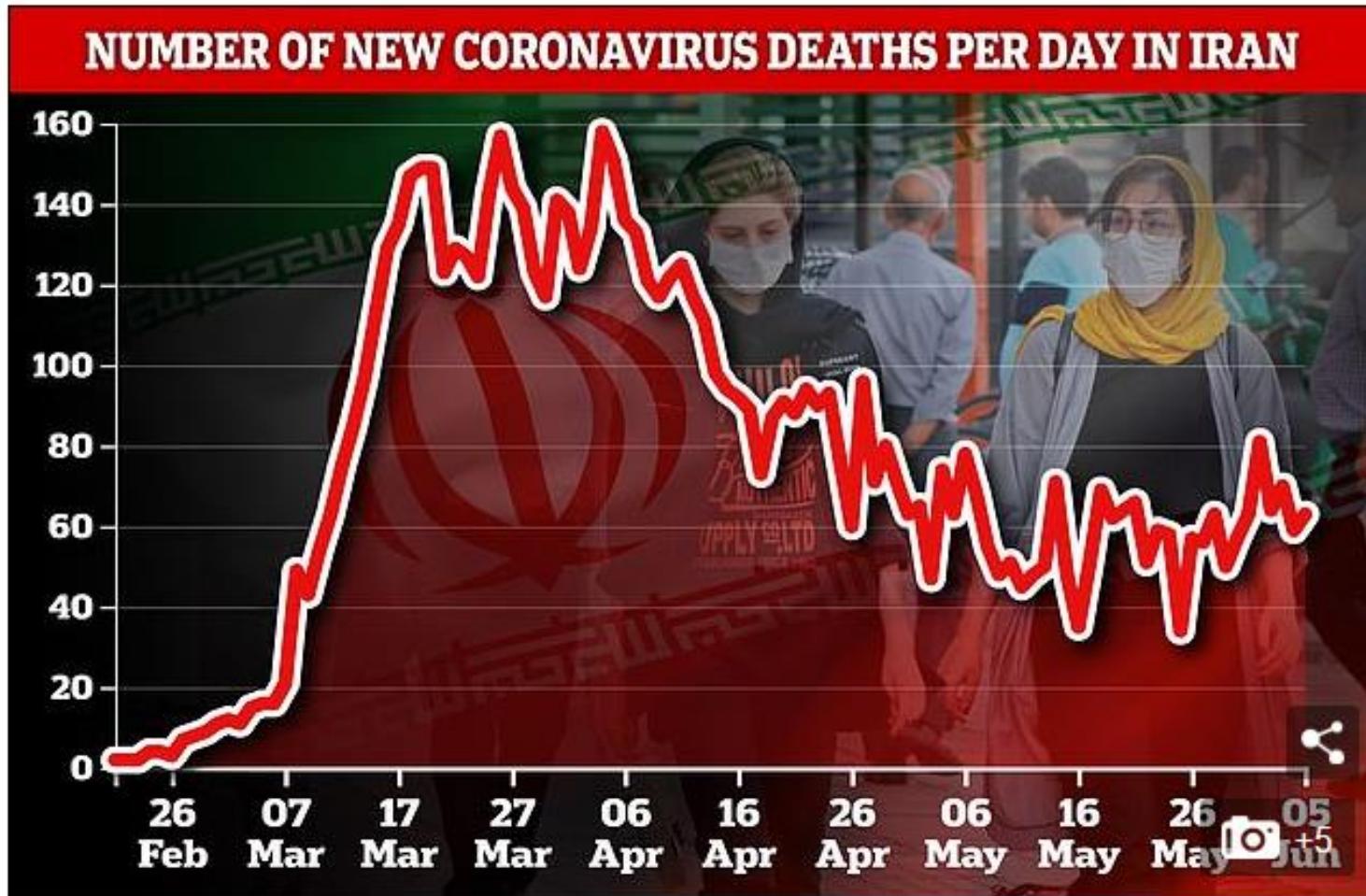
2nd Waves Appearing



Iran has reported a second wave of coronavirus infections as its daily case total hit a record high on Wednesday as lockdown eased - having previously been falling

<https://www.dailymail.co.uk/news/article-8391325/Iran-country-report-second-wave-coronavirus.html?ITO=applenews>

2nd Waves Appearing



Officials have put the 'second wave' down to increased testing, and point to the fact that deaths have not followed suit (pictured) as evidence. Deaths often lag behind cases, because of the time it takes an infected person to get sick enough to die

The Truth Wins Out

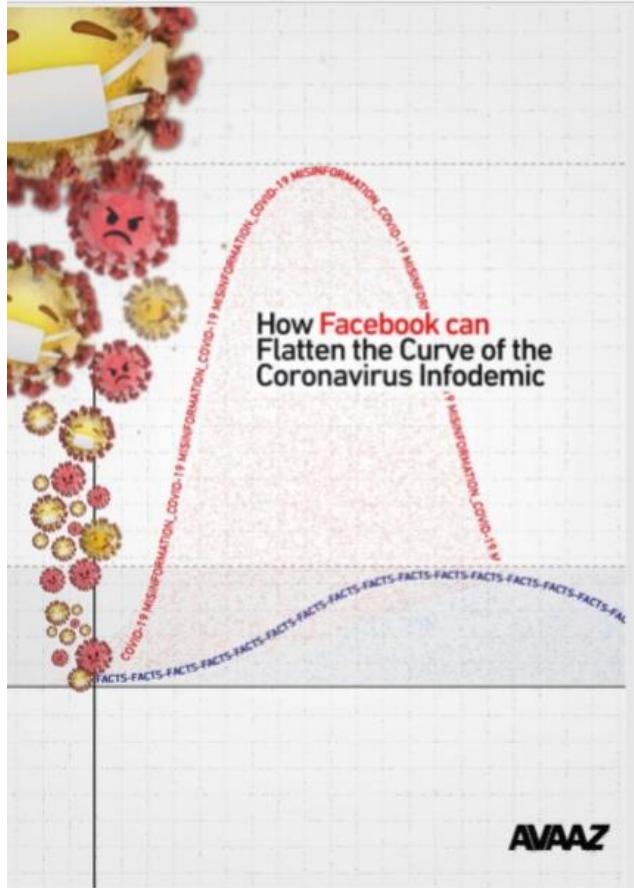
- The Turkish government has cast aside a sample of Chinese-made [coronavirus](#) rapid testing kits after finding out that they gave inaccurate results, a Turkish official confirmed to Middle East Eye on Friday.
- Spain [revealed on](#) that it had withdrawn 9,000 Chinese-made kits after realizing that they had only 30 percent accuracy.
- A Czech media outlet also [reported](#) that up to 80 percent of the 150,000 portable quick tests that China delivered to the republic earlier this month were faulty.
- The Dutch government has recalled over half a million face masks it imported from China after discovering that they were faulty.
- The Netherlands said that it had asked its hospitals to return around 600,000 face masks which health professionals are using to treat patients of the coronavirus.
- ***Intentional? Bad QC? Getting rid of junk?***

<https://www.businessinsider.com/coronavirus-holland-recalls-over-half-a-million-masks-imported-from-china-2020-3>

<https://www.bbc.com/news/world-europe-52092395>

<https://www.middleeasteye.net/news/coronavirus-turkey-faulty-chinese-kits-not-use> 356

Assessment of EU Research = RU & PRC Prominent in Info Warfare



EUROPEAN EXTERNAL ACTION SERVICE
Strategic Communications Division



Brussels, 20/04/2020
EEAS SG.AFFGEN.7/LG

DISINFORMATION ON COVID-19 – INFORMATION ENVIRONMENT ASSESSMENT

Key findings

- COVID-19-related disinformation continues to proliferate widely on social media, with increasing numbers of reports highlighting direct harm to the health of citizens and public security.
- Russian official sources and state-controlled media and social media channels have been running a coordinated campaign across EU Member States and neighbouring regions promoting false health information and disinformation about the EU and its partners.
- Reports indicate that China has continued to run a global disinformation campaign to deflect blame for the outbreak of the pandemic and improve its international image. Both overt and covert tactics have been observed.
- Disinformation networks linked to the Iranian Government have been exploiting the pandemic to frame “the West” and attack international sanctions.
- Analysis by EEAS Stratcom and external groups shows that highly harmful disinformation about COVID-19 is going particularly viral in smaller media markets within and outside the EU, where tech companies face lower incentives to take adequate counter-measures.
- The EU working with international partners, both inside the EU and globally, to step up its response to malign influence campaigns and COVID-19-related disinformation, including in the context of the EU Rapid Alert System.

Table of Contents

1. Impact assessment.....	2
2. State-backed influence campaigns.....	4
Russia 4	
China 7	
3. Regional and country updates	9
Annex 1: Examples of health-related disinformation on Facebook and YouTube.....	11
Annex 2: Examples of health-related disinformation by Kremlin-linked sources on Facebook, Twitter and Google.....	21

https://secure.avaaz.org/campaign/en/facebook_coronavirus_misinformation/

<https://www.documentcloud.org/documents/6877118-INTERNAL-Coronavirus-3rd-Information-Environment.html>

Dis-Information Impact Assessment

- **Russia and China continue to widely target both conspiracy narratives both at public audiences**
- University of Mainz research shows how Covid-related conspiracy theories and disinformation can adversely impact individual health behavior.
 - One third of people across 6 countries (Argentina, Germany, South Korea, Spain, the UK, and the US) say they have seen "a great deal" of false or misleading information about COVID-19 on social media and messaging applications in the last week (up to 15th of April)
 - One third of UK citizens believe that Vodka can be used as hand sanitizer, while one fifth think the virus originated in a lab, according to a YouGov survey dated March 30.
 - According to a BBC report, in one Iranian province more people had died from drinking industrial-strength alcohol than from COVID-19, based on a false claim that it could protect you from the virus.

https://secure.avaaz.org/campaign/en/facebook_coronavirus_misinformation/

Dis-Information Impact Assessment - Cont

- Official Russian sources and state media continue running a coordinated campaign with the twofold aim of undermining in the EU and its crisis response, and to sow confusion about the origins health implications of COVID-19.
- The campaign mostly builds on open source media and social media channels, with some indications of covert behavior.
- The campaign exposes coordination across EU Member States and the wider neighborhood.
- Kremlin-backed disinformation on covid-19 continues to proliferate widely on social media even if it contradicts official WHO guidance and the content policies of social media companies.
- Potential harm is assessed to be high, as conspiracy theories and false health information have been proven to negatively impact health behavior.

Other Results

- A new survey by Pew Research Center, conducted from 10-16 March 2020, has found that nearly a third of Americans (29%) believe that COVID-19 was “most likely” produced in a laboratory.
- Conspiracy theories about 5G telecommunication masts allegedly facilitating the spread of COVID-19 led to vandalism and abuse of telecommunications staff in several locations in the Netherlands, Belgium and the UK.
- According to a poll published by Slovak paper Denník N, 67% of Slovaks respondent say China is helping Slovakia fight COVID-19, while less than 20 % say the same about the European Union (conducted March 25 – 26).
- Italian polling firm SWG finds that the share of respondents saying they considered
- China as friendly to Italy went up to 52% in March from 10% in January, while the share of respondents indicating they have trust in EU institutions went down to 27% in March from 42% in September.

Concurrent - China's Controversial Mission to Reinvent the Internet

- “Network 2030” is both proposed by and designed Huawei.
- Based on Huawei 5G technology approach.
- Goals/Drivers
 - High density data movement
 - Holographic avatars
 - Striving for even more realistic personal communications
 - Security through trustworthy systems
 - Self-governing independent network systems

<https://www.ttc.or.jp/application/files/7815/6989/4858/20191001.pdf>

<https://www.ft.com/content/ba94c2bc-6e27-11ea-9bca-bf503995cd6f>

And Others, too....

- Clint Watts, a research fellow who focuses on global disinformation at the Foreign Policy Research Institute, has written that Iranians are pushing coronavirus conspiracies even more strongly than Russia.
- China is also pushing its own campaigns related to the coronavirus, but Watts and Rachel Chernesky, a project manager at the same think tank, have noted that that country has been less interested in peddling disinformation and more in pushing narratives about the strength of its response compared to the U.S.
 - Chinese foreign ministry spokesman Zhao Lijian became the latest to promote a conspiracy with a series of tweets late on Thursday and early Friday suggesting that the virus may have been spread by the United States military.

15Apr - Joint DHS & FBI Alert re: DPRK

- The DPRK's malicious cyber activities threaten the United States and the broader international community and, in particular, pose a significant threat to the integrity and stability of the international financial system.
- [Click here](#) for a PDF version of the report.
- The DPRK continues to use cyber capabilities to steal from financial institutions to generate revenue.

Contact Tracing

An integral part of fighting the COVID-19 pandemic is to find out how the virus is transmitted. Contact tracing and follow-up health interventions can ensure limited spread of the infection. It can also stop the pace of the pandemic before the third stage which is community transmission.



- What is contact tracing?
- Who is a contact?
- And, how are contacts traced? (*hint – it will involve your cell phone logs at some point*)

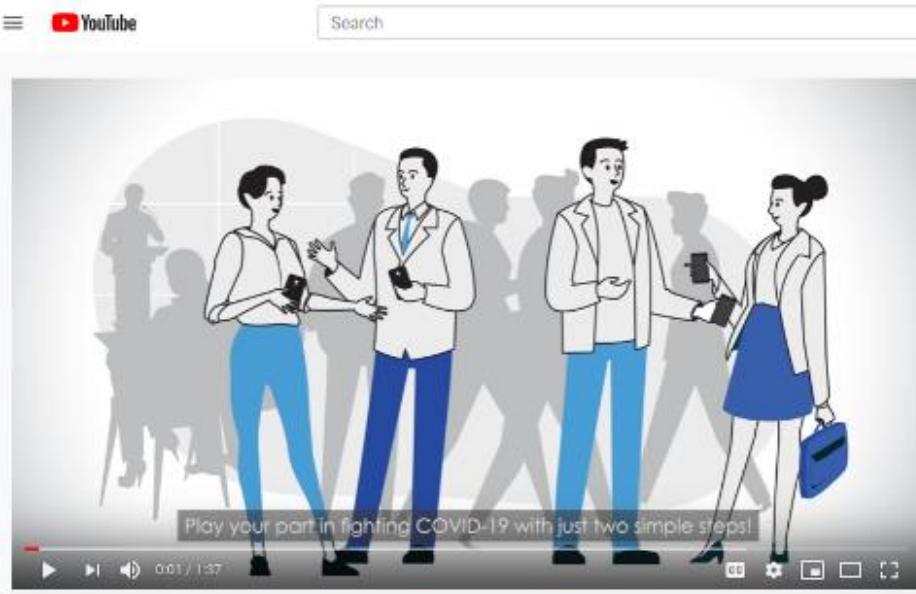
Contact Tracing Technology

- Our phones are the front-end to a wealth of data that can all be collated and mined. Your phone knows where you go, it also knows who you know, who you speak to, how often.
- Add the phone's location to details of who you know and look at where those people might also be, and you create a dataset that provides a map of likely contact.
 - And likely contact means possible infections. And I can go much further, building and manipulating that dataset using just metadata.
- As quoted in the [*Washington Post*](#), “*You’re trying to track back in history to determine who has been where and who has met whom. I can’t imagine there won’t be dozens of countries thinking about doing the same thing.*”

Impact on Privacy and Monitoring of Movements

- Israel on 18Mar - “*The idea is to sift through geolocation data routinely collected from Israeli cellphone providers about millions of their customers in Israel and the West Bank, find people who came into close contact with known virus carriers, and send them text messages directing them to isolate themselves immediately.*”

There's an app for that!



TraceTogether is a community-driven contact-tracing tool to help trace COVID-19 cases! If you've unknowingly had close contact with someone who caught COVID-19, whether you know the person or not, the new

TraceTogether app will help contact tracers get in touch with you more quickly.

TraceTogether will estimate the proximity between app users and the duration of encounters through the exchange of short-distance Bluetooth signals between mobile phones. The app does not collect any personal details and geolocation data.

Let's do our part in the nationwide effort to stop the spread of COVID-19 through community-driven contact tracing. Download TraceTogether

(www.go.gov.sg/tracetogther) and help keep Singapore safe!

<https://www.youtube.com/watch?v=buj8ZTRtJes>

Singapore – 21Mar

What is TraceTogether and how does it work?

TraceTogether is a contact-tracing smartphone app that enables the Ministry of Health (MOH) to quickly track people who have been exposed to confirmed coronavirus cases.

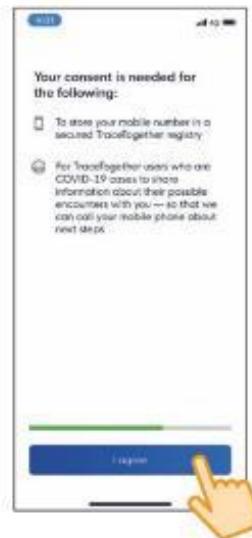
- 1 Users here can download the app on the Apple App Store or the Google Play Store.



- 2 Users have to input their mobile phone number for MOH to be able to contact them quickly. The number is the only data collected by the Government through the app.



- 3 During the initial set-up, users have to give their explicit consent to be able to use the app.



- 4 Users will then have to enable push notifications and location permissions, and keep the Bluetooth function on their phones turned on.



- 5 This is because the app uses short-distance Bluetooth signals that are exchanged between phones to detect other TraceTogether users in close proximity.



- 6 Official contact tracers who call users will provide a code that users can match with a corresponding verification code on their app.
- Once authenticated, users will be given a PIN number that allows submission of logs when entered.
 - Official contact tracers will not ask for personal financial details or transfer of money.



Sources: GOVTECH, MINISTRY OF HEALTH PHOTOS: GOVTECH, STRAITS TIMES GRAPHICS

"When users are contacted by contact tracers, they will then be asked to share their data logs. If they refuse, they may be prosecuted under the Infectious Diseases Act."

Europe – 25Mar



“Eight European carriers, including Deutsche Telekom (T-Mobile), Orange and Vodafone, have agreed to share phone location data with the European Commission to help measure the coronavirus' reach.”

<https://www.engadget.com/2020-03-25-carriers-share-locations-with-eu-to-track-covid-19.html>

Contact Tracing on Steroids



Do Apple Inc. and Alphabet Inc.'s Google hold the key for tracking the spread of Covid-19 and possibly reopening the global economy?

The tech giants on Friday 10Apr, said they will release tools for software developers to create so-called contact-tracing apps that record when smartphones come into close contact with each other. Such apps could warn users if they were nearby someone later diagnosed as positive for Covid-19.

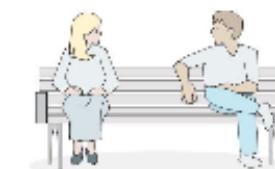
The plan, which could potentially cover most of the world's smartphones, is ambitious and almost surely will be controversial in certain quarters for privacy and other reasons.

To work, it requires widespread adoption, as well as broad testing of potentially infected people, and it isn't yet clear whether government and public-health officials will get behind the idea.

With A Trace

How Google and Apple's proposed tracking technology would work.

- 1 Karen and David meet in person for a 10-minute conversation.



- 2 David later grows feverish and tests positive for Covid-19. He voluntarily enters the result into an app.



Their phones, using Bluetooth technology, exchange anonymous identifier beacons which record that they have been proximity.



A few days later...

David's phone uploads the last 14 days of data for his broadcast beacons to the cloud.

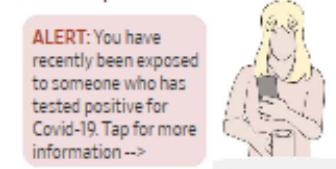


- 3 Karen continues her day-to-day life, unaware she was near a potentially contagious person.



Sometime later...

- 4 Karen receives a notification on her phone.

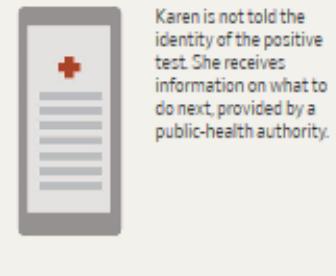


Karen's phone periodically downloads the broadcast beacon keys of everyone who has tested positive for Covid-19 in her region. Once David tests positive, her phone is notified.



A match is found.

Karen is not told the identity of the positive test. She receives information on what to do next, provided by a public-health authority.



Source: Google

https://www.wsj.com/articles/heres-how-apple-and-google-plan-to-track-the-coronavirus-through-your-phone11586618075?emailToken=4df31fc157b296313416895220312e1cR1A1vo9J6uVQR6BuQuhRqF8A71eyb4SUcMQaTDKkxKU3rAV09ERw4eoGtYVYCm2xCclpU6WJF82eK3qQm7K7cQXg61LEYfp7yEOZVNQbnZFQGNaFLWZgHgU+Mc7zgP++Rwv8ZLHyatEsT3ixkqQOkg%3D&reflink=article_email_share

First Tracking, then de-Anonymizing (UK)



Covid-19 investigations

NHS coronavirus app: memo discussed giving ministers power to 'de-anonymise' users

More from this series

Exclusive: draft plans for contact-tracing app said device IDs could be used to identify users

- Coronavirus - latest updates
- See all our coronavirus coverage

David Pegg and Paul Lewis

Mon 13 Apr 2020 08.02 EDT



A draft government memo explaining how the NHS contact-tracing app could stem the spread of the coronavirus said ministers might be given the ability to order "de-anonymisation" to identify people from their smartphones, the Guardian can reveal.

The health secretary, Matt Hancock, announced on Sunday that the UK planned to introduce an app that would enable people who developed Covid-19 symptoms to "anonymously" alert other users to whom they had been in close proximity. "All data will be handled according to the highest ethical and security standards, and would only be used for NHS care and research," he said.

"Today I wanted to outline the next step: a new NHS app for contact tracing. If you become unwell with the symptoms of coronavirus, you can securely tell this new NHS app and the app will then send an alert anonymously to other app users that you've been in significant contact with over the past few days, even before you had symptoms, so that they know and can act accordingly.

All data will be handled according to the highest ethical and security standards, and would only be used for NHS care and research, and we won't hold it any longer than it's needed. And as part of our commitment to transparency we'll be publishing the source code, too."

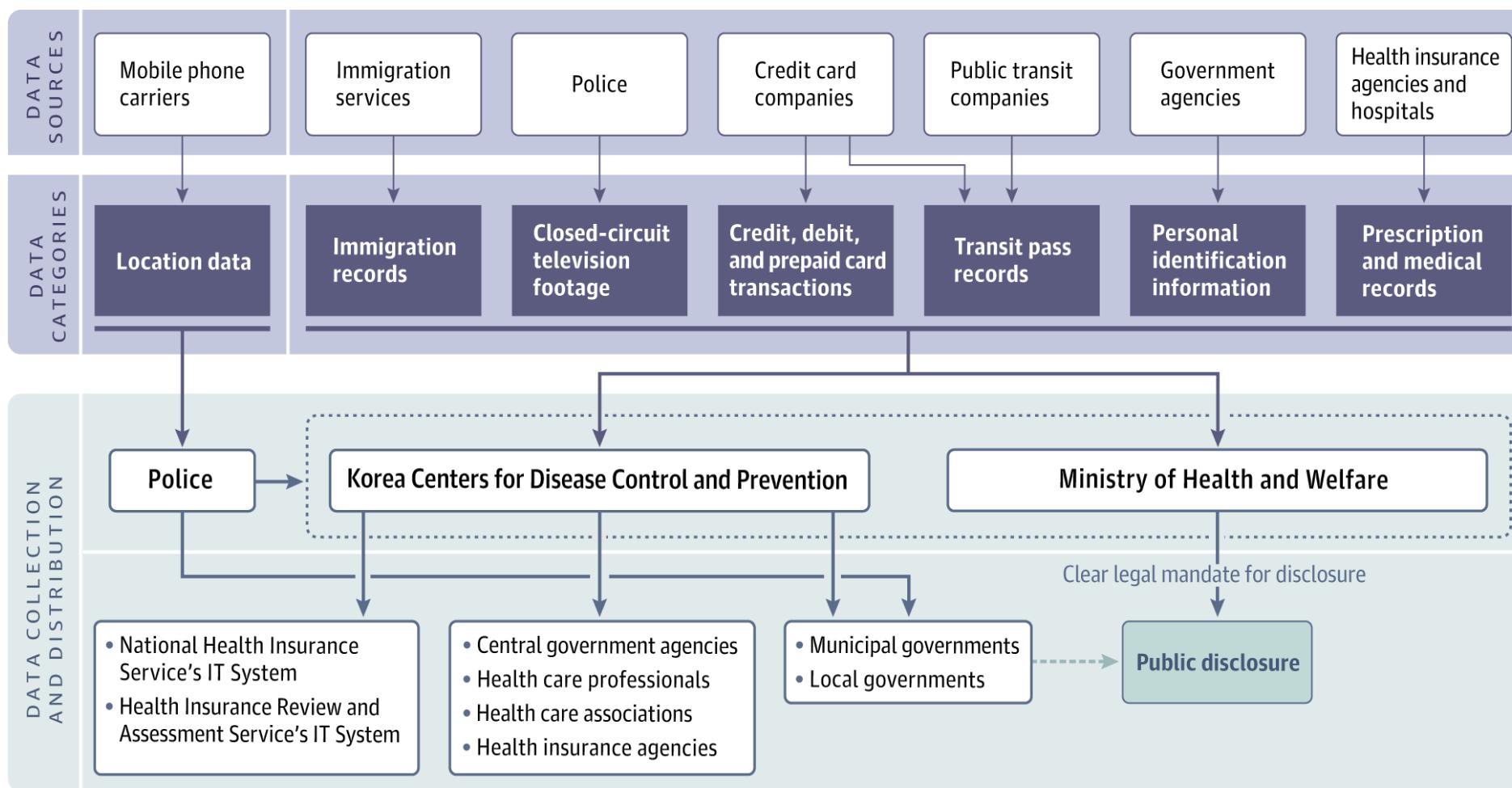
<https://www.theguardian.com/uk-news/live/2020/apr/12/coronavirus-live-news-nhs-staff-deaths-boris-johnson-latest-updates?page=with:block-5e932f338f082dfd549d5151#block-5e932f338f082dfd549d5151>

<https://www.theguardian.com/world/2020/apr/13/nhs-coronavirus-app-memo-discussed-giving-ministers-power-to-de-anonymise-users>

Korea Centers for Disease Control and Prevention (KCDC) Tracking Solution

- IT-based epidemic containment strategies could include documentation, modeling, and contact tracing.
- To engage in documentation, the Korean government developed a customized app for quarantined individuals and required them to report their health status on a regular basis, and, with aggregated location data, modeling efforts were also made to locate potential sources of community-acquired infections.
- Korea's focus, however, has been on tracing infected individuals and also those who had been in contact with an infected individual.

Information Technology–Based Tracing Strategy in Response to COVID-19 in South Korea—Privacy Controversies Abound as of 23Apr2020



Coronavirus Disease 2019 Contact Tracing in Korea: Sources, Categories, Collection, and Distribution of Data
IT indicates information technology.

<https://jamanetwork.com/journals/jama/fullarticle/2765252>

Telecon Tracking

- In response to the outbreak of COVID-19:
 - **Contact Tracing Apps** are being used in 28 countries
 - **Alternative digital tracking measures** are active in 35 countries
 - **Physical surveillance technologies** are in use in 11 countries
 - **COVID-19-related censorship** has been imposed by 18 governments
 - **Internet shutdowns** continue in 3 countries despite the outbreak
- **The COVID-19 Digital Rights Tracker is updated every Thursday at 13:30 GMT**

Managers Using Spying Software to Review Teleworkers Behavior



"Along with InterGuard, software makers include Time Doctor, Teramind, VeriClock, innerActiv, ActivTrak and Hubstaff. All provide a combination of screen monitoring and productivity metrics, such as number of emails sent, to reassure managers that their charges are doing their jobs."

Knowledge is power – and in the age of internet, information is power.

Authoritarian states throughout the ages have sought to control the flow of information in an effort to maintain their grip on power. You might well think that the internet has been a liberating technology, one that makes such control of information impossible.

You'd be wrong.

The Dictator's Guide to Internet Surveillance and Censorship

Using the internet to control what information is made available to the masses and monitor what they might be saying is all too easy if you're a dictator with deep pockets and a dystopian determination.



Davey Winder

6 Mar 2019 12:00 GMT



377

Sources of Information - Vetting

- When one sees shady coronavirus news on social media, three quick questions to ask are:
 - *Who wrote or made this coronavirus information?*
 - If the person that made the information won't attach their name to it or you believe uses a pseudonym, then there's likely a reason—usually, it's because the information they've provided isn't very good.
 - *Where is the source of this coronavirus information physically located in the world?*
 - If one can't figure out where in the world the information is coming from, then the information outlet may not want people to find it because they cannot or do not want to stand behind the information they are producing.
 - *How does this information source on coronavirus make its money?*
 - Most reputable outlets offer subscriptions or host ads. If one can't figure out how an information outlet makes its money, then that may indicate an entity behind the scenes is using the outlet for manipulative purposes.

Vetting the Source “SME”

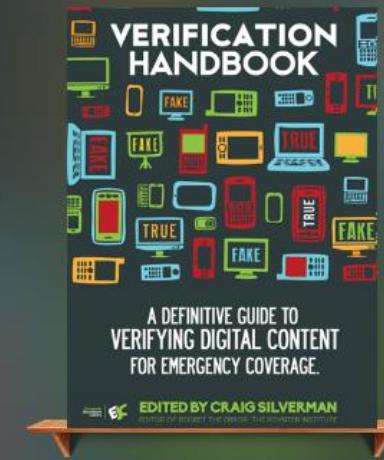
- When one tries to evaluate the expertise of someone writing or speaking about coronavirus, there are three quick checks for evaluating an expert:
 - *What are their certifications?*
 - We should all be looking for doctors and public health experts in this time of crisis.
 - *What is their experience with diseases and epidemics?*
 - Not all doctors are equally experienced with coronavirus. Does the expert have a particular specialty in infectious diseases, epidemics and responding to epidemics?
 - *What is the data and analysis they are using?*
 - The expert should be using talking points from the best available statistics about the coronavirus and their analysis about how it should proceed.
Discussions of other epidemics can be helpful, but may or may not apply to what's happening today. (Yes, for example, refer to the earlier slides on the 1918 Pandemic)

Good Information Also Abounds

- Good sources of updates on Corona
 - <https://www.livescience.com/topics/live/coronavirus-live-updates>
- Good sources of updates on Corona scams
 - <https://www.tripwire.com/state-of-security/security-awareness/covid-19-scam-roundup-week-of-3-16-20/>
- Weekly Corona Themed Cyber Crime Reports
 - <https://securityaffairs.co/wordpress/100698/hacking/corona-virus-themed-attacks-march-22-march-28-2020.html>
- DOD Rumint Page
 - <https://www.defense.gov/Explore/Spotlight/Coronavirus/Rumor-Control/>
- Anomali Threat Bulletin
 - <https://www.anomali.com/news-events/press/anomali-offers-open-source-threat-intelligence-to-fight-covid-19-themed-cyber-attacks>

Verification Handbook Series

VERIFICATION HANDBOOK



NEW VERIFICATION HANDBOOK FOR INVESTIGATIVE REPORTING

[Click here to download the PDF version](#)

Also available in Arabic (العربية), Macedonian, Russian and Turkish!

NEW ADDITIONAL MATERIALS TO VERIFYING DIGITAL CONTENT FOR EMERGENCY COVERAGE

[Click here to download the PDF version](#)

A definitive guide to verifying digital content for emergency coverage

Authored by leading journalists from the BBC, Storyful, ABC, Digital First Media and other verification experts, the Verification Handbook is a groundbreaking new resource for journalists and aid providers. It provides the tools, techniques and step-by-step guidelines for how to deal with user-generated content (UGC) during emergencies.

[Read the book](#) [Buy the book](#)

Or directly download the [PDF](#), [ePub](#) or [Kindle](#) version.

Available in Greek! ([PDF](#), [ePub](#) or [Kindle](#))

Available in French! ([PDF](#), [ePub](#) or [Kindle](#))

Available in Portuguese ([PDF](#), [ePub](#) or [Kindle](#))

Available in Spanish ([PDF](#), [ePub](#) or [Kindle](#))

Available in Arabic (العربية)

Тепер також і на українській мові! ([PDF](#), [ePub](#) or [Kindle](#))

Now also available in Turkish ([PDF](#), [ePub](#) or [Kindle](#))

Now also available in Croatian ([PDF](#), [ePub](#) or [Kindle](#))

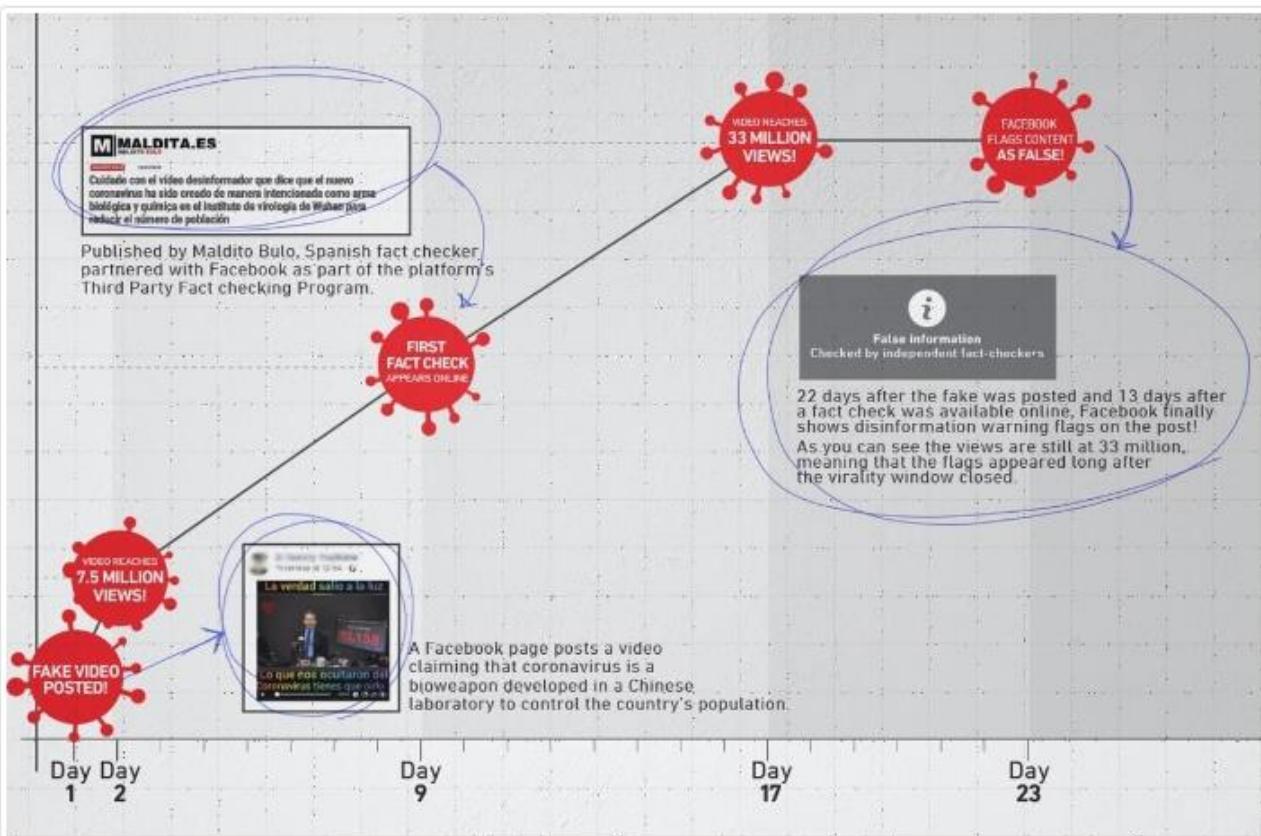
Now also available in Italian ([PDF](#))

"Authored by leading journalists from the BBC, Storyful, ABC, Digital First Media and other verification experts, the Verification Handbook is a groundbreaking new resource for journalists and aid providers. It provides the tools, techniques and step-by-step guidelines for how to deal with user-generated content (UGC) during emergencies."

Copies free for download.

<http://verificationhandbook.com/>

How Long Is FB's Reaction Time To Disinfo?



For example, it **took 22 days** for Facebook to label a misinformation claiming that the virus was deliberately created in a lab at the Institute of Virology in Wuhan.

Examples - Got Milk?

Новини України та світу
22 березня о 09:42 ·

Молоко допомагає боротися із COVID-19 - інформують науковці та урядовці Китаю...



PRESENTNEWS.BIZ.UA

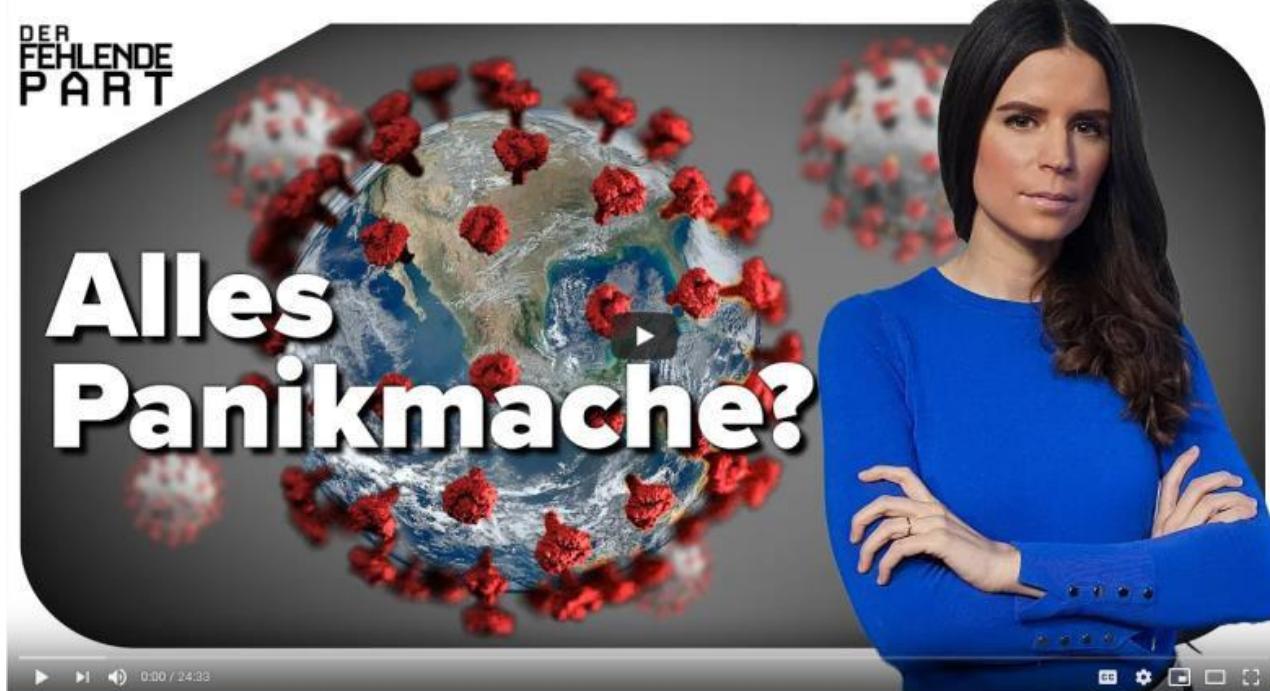
Молоко допомагає боротися із COVID-19 - інформують науковці та урядовці Китаю...

288 83 коментарі 680 поширень

Подобається Коментувати Share

- Post on a public page in Ukrainian claiming “milk helps to fight COVID”
- 3373 Interactions
- 250 comments
- 1583 shares

Examples - Youtube Channels



Kremlin-funded YouTube channel in German suggesting that "*the pandemic never happened*" (almost 900.000 views and 5000 comments)

Examples - Washing Hands Doesn't Help

Sputnik Deutschland
28 March at 11:49 · [...](#)

Alternative zur Händedesinfektion?
#covid19

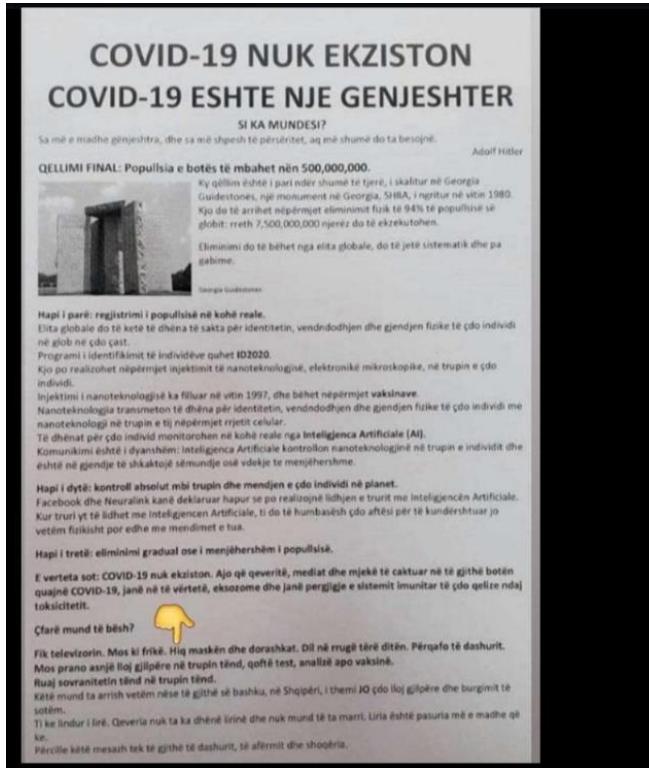


DE.SPUTNIKNEWS.COM
„Händewaschen bringt gar nichts“: Hygienericht kritisiert Maßnahmen zum Schutz vor Covid-19

49 likes 38 comments 14 shares

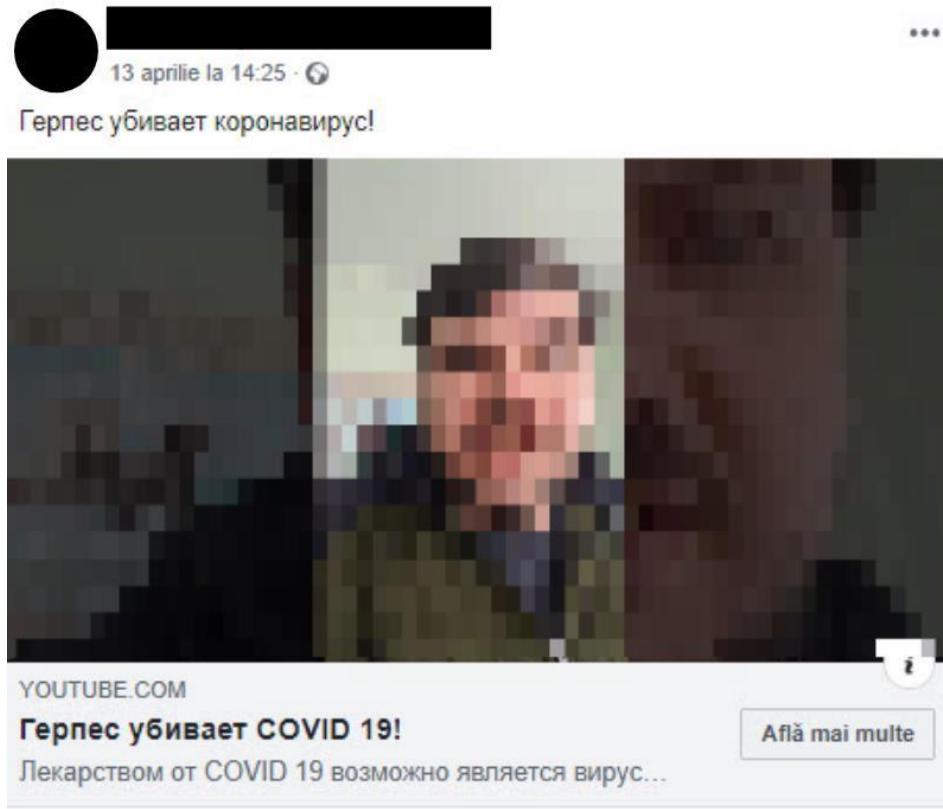
- Post and link by Kremlin-owned Sputnik Deutschland suggesting that washing hands is ineffective to prevent infection
- 119 Interactions
- 38 Comments
- 120 Shares)

Examples - Plot for Population Control



Post on a public page claiming that the pandemic is part of a three-stage process aimed to reduce the global population to under 500 million.

Examples - Fight Fire With Fire



Moldova

YouTube video distributed on a public Facebook page claiming that herpes kills COVID-19.

Examples - Beware 5G



Post on a public page claiming that covid-19 is a pretext to secretly installing 5G networks (when people are "at home")

Examples - Bioweapon Claim in Poland



March 16 · 

Cal a akcja była zaplanowana ! To bron biologiczna SARS + HIV + Koronawirus a chorych w naszych szpitalach jest dużo więcej niż podają..

Co się tu stało Alex, to to, że naukowcy z Wuhan wzięli wirusa SARS z Północnej Karoliny ze wzmocnioną funkcją działania (aktywującą m.in. mutacje), który już sam w sobie jest bronią biologiczną ... 

M.CDA.PL

Koronawirus. Wyprodukowany w USA i Chinach. (zaprojektowania broń biologiczna)

 28 41 Comments 8 Shares

Public post
claiming covid-19
is a bioweapon, just
like HIV and SARS

Examples - Attacking Public Voices

Союз Православных Журналистов - СПЖ
9 апреля в 14:11 ·

Билл Гейтс заявил, что очень скоро появится вакцина от коронавируса, которая должна стать обязательной для всех. Что это – спасение для человечества или нечто другое?
<http://tinyurl.com/sl7wsse>

Переглянути переклад



SPZH.NEWS

Вакцина от коронавируса или биологическое программное обеспечение?

311

Комментарии: 61 Поделились: 584

Public post sharing a link to an article spreading a conspiracy theory that Bill Gates is developing a vaccine against COVID-19 with the aim of establishing global "*biological programming*"

Examples - False Cures

1 квітня о 23:47 · ④

Степан Бориславський › Монастириська - мій Рідний Край Group
31 березня о 12:41 · ④

В ІЗРАЇЛІ НЕМАЄ СМЕРТІ ВІД COVID19
Було знайдено ліки від вірусу COVID19 або спосіб його усунення.
* Рецепт простий *
1. * Лимон *
2. * Бікарбонат *
Змішуйте і пийте як гарячий чай кожен день, дія лимона з гарячою харчовою содою негайно вбиває вірус повністю виводить його з організму. Ці два компоненти подщоючивають імунну систему, так як, коли настає ніч, система стає кислою і рівень захисту знижується.

ПОДЩОЮЧИВАЮТЬ ІМУННУ СИСТЕМУ, ТАК ЯК, КОЛИ НАСТАЄ НІЧ, СИСТЕМА СТАЄ КИСЛОЮ І РІВЕНЬ ЗАХИСТУ ЗНИЖУЄТЬСЯ.

Кожен в Ізраїлі вночі випиває чашку гарячої води з лимоном і невеликою кількістю харчової соди, оскільки доведено, що це вбиває вірус.

* ДОСЛДЖЕННЯ: ЖУРНАЛ ВІРОЛОГІЇ, КВІТЕНЬ 1991 року, СТОРІНКА 1916 *

Все, що нам потрібно зробити, щоб перемогти вірус корони, ми повинні приймати більше лужних продуктів, які знаходяться вище рівня pH вірусу.

Деякі з яких:

Лимон - 9.9рН
Лайм - 8.2рН
Авокадо - 15.6 рН
Часник - 13.2рН
Манго - 8.7рН
Мандарин - 8.5рН
Ананас - 12.7 рН
Кульбаба - 22.7 рН

Звідки ви знаєте, що у вас є коронавірус?

1. Сверблячка в горлі,
2. Сухість в горлі,
3. Сухий кашель.

Отже, якщо Ви зауважили ці три речі, треба швидко взяти гарячу воду і пити.

55 Like 2 comments 76 shares Share

Ukraine

Post on a public page claiming that Covid-19 can be cured with lemon and baking soda and that in Israel there are no deaths caused by the virus, thanks to this recipe.

Examples -“Black people are resistant to Coronavirus”

11 February ·

OUR MELANIN IS OUR DEFENSE

"SENDU (pictured here) is a young Cameroonian student in China recently infected with #Coronavirus. He was released from hospital this morning cured of the virus. Chinese doctors have confirmed that he remained alive because he has black skin, the antibodies of a black are 3 times strong, powerful, and resistant as that of a white. #Coronavirus killed more than 800 people at less than 1 month in China, not easy to survive this virus.
#SENDU #CAMEROON #Melanin #AFRICA"

This is a story shared with me by one of my friends from Sankola. This is why the Caucasians is always at war with our black skin because they know our melanin is our defense against all that they throw at us. This proves yet again that the black man is indestructible, our bodies are made of the same substances that make up this Earth because we are owners of this universe they will never wipe us off, history has already proved that. Asse

- The false claim that those with black skin are more resistant to the coronavirus.
- **3,604** available Interactions
- **112,830** estimated views
- Removed after being reported to Facebook

https://secure.avaaz.org/campaign/en/facebook_coronavirus_misinformation/

Examples -“Good News: Coronavirus is destroyed by Chlorine Dioxide”



- The false claim that chlorine dioxide cures the virus. (6,368 best available Interactions and 199,362 estimated views)
- **6,368** best available Interactions
- **199,362** estimated views
- Taken down after being reported to FB.

Multiplied Over and Over

**Good News: Coronavirus Destroyed By Chlorine Dioxide – Kerri Rivera **



Good News: Coronavirus Destroyed By Chlorine Dioxide – Kerri Rivera

KERRIRIVERA.COM

93 13 84

According to this nice little abstract on Pub Med ([ncbi.nlm.nih.gov/pubmed/15847934](https://pubmed.ncbi.nlm.nih.gov/pubmed/15847934)



Good News: Coronavirus Destroyed By Chlorine Dioxide – Kerri Rivera

KERRIRIVERA.COM

16 0 16

2 months ago - posted by FB User



Good News: Coronavirus Destroyed By Chlorine Dioxide – Kerri Rivera

KERRIRIVERA.COM

10 0 5

Good News: Coronavirus Destroyed By Chlorine Dioxide – Kerri Rivera

KERRIRIVERA.COM

40 8 26

Chlorine Dioxide: the simple and so effective solution that Rockefeller's Big Phafma fears.



Good News: Coronavirus Destroyed By Chlorine Dioxide – Kerri Rivera

KERRIRIVERA.COM

21 12 19

Chlorine Dioxide: the simple and so effective solution that Rockefeller's Big Phafma fears.



Good News: Coronavirus Destroyed By Chlorine Dioxide – Kerri Rivera

KERRIRIVERA.COM

15 1 6

2 months ago - posted by FB User



Good News: Coronavirus Destroyed By Chlorine Dioxide – Kerri Rivera

KERRIRIVERA.COM

4 0 9

Good News: Coronavirus Destroyed By Chlorine Dioxide – Kerri Rivera

KERRIRIVERA.COM

5 2 9

2 months ago - posted by FB User



Good News: Coronavirus Destroyed By Chlorine Dioxide – Kerri Rivera

KERRIRIVERA.COM

Examples -“Vice President Pence urges those with Coronavirus to go to the Police”

- **(The tweet in the image is fake, Vice President Pence did not tweet this)**

The false claim that Vice President Mike Pence advised those diagnosed with the virus to go to the nearest police station.

- 694 best available Interactions
- 21,727 estimated views

March 1 ·

 Mike Pence
@Mike_Pence

Find The Police: If you are diagnosed with Coronavirus, report immediately to the nearest police station. #FTP



See Notice

448

53 Comments 184 Shares

https://avaazimages.avaaz.org/facebook_coronavirus_misinformation.pdf

Examples -“Hairdryers could be used for coronavirus prevention”

- The false claim that using hot air from a hair dryer would fight the virus.
- 119,057 best available Interactions
- 2,600,000 Facebook views



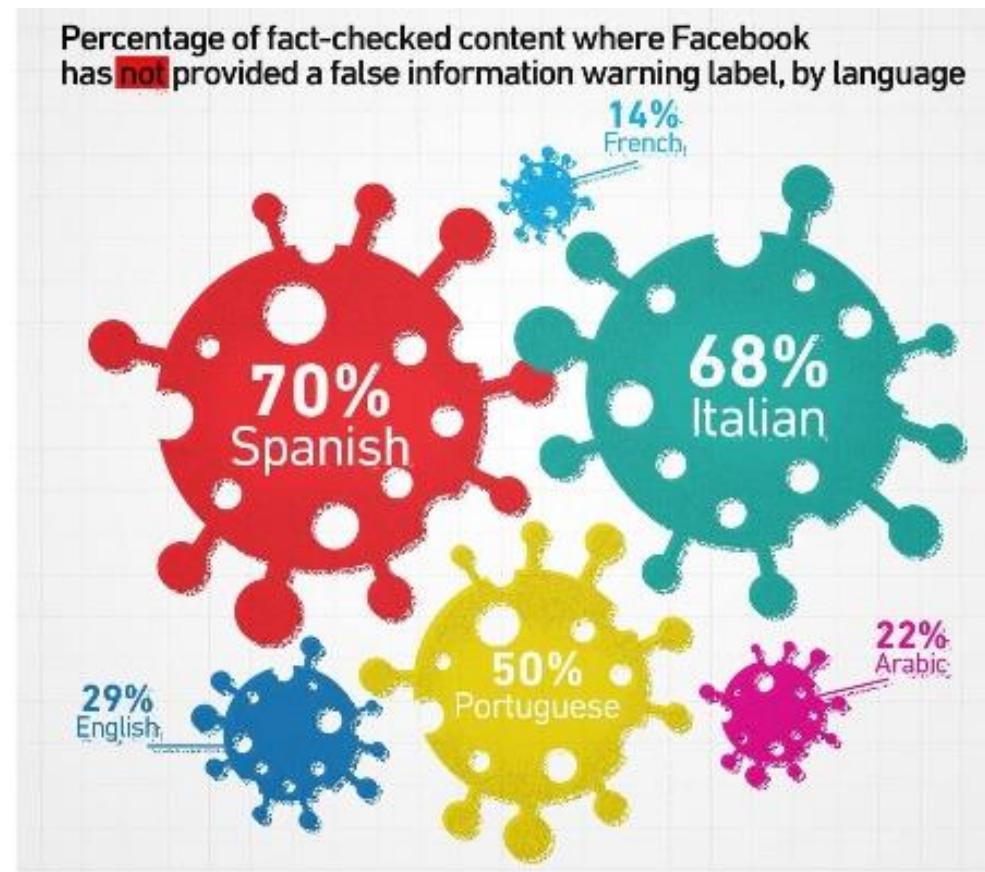
Examples -“Virus can be cured by one bowl of freshly boiled garlic water”

- The false claim that the virus can be cured with garlic boiled in hot water.
- 115 best available Interactions
- 3,600 estimated views



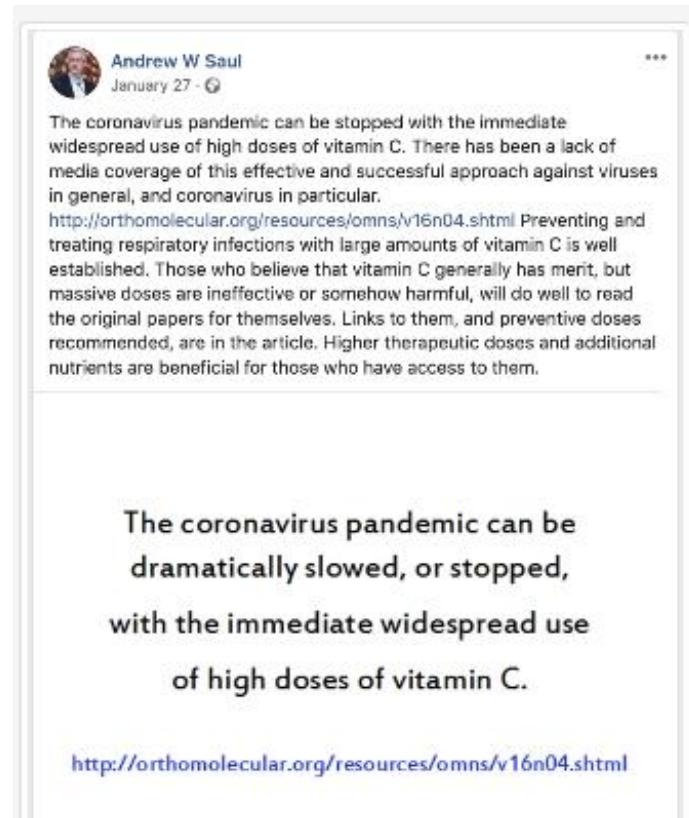
Examples - ITALIAN, SPANISH AND PORTUGUESE SPEAKING USERS APPEAR TO BE AT GREATER RISK OF UNCHECKED MISINFORMATION EXPOSURE

- 70% (7 out of 10) of Spanish-language content (to date, shared 510k times overall);
- 68% (13 out of 19) of Italian-language content (to date, shared 307k times overall);
- 50% (7 out of 14) of Portuguese-language content (to date, shared 78k times overall);
- 22% (2 out of 9) of Arabic-language content (to date, shared 453k times overall);
- 14% (1 out of 7) of French-language content (to date, shared 44k times overall), faring better than the scale at which English-language content was appropriately labeled.



Examples -“The coronavirus pandemic can be stopped with the immediate widespread use of high doses of vitamin C”

- 29% of the English-language misinformation content analyzed (shared 290k times) has not been labeled by Facebook.
- 16% of all the English stories fall into the category of the exact kind of violative harmful content that Facebook has publicly committed to remove.
- For example, in the [post](#) and the accompanying [article](#), Andrew W Saul claims, “*The coronavirus pandemic can be stopped with the immediate widespread use of high doses of vitamin C.*” As of 7 April 2020, posts linking the article have received an estimated 301,110 views.



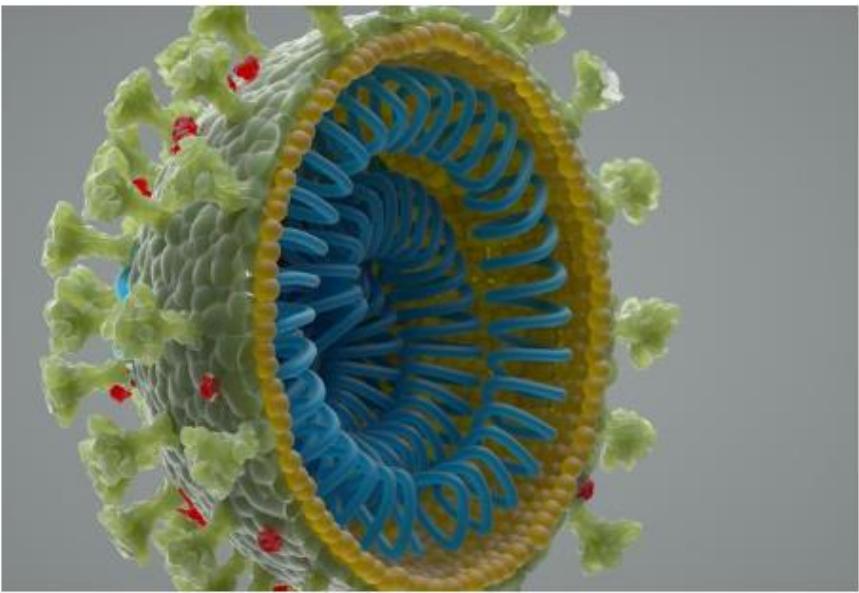
A screenshot of a Facebook post from Andrew W. Saul. The post includes a profile picture of him, the name "Andrew W. Saul", the date "January 27", and a link to his post. The main text of the post reads: "The coronavirus pandemic can be stopped with the immediate widespread use of high doses of vitamin C. There has been a lack of media coverage of this effective and successful approach against viruses in general, and coronavirus in particular. <http://orthomolecular.org/resources/omns/v16n04.shtml> Preventing and treating respiratory infections with large amounts of vitamin C is well established. Those who believe that vitamin C generally has merit, but massive doses are ineffective or somehow harmful, will do well to read the original papers for themselves. Links to them, and preventive doses recommended, are in the article. Higher therapeutic doses and additional nutrients are beneficial for those who have access to them." Below the post, there is a quote in a larger font: "The coronavirus pandemic can be dramatically slowed, or stopped, with the immediate widespread use of high doses of vitamin C." At the bottom, there is a link: "<http://orthomolecular.org/resources/omns/v16n04.shtml>"

The coronavirus was not engineered in a lab. Here's how we know.

By Jeanna Bryner - Live Science Editor-in-Chief 21 March 2020

The persistent myth can be put to bed.

Comments (240)



Editor's note: On April 16, news came out that the U.S. government said it was investigating the possibility that the novel coronavirus may have somehow escaped from a lab, though experts still think the possibility that it was engineered is unlikely. This [Live Science report explores the origin of SARS-CoV-2](#).

As the novel coronavirus causing [COVID-19 spreads across the globe](#), with cases surpassing 284,000 worldwide today (March 20), misinformation is spreading almost as fast.

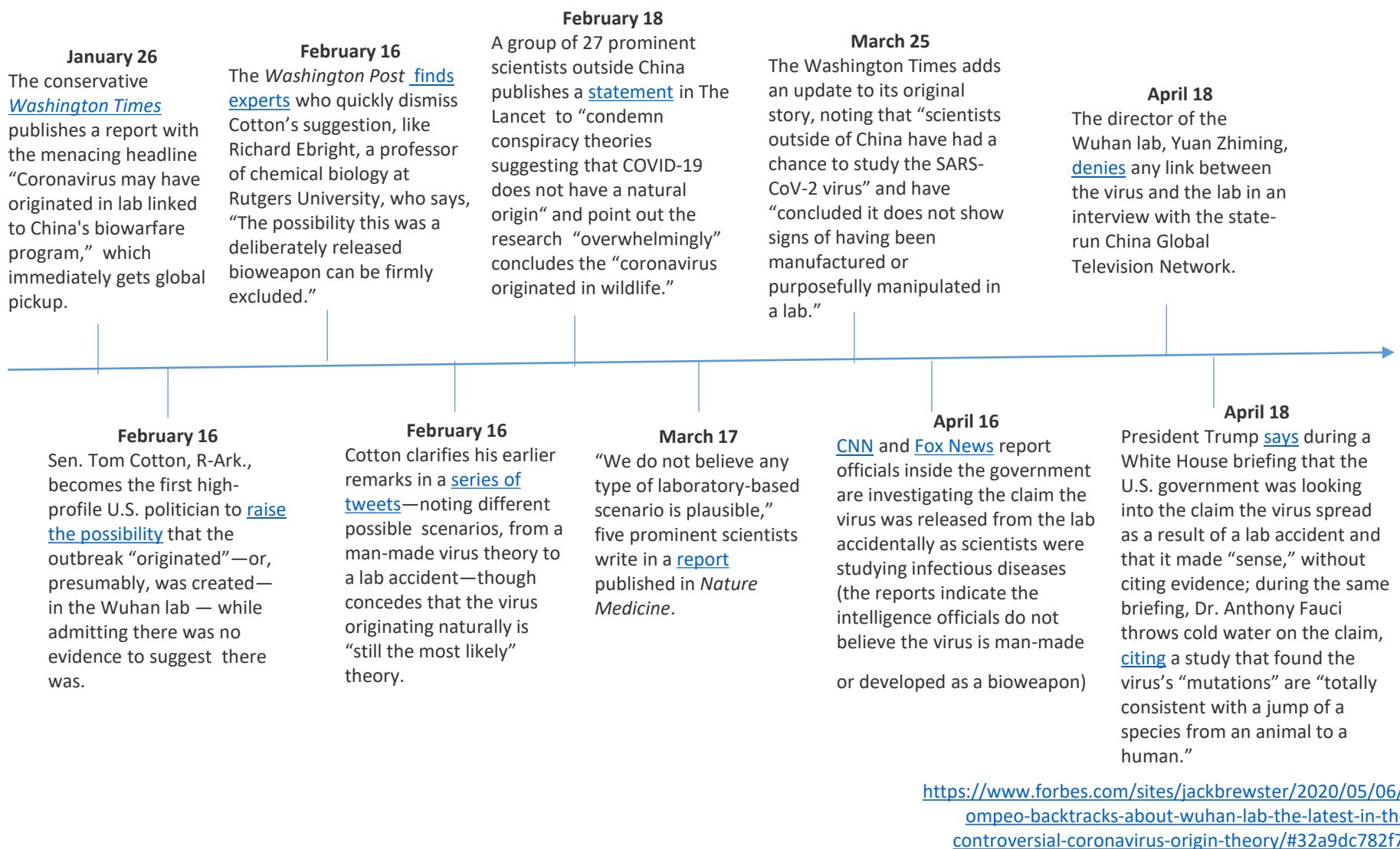
One persistent myth is that this virus, called SARS-CoV-2, was made by scientists and escaped from a lab in Wuhan, China, where the outbreak began.

A new analysis of SARS-CoV-2 may finally put that latter idea to bed. A group of researchers compared the genome of this novel coronavirus with the seven [other coronaviruses](#) known to infect humans: SARS, MERS and SARS-CoV-2, which can cause severe disease; along with HKU1, NL63, OC43 and 229E, which typically cause just mild symptoms, the researchers wrote March 17 in the journal [Nature Medicine](#).

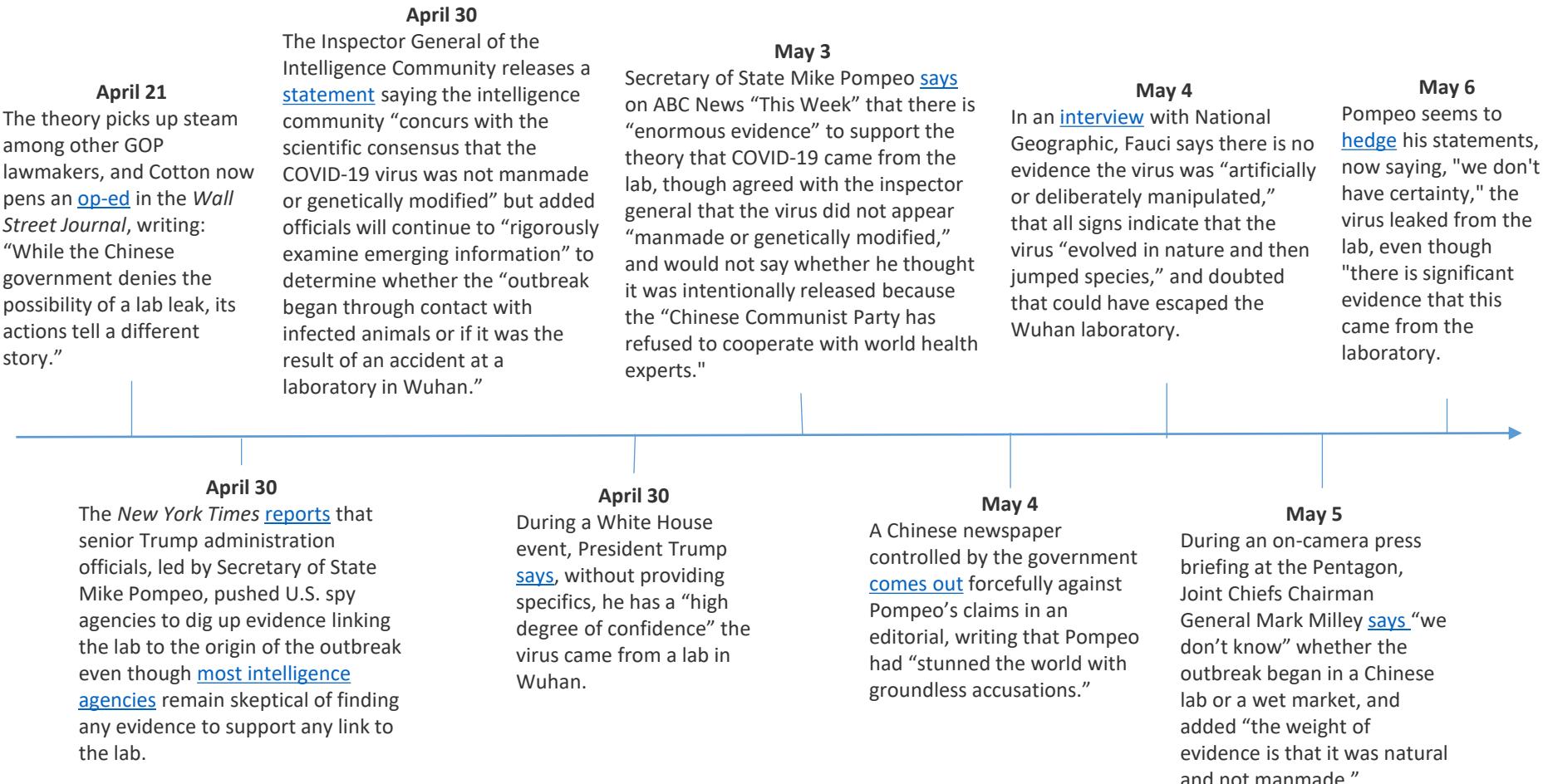
"Our analyses clearly show that SARS-CoV-2 is not a laboratory construct or a purposefully manipulated virus," they write in the journal article.

<https://www.livescience.com/coronavirus-not-human-made-in-lab.html>

Timeline of Disinformation



Timeline of Disinformation



On April 25, Politico [reported](#) that a [memo](#) from the National Republican Senatorial Committee instructed GOP campaigns to say China caused the virus "by covering it up" and that Democrats are "soft on China."

False Rhetoric Abounds...

PRC Rumor vs US “Plandemic”

Your Army

Conspiracies falsely accuse an Army reservist of being ‘patient zero’ of coronavirus pandemic

Kyle Rempfer

April 28



The U.S. armed forces team marches during opening ceremonies for the 2019 Military World Games in Wuhan, China Oct. 18, 2019. (DoD)

https://www.armytimes.com/news/your-army/2020/04/28/conspiracies-falsely-accuse-an-army-reservist-of-being-patient-zero-of-coronavirus-pandemic/?utm_source=Sailthru&utm_medium=email&utm_campaign=EBB%2004.29.20&utm_term=Editorial%20-%20Early%20Bird%20Brief

Why It's Important To Push Back On ‘Plandemic’—And How To Do It



Tara Haelle Senior Contributor

Healthcare

I offer straight talk on science, medicine, health and vaccines.



Members of the clinical staff wearing Personal Protective Equipment PPE care for a patient with ... [4] ASSOCIATED PRESS

By now you've probably heard about or even seen the video "Plandemic" that's been spreading like wildfire through social media networks. This article is not the one you should give to your friend or relative or coworker who shared the video. (If you want that article,

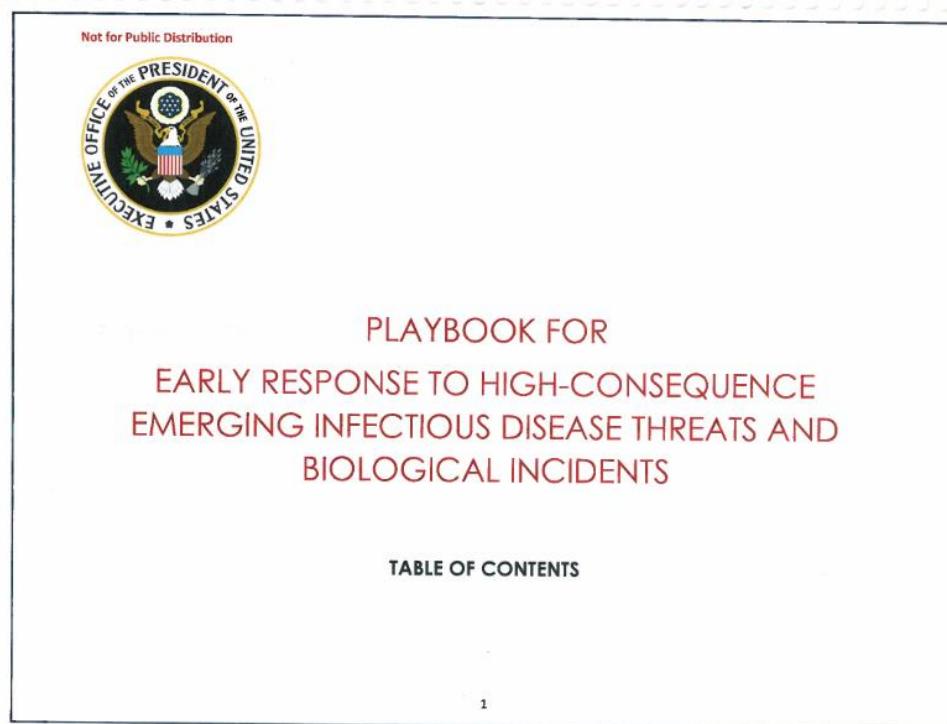
https://www.forbes.com/sites/tarahaelle/2020/05/08/why-its-important-to-push-back-on-plandemic-and-how-to-do-it/?fbclid=IwAR0jD5qsgTaRtnh9tdPM67vme-eCMu2XyCMiP82B2o3Loq1n_45ltk4v24#25e2c1e65fa3

Fake News Post	Language	Facebook warning label showing on post?	Delay of fact check (where applicable)	Fact check (linked to article) * = Facebook Third Party Fact Checker
Gaza is the only place in the world free of the Coronavirus	Arabic	Yes (4 days after fact check)	2	Fatabyyano*
The hot air produced by hair dryers can prevent coronavirus	Arabic	Yes	6	Fatabyyano*
Hold your breath for 10 seconds to test yourself for coronavirus	Arabic	No	-	AFP*
UNICEF instructions to protect from coronavirus: gargle with salt water...	Arabic	Yes	11	AFP*
The coronavirus pandemic can be stopped with high doses of vitamin C	English	Yes	10	Lead Stories*
Coronavirus destroyed by chlorine dioxide	English	Yes	14	Factcheck.org*
Oregano oil proves effective against coronavirus	English	No	-	Washington Post
Black people are resistant to Coronavirus	English	Yes	1	AFP*
VP Pence urges people with coronavirus to go to the police	English	Yes	1	Lead Stories*
Garlic cures coronavirus	English	Yes	10	Factcheck.org*
Information regarding Coronavirus: temperatures above 26/27° kill the virus	French	Yes	4	Les Décodeurs du Monde*
Coronavirus was created and planned by the WHO and the Gates Foundation	Italian	No	-	Open
Use natural defenses against viruses and bacteria - staying home is useless	Italian	No	-	Open
Warning: coronavirus found on packages from China	Portuguese	Yes	27	AFP*
Vaccine that cures coronavirus in 3 hours is ready	Portuguese	Yes (10 days after fact check)	-	Agência Lupa*
793 deaths in Italy today, 232 children among them	Portuguese	Yes (1 days after fact check)	4	Aos Fatos*
Bolsonaro says that hydroxychloroquine has been proved as cure for coronavirus	Portuguese	No	-	Boatos
Doctor Mario Pesaresi reveals inhaling steam as a natural remedy for coronavirus	Spanish	No		Maldito Bulo*
Avoid more deaths! Gargle with disinfectant	Spanish	Yes	1	AFP*
Coronavirus was created in the Institute of Virology in Wuhan	Spanish	Yes (13 days after fact check)	9	Maldito Bulo*

Sources

- <https://assets.documentcloud.org/documents/6877118/INTERNAL-Coronavirus-3rd-Information-Environment.pdf>
- <https://psyarxiv.com/ye3ma/>
- https://secure.avaaz.org/campaign/en/facebook_coronavirus_misinformation/
- https://www.politico.eu/wp-content/uploads/2020/04/Navigating-the-Coronavirusinfodemic.pdf?utm_source=POLITICO.EU&utm_campaign=66ec24c50f-EMAIL_CAMPAIGN_2020_04_15_05_01&utm_medium=email&utm_term=0_10959edeb5-66ec24c50f-190134993
- <https://yougov.co.uk/topics/health/articles-reports/2020/03/30/covid-19-bogus-claims-fool-britons>
- <https://www.bbc.co.uk/news/live/world-51984399/page/3>
- <https://www.pewresearch.org/fact-tank/2020/04/08/nearly-three-in-ten-americans-believe-covid-19-wasmade-in-a-lab/>
- <https://formiche.net/2020/04/cina-usa-sondaggio-swg-casini-ventura/>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6137759/>
- <https://asia.nikkei.com/Spotlight/Coronavirus/Chinese-diplomat-backpedals-on-blaming-US-forcoronavirus>
- <https://youtu.be/dIGj1RdUHUM>
- <https://www.theguardian.com/world/2020/apr/11/china-clamping-down-on-coronavirus-researchdeleted-pages-suggest>
- <https://focustaiwan.tw/cross-strait/202004080010>
- <https://www.propublica.org/article/how-china-built-a-twitter-propaganda-machine-then-let-it-loose-oncoronavirus>

Updated (2016) Playbook Left by Obama



"Is there sufficient personal protective equipment for healthcare workers who are providing medical care?" the playbook instructs its readers, as one early decision that officials should address when facing a potential pandemic."

"If YES: What are the triggers to signal exhaustion of supplies? Are additional supplies available?"

"If NO: Should the Strategic National Stockpile release PPE to states?"

Plan TOC

Not for Public Distribution

CHAPTER I – EXECUTIVE SUMMARY

I.	PLAYBOOK PURPOSE.....	PAGE 04
II.	POLICY COORDINATION AND EXERCISING THE PLAYBOOK.....	PAGE 04
III.	RISK ASSESSMENT DASHBOARD.....	PAGE 05
	A. INTERNATIONAL.....	PAGE 06
	B. DOMESTIC.....	PAGE 07
IV.	SAMPLE PATHOGENS INVOLVED.....	PAGE 08
V.	OTHER KEY CONSIDERATIONS.....	PAGE 11

CHAPTER II – PLAYBOOK; DECISION-MAKING RUBRICS

I.	INTERNATIONAL.....	PAGE 14
II.	DOMESTIC.....	PAGE 31

CHAPTER III – APPENDIX MATERIAL

I.	DECLARATION AND MITIGATION OPTIONS.....	PAGE 42
II.	KEY DEPARTMENTS AND AGENCIES.....	PAGE 46
	A. INTERNATIONAL.....	PAGE 46
	B. DOMESTIC.....	PAGE 52
III.	SAMPLE EXERCISES.....	PAGE 62
IV.	COMMUNICATIONS.....	PAGE 67
V.	CONCEPT OF OPERATIONS FOR DOMESTIC RESPONSE.....	PAGE 68

The Coming Vaccine Information War



The anti-vaccine community is more organized and strategic than many of its critics believe. [See also](#)
Diodato/Corbis, via Getty Images

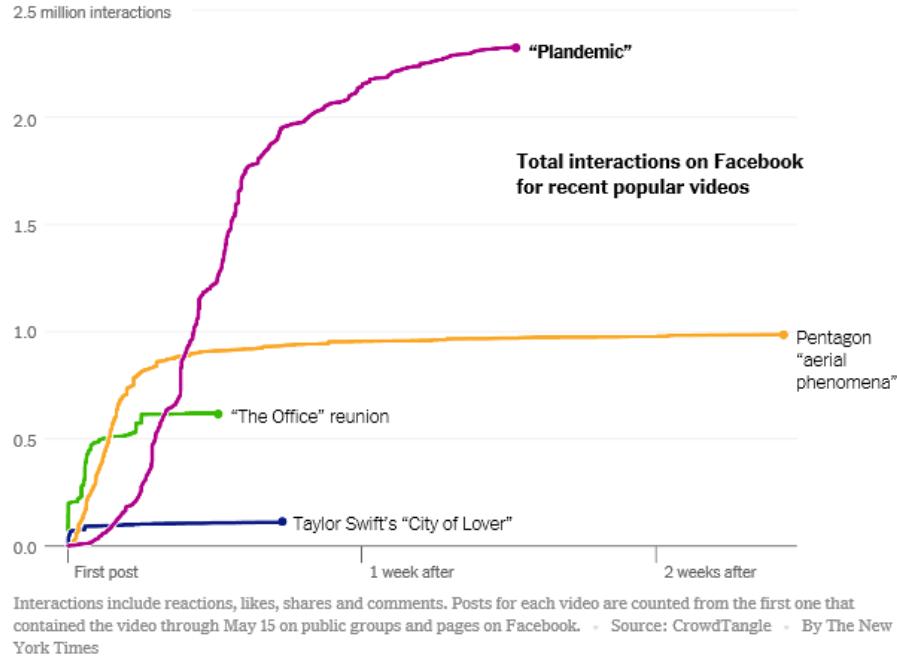
What if we get a Covid-19 vaccine and half the country refuses to take it? There are scenarios that might occur:

First, because of the pandemic's urgency, any promising Covid-19 vaccine is likely to be fast-tracked through the testing and approval process.

Second, if a vaccine does emerge, there is a good chance that leading health organizations like the Bill and Melinda Gates Foundation or the World Health Organization will have a hand in producing or distributing it.

Third, if and when a Covid-19 vaccine is approved for widespread use, people may be required to take it before being allowed to fly on certain airlines, attend certain schools or enter certain businesses. That's a good idea, public health-wise, but it would play into some of the worst fears of the anti-vaccine movement.

How the ‘Plandemic’ Movie and Its Falsehoods Spread Widely Online



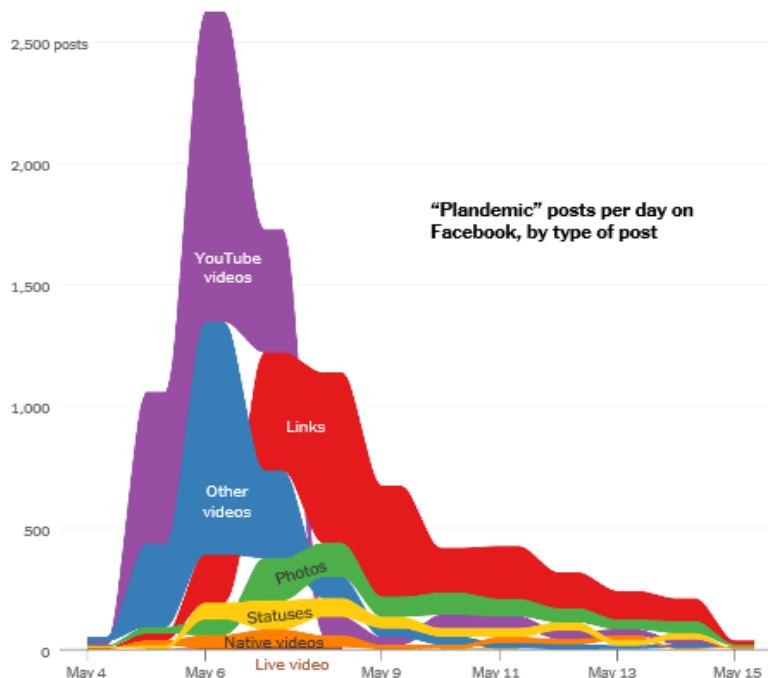
“Plandemic” went online on May 4 when its maker, Mikki Willis, a little-known film producer, posted it to Facebook, YouTube, Vimeo and a separate website set up to share the video.

For three days, it gathered steam in Facebook pages dedicated to conspiracy theories and the anti-vaccine movement, most of which linked to the video hosted on YouTube.

Then it tipped into the mainstream and exploded.

<https://www.nytimes.com/2020/05/20/technology/plandemic-movie-youtube-facebook-coronavirus.html?referringSource=articleShare>

How the ‘Plandemic’ Movie and Its Falsehoods Spread Widely Online



On Facebook, “Plandemic” was liked, commented on or shared nearly 2.5 million times, according to the CrowdTangle data.

“Plandemic” stormed into people’s Facebook, Twitter and YouTube feeds even though its claims were widely debunked and the social media companies vowed to remove the video.

On the afternoon of May 5, Dr. Christiane Northrup, a women’s health physician, shared “Plandemic” with her nearly half a million Facebook followers. Dr. Northrup, who had developed a following from her appearances as a medical expert on “Oprah,” had previously expressed misgivings about vaccines.

Her status as a celebrity doctor made her endorsement of “Plandemic” powerful. After Dr. Northrup shared the video, more than 1,000 people also shared it, many of them to groups that oppose mandatory vaccinations, according to an analysis by The Times. She did not respond to a request for comment.

<https://www.nytimes.com/2020/05/20/technology/plandemic-movie-youtube-facebook-coronavirus.html?referringSource=articleShare>

How the ‘Plandemic’ Movie and Its Falsehoods Spread Widely Online

- BuzzFeed wrote [an article](#) on May 7 about “Plandemic” and its falsehoods, in one of the first signs that the mainstream news media had noticed the video. The article was shared on 63 Facebook pages.
- “‘Plandemic’ is a part of a larger narrative of conspiracy theories and disinformation reporters have been highlighting since the pandemic began,” Jane Lytvynenko, who reported on the video for BuzzFeed, said in an email. “Its popularity shows how vital it is to keep reporting on false and misleading information and take online events as seriously as offline ones.”
- After BuzzFeed published its piece, the tenor of comments and shares around “Plandemic” shifted. More people began to fact-check and debunk the video.
- That same day, YouTube and Facebook removed “Plandemic” for violating their misinformation policies. By then, the video was fully in the mainstream.

<https://www.nytimes.com/2020/05/20/technology/plandemic-movie-youtube-facebook-coronavirus.html?referringSource=articleShare>

Researchers: Nearly Half Of Accounts Tweeting About Coronavirus Are Likely Bots

- Nearly half of the Twitter accounts spreading messages on the social media platform about the coronavirus pandemic are likely bots, researchers at Carnegie Mellon University said Wednesday.
- Researchers culled through more than 200 million tweets discussing the virus since January and found that about 45% were sent by accounts that behave more like computerized robots than humans.
- Researchers identified more than 100 false narratives about COVID-19 that are proliferating on Twitter by accounts controlled by bots.
- Among the misinformation disseminated by bot accounts: tweeted conspiracy theories about hospitals being filled with mannequins or tweets that connected the spread of the coronavirus to 5G wireless towers, a notion that is patently untrue.

<https://www.npr.org/sections/coronavirus-live-updates/2020/05/20/859814085/researchers-nearly-half-of-accounts-tweeting-about-coronavirus-are-likely-bots>

A Wave Of Radicalized Influencers Is Mainstreaming COVID-19 Conspiracy Theories

- Kim Cohen’s Instagram page chronicles her bikini-clad adventures around the world, along with the occasional inspirational quote and photo of her Yorkie, Peanut — standard content for a travel blogger and influencer like herself.
- But in mid-March, as much of the world awoke to the severity of the COVID-19 crisis, Cohen’s more than 100,000 followers noticed a drastic change in her feed: The 34-year-old abruptly pivoted from sharing filtered beach selfies to blasting out terrifying coronavirus conspiracy theories.
- Her social media channels have morphed into open fan pages for [QAnon](#), a violent conspiracy movement [that falsely claims](#) the virus is a lab-engineered bioweapon.
- The cabal has “been trying to depopulate humanity for a very long time...”

A Wave Of Radicalized Influencers Is Mainstreaming COVID-19 Conspiracy Theories

**THE GREAT AWAKENING
IS HERE...**



INSTAGRAM

Amid the COVID-19 pandemic, a growing group of influencers have outed themselves as far-right propagandists.

For 30-year-old Anna Wood, another Instagram influencer with just over 100,000 followers whom she calls her “love beams,” the shift toward conspiratorial content happened more gradually. Back in March, she started dropping QAnon references in between her regular meditation posts and encouraging her audience to question official accounts about the burgeoning pandemic. By April, she had uploaded her first video arguing that the media and “powers that be” were inciting coronavirus hysteria to exert greater control over society. Since then, she has come out with a series of posts pushing dangerous and inaccurate claims, ***including that wearing face masks can make you sick.***

<https://portal.news/a-wave-of-radicalized-influencers-is-mainstreaming-covid-19-conspiracy-theories-53890.html>

A Wave Of Radicalized Influencers Is Mainstreaming COVID-19 Conspiracy Theories

- Rebecca Pfeiffer, a 37-year-old mother of three with 104,000 Instagram followers, also seems to believe that her decision to broadcast her coronavirus skepticism is a positive use of her platform.
- In between her pictures modeling items from Chanel, Aerie, Lululemon and Nordstrom, she has been uploading [Instagram Stories](#) promoting QAnon and suggesting that the outbreak is a cover-up for a global child sex trafficking ring.
- Her many wild assertions could compromise her brand relationships, scare off followers and ultimately hurt her income, but it's a risk she says she's willing to take.
- This apparent sincerity sets the influencers-turned-conspiracy theorists apart from the countless fear-mongering grifters spreading fake news in transparent attempts to capitalize on the pandemic.

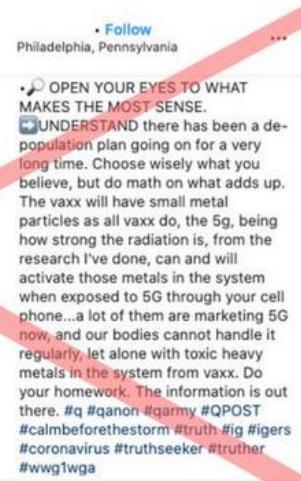
<https://portal.news/a-wave-of-radicalized-influencers-is-mainstreaming-covid-19-conspiracy-theories-53890.html>

A Wave Of Radicalized Influencers Is Mainstreaming COVID-19 Conspiracy Theories



INSTAGRAM

As Instagram users turn to wellness bloggers for health advice, many have been spreading anti-vaccine misinformation.



Scrolling through Instagram's thriving #Wellness community makes clear why: A startling number of wellness bloggers — who often lack medical training or accreditation — are spreading misinformation about vaccines as people turn to their pages for health advice during the worst public health crisis in a century.

Ali Le Vere, the woman behind a 111,000-follower wellness page, has used her platform to share posts that recommend debunked coronavirus treatments such as colloidal silver, villainize Dr. Fauci and suggest the COVID-19 vaccine will fatally harm those who take it.

Krystal Tini, a yoga enthusiast who built up her audience of nearly 100,000 followers (including Donald Trump Jr.) with holistic healing posts, has claimed that 5G will “activate” vaccine ingredients inside the bodies of those who have been injected, killing them.

<https://portal.news/a-wave-of-radicalized-influencers-is-mainstreaming-covid-19-conspiracy-theories-53890.html>

Moldovan Church Denounces COVID Vaccine as Anti-Christian Plot

- The Orthodox Church in Moldova has denounced the potential use of a vaccine against COVID-19, calling it a satanic plan to microchip people, or introduce other foreign devices into the human body.
- “The global anti-Christian system wants to introduce microchips into people’s bodies with whose help they can control them, through 5G technology,” a cleric said in a press release on Tuesday evening.
- ***“Vaccination introduces nanoparticles into the body that react to the waves transmitted by 5G technology and allow the system to control humans remotely,” the Church statement said.***
- Rhetoric about the allegedly negative effects of 5G has been intensively promoted during the COVID-19 pandemic by conservative circles in Europe and the US, together with Russian media affiliated to the Kremlin.

<https://balkaninsight.com/2020/05/20/moldovan-church-denounces-covid-vaccine-as-anti-christian-plot/>

A pandemic of conspiracy theories spreads across the internet and around the world



A rally against coronavirus policies in Cologne, Germany, May 16, 2020. (Ying Tang/NurPhoto)

"All of that just contributes to this massive, unstoppable flow of information that would be impossible to contend with even for the most resilient society," said Nina Jankowicz, a fellow at the Wilson Center in Washington, D.C.

The coronavirus “infodemic,” however, has allowed a host of malign actors — from the Russian government to domestic extremists to scam artists peddling bogus cures — to exploit existing societal fissures for their own political or personal gain.

Disinformation feeds on anxiety and promotes emotional and irrational responses. “I think it’s a common misconception that disinformation creates some sort of new feeling in people,” Jankowicz says. “Often it's really weaponizing preexisting feelings, or certainly amplifying them.

“So the anti-vax groups, for instance, are going to be more likely to buy into this narrative about the vaccine being somehow an instrument for global control. The folks who are distrustful of the United States, whether that's in the Middle East, or in China, or Russia, are going to be pawns of their nation's propaganda machines.”

A pandemic of conspiracy theories spreads across the internet and around the world



A protest organized by members of the far-right Alternative for Germany party against the government coronavirus policies in Berlin last week. Emile Ducke for The New York Times

"This so-called pandemic is nothing but the flu," scoffed Robert Farle, a state lawmaker of the AfD. He has been joining protests in his eastern hometown, Magdeburg.

In Berlin, the AfD dominated one of about 20 protests, each limited to 50 people, near the Brandenburg Gate. "Germany," "Constitution" and "Freedom," their signs read.

Germany's Coronavirus Protests: Anti-Vaxxers, Anticapitalists, Neo-Nazis

- Outside Germany's Parliament building, a vegan celebrity cook grabbed the mic and shouted that he was “ready to die” to stop self-serving elites from using the pandemic to topple the world order.
- The one driving force behind the mobilization is the country’s far right, particularly the Alternative for Germany party, or AfD, which had been marginalized by the pandemic. Now, the AfD’s leaders see the protests as a first step toward moving back into the national conversation, using them to position their message for the months ahead, when Germany must confront job losses and a battered economy.

WHAT ARE THINGS LIKE TEN
YEARS FROM NOW IN 2020?

WE HAVE THIS NEW "BITCOIN"
THING—DOES IT EVER CATCH
ON AND BECOME NORMAL?



IT'S STILL AROUND.
I JUST BOUGHT
A BOTTLE OF
HAND SANITIZER
FOR ONE BITCOIN.



COOL, THAT SOUNDS
PRETTY NORMAL.

WELL, HERE'S
THE THING...

