No. 20A95

In the Supreme Court of the United States

REV. KEVIN ROBINSON AND RABBI YISRAEL A. KNOPFLER,

Applicants,

v.

PHILIP D. MURPHY, ET AL.,

Respondents.

APPENDIX FOR RESPONDENTS – VOLUME IV OF IV, PAGES 603-END

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December 3, 2020

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EXHIBIT HHH

R.A. 603

CDC Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

Coronavirus Disease 2019 (COVID–19)

WEAR A MASK. PROTECT OTHERS.

How to Wear Masks

Updated Aug. , 2020   Print

Masks are an additional step to help slow the spread of COVID-19 when combined with every day preventive actions and social distancing in public settings.

> **CDC recommends that people wear masks in public** and when around people who don t live in your household.
>
> **Masks should NOT be worn by children under age 2 or anyone who has trouble breathing**, is unconscious, incapacitated, or otherwise unable to remove the mask without assistance.
>
> **Do NOT use a mask meant for a healthcare worker.** Currently, surgical masks and N95 respirators are critical supplies that should be reserved for healthcare workers and other first responders.

Wear your Mask Correctly

Wash your hands before putting on your mask

Put it over your nose and mouth and secure it under your chin

Try to fit it snugly against the sides of your face

Make sure you can breathe easily

CDC does not recommend use of masks or cloth masks for source control if they have an exhalation valve or vent

Wear a Mask to Protect Others

Wear a mask that covers your nose and mouth to help protect others in case you re infected with COVID-19 but don t have symptoms

Wear a mask in public settings when around people who don t live in your household, especially when it may be difficult for you to stay six feet apart

Wear a mask correctly for maximum protection

Don t put the mask around your neck or up on your forehead

Don t touch the mask, and, if you do, wash your hands or use hand sanitizer to disinfect

ollow Everyday Health Habits

Stay at least 6 feet away from others

Avoid contact with people who are sick

R.A. 604

Wash your hands often, with soap and water, for at least 20 seconds each time

Use hand sanitizer if soap and water are not available
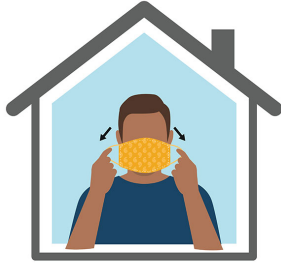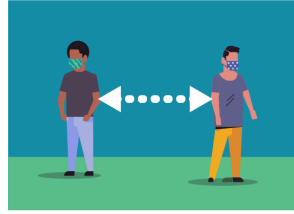
Take Off Your Mask Carefully, When You re Home

Untie the strings behind your head or stretch the ear loops

Handle only by the ear loops or ties

 old outside corners together

Place mask in the washing machine (learn more about how to wash masks)

 e careful not to touch your eyes, nose, and mouth when removing and wash hands immediately after removing.

More Information

Considerations for Wearing Masks

How to Wear Your Mask

How to Wash Your Mask

How to Make Your Own Mask

ASL Video Series: Easy DIY Mask

How to Make Your Own Mask Video (Spanish)

Last Updated Aug.   , 2020

Content source: National Center for Immunization and Respiratory Diseases (NCIRD), Division of Viral Diseases

R.A. 605

EXHIBIT III

Just 6 states meet these basic criteria to reopen and stay safe

German Lopez

All 50 states have moved to reopen their economies, at least partially, after shutting down businesses and gatherings in response to the coronavirus pandemic.

© Ethan Miller/Getty Images Conservative radio talk show host Wayne Allyn Root hosts a protest in Las Vegas, Nevada, demanding the reopening of businesses on April 24. But a Vox analysis suggests that most states haven't made the preparations needed to contain outbreaks — putting themselves at risk for a rise in Covid-19 cases and deaths should they continue to reopen, as many states have already seen.

Experts told me states need three things to be safe to open. State leaders, from the governor to the legislature to health departments, need to ensure the SARS-CoV-2 virus is no longer spreading unabated. They need the testing capacity to track and isolate the sick and their contacts. And they need the hospital capacity to handle a potential surge in Covid-19 cases.

More specifically, states should meet at least five basic criteria. They should see a two-week drop in coronavirus cases, indicating that the virus is actually abating. They should have fewer than four daily new cases per 100,000 people per day — to show that cases aren't just dropping but are also below dangerous levels. They need at least 150 new tests per 100,000

people per day, letting them quickly track and contain outbreaks. They need an overall positive rate for tests below 5 percent — another critical indicator for testing capacity. And states should have at least 40 percent of their ICU beds free to actually treat an influx of people stricken with Covid-19 should it be necessary.

These metrics line up with a range of expert recommendations, as well as the various policy plans put out by both independent groups and government officials to deal with the coronavirus.

Meeting these metrics doesn't mean that a state is ready to safely reopen its economy — a process that <u>describes a wide range of local and state actions</u>. And failing them doesn't mean a state is in immediate danger of a coronavirus outbreak if it starts to reopen; with Covid-19, there's always an <u>element of luck</u> and <u>other factors</u>.

But with these metrics, states can gauge if they have repressed the coronavirus while building the capacity to contain future outbreaks should they come. In other words, the benchmarks show how ready states are for the next phase of the fight.

So far, most states are not there. As of August 12, just six states — Alaska, Connecticut, Maine, New Hampshire, New Jersey, and New York — met four or five of the goals, which demonstrates strong progress. Twenty-eight states and Washington, DC, hit two or three of the benchmarks. The other 15 achieved zero or one. (Washington state is excluded due to <u>recent errors in its test reporting</u>.)

R.A. 608

Most states haven't done enough to contain Covid-19

Each state's progress on coronavirus cases, testing, and hospital capacity as of August 12

Little progress
Some progress
Strong progress
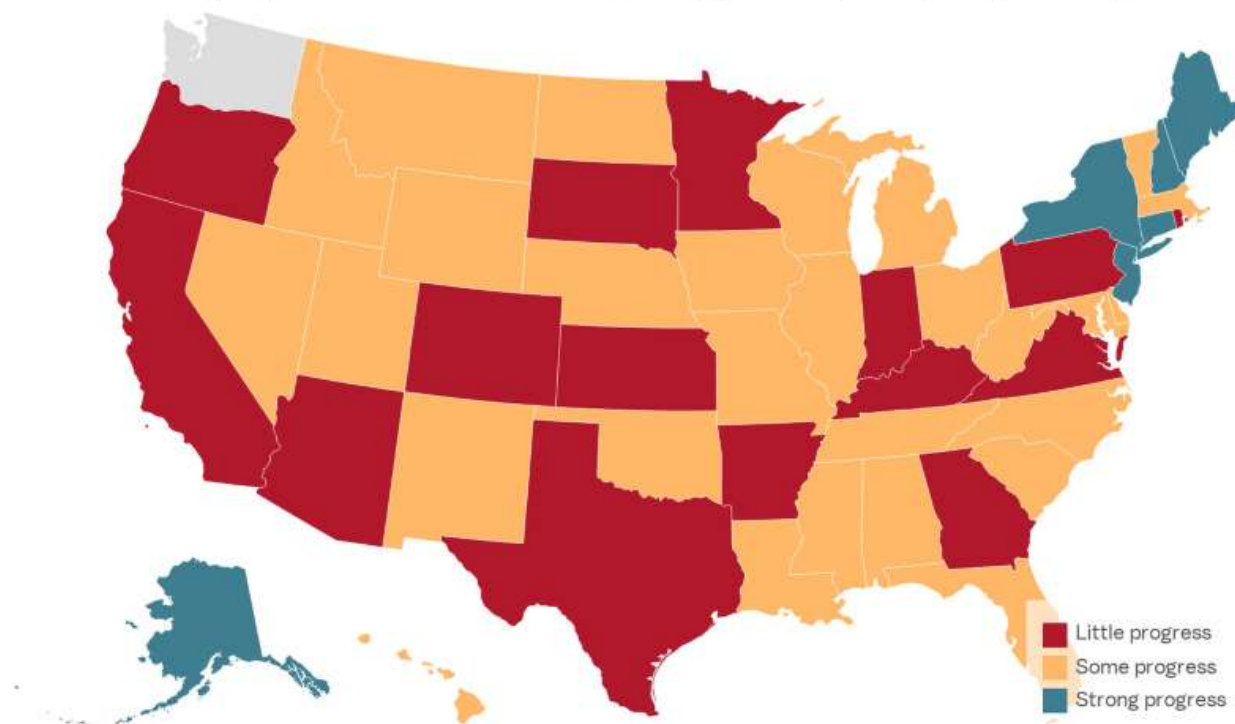
Source: Vox analysis of New York Times, Covid Tracking Project, and Health and Human Services data

Vox

Even the states that have made the most progress aren't safe to fully reopen. Without a vaccine or similar treatment, the threat of the coronavirus is still out there. Especially in states that suffered big outbreaks, such as Arizona and New York, even a lot of progress or some progress doesn't mean all the underlying problems that led to an epidemic are gone.

Nor do the metrics cover everything that states should do before they can safely reopen. They don't show, for example, if states have the capacity to do contact tracing, in which people who came into contact with someone who's sick with Covid-19 are tracked down by "disease detectives" and quarantined. Contact tracing is key to containing an epidemic, but states don't track how many contact tracers they've hired in a standardized, readily available way.

States also don't have ready data for health care workers' access to personal protective equipment, such as masks and gloves — a critical measure of the health care system's readiness that's difficult to track.

But the map gives an idea of how much progress states have made toward containing the coronavirus and keeping it contained.

States will have to follow these kinds of metrics as they reopen. If the numbers — especially coronavirus cases — go in the wrong direction again, experts said governments should be ready to bring back restrictions. If states move too quickly to reopen or respond too slowly to a turn for the worse, they could see a renewed surge in Covid-19 cases.

"Planning for reclosing is part of planning for reopening," Mark McClellan, a health policy expert at Duke, told me. "There will be outbreaks, and there will be needs for pauses and going back — hopefully not too much if we do this carefully."

So this will be a work in progress, at least until we get a Covid-19 vaccine or the pandemic otherwise ends, whether by natural or human means. But the metrics can at least help give states an idea of how far along they are in the fight against the coronavirus.

Goal 1: A sustained two-week drop in coronavirus cases

Daily coronavirus cases aren't decreasing in many states

Many states haven't seen sustained drops in Covid-19 cases over two weeks as of August 12

Legend:
- No significant drop
- 1- or 2-week drop
- 1- and 2-week drop

*Recorded changes are based on the seven-day moving average of daily new coronavirus cases.

Source: New York Times

Vox

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What's the goal? A 10 percent drop in daily new coronavirus cases compared to two weeks ago and a 5 percent drop in cases compared to one week ago, based on data from the New York Times.

Which states meet the goal? Alabama, Alaska, Arizona, Connecticut, Delaware, Florida, Louisiana, Maine, Maryland, Mississippi, Missouri, Nevada, New Hampshire, New Jersey, New Mexico, North Carolina, Ohio, Oklahoma, Pennsylvania, South Carolina, Tennessee, Texas, Utah, Washington, West Virginia, and Wyoming — a total of 26 states.

Why is this important? Guidance from the White House and several independent groups emphasize that states need to see coronavirus cases drop consistently over two weeks before they can say they're ready to begin reopening. After all, nothing shows you're out of an outbreak like a sustained reduction in infections.

"The first and foremost [metric] is you want to have a continued decrease in cases," Saskia Popescu, an infectious disease epidemiologist, told me. "It's a huge piece."

A simple reduction in cases compared to two weeks prior isn't enough; it has to be a significant drop, and it has to be sustained over the two weeks. So for Vox's map, states need at least a 10 percent drop in daily new cases compared to two weeks prior and at least a 5 percent drop compared to one week prior.

Reported cases can be a reflection of testing capacity: More testing will pick up more cases, and less testing will pick up fewer. So it's important that the decrease occur while testing is either growing or already sufficient. And since states have recently boosted their testing abilities, increases in Covid-19 cases can also reflect improvements in testing.

Even after meeting this benchmark, continued caution is warranted. If a state meets the goal of a reduction in cases compared to one and two weeks ago but cases seemed to go up in recent days, then perhaps it's not time to reopen just yet. And if cases have dropped but only from a very high baseline of cases, then that's less comforting than a drop from a lower baseline.

"You have to use common sense," Cyrus Shahpar, a director at the public health policy group Resolve to Save Lives, told me.

Goal 2: A low number of daily new Covid-19 cases

R.A. 611

Most states still have too many daily cases per capita

Daily new coronavirus cases were mostly above 4 per 100,000 people as of August 12

Legend:
- 0 to 4
- 4 to 8
- 8 to 12
- 12 to 20
- 20 or higher
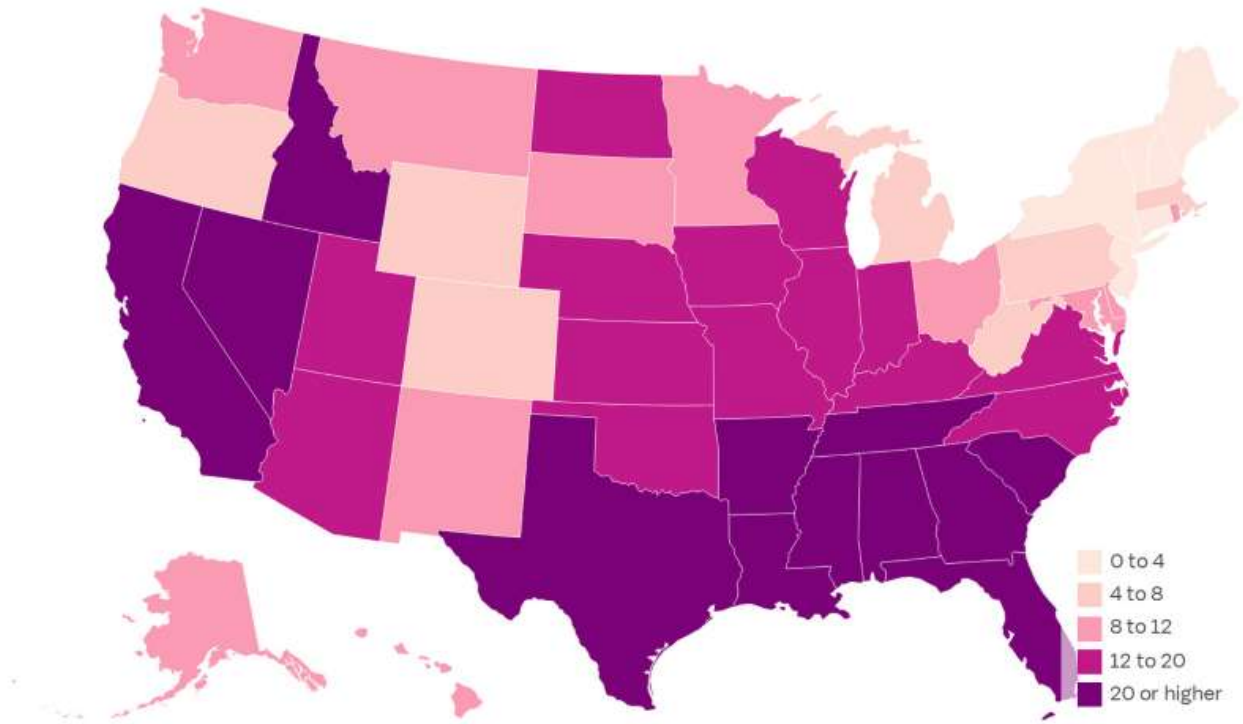
*Covid-19 case counts are based on the seven-day moving average of daily new coronavirus cases.

Source: New York Times and Census Bureau

Vox

© Provided by Vox.com

What's the goal? Fewer than four daily new coronavirus cases per 100,000 people per day, based on data from the New York Times and the Census Bureau.

Which states meet the goal? Connecticut, Maine, New Hampshire, New Jersey, New York, and Vermont — just six states.

Why is this important? One of the best ways to know you're getting away from a disease outbreak is to no longer see a high number of daily new infections. While there's no universally accepted number, experts said that four daily new coronavirus cases per 100,000 people is a decent ceiling.

"If I go from one to two to three [coronavirus cases a day], it's different than going from 1,000 to 2,000 to 3,000, even though the percent difference is the same," Shahpar said. "That's why you have to take into account the overall level, too."

To put it another way, it's not enough for daily new Covid-19 cases to drop, even for weeks. Cases also should fall below a certain level before a state can be deemed truly safe.

R.A. 612

For example, Arizona has seen its daily new cases drop over the past two weeks. But its daily new cases are still, after controlling for population, the third highest in the country. That indicates an epidemic that remains out of control.

At the same time, if your state is now below four daily new cases per 100,000 but it's seen a recent uptick in cases, that's a reason for caution. Even the worst-hit states, after all, began with a handful of cases before they saw an exponential surge.

But if your state is below the threshold, it's in a pretty solid place relative to most states.

Goal 3: High coronavirus testing capacity

Some states still don't have enough testing per capita

Daily new coronavirus tests were sometimes below 150 per 100,000 people as of August 12

Legend:
- 50 or lower
- 50 to 100
- 100 to 150
- 150 or higher

*Covid-19 test counts are based on the seven-day moving average of daily new coronavirus tests.

Source: Covid Tracking Project and Census Bureau

Vox

© Provided by Vox.com

What's the goal? At least 150 tests per 100,000 people per day, based on data from the Covid Tracking Project and the Census Bureau.

Which states meet the goal? Alabama, Alaska, Arkansas, California, Connecticut, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana,

R.A. 613

Nebraska, Nevada, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Rhode Island, South Carolina, Tennessee, Virginia, West Virginia, and Wisconsin — 38 states. Washington, DC, did as well. (Washington state is excluded due to recent errors in its test reporting.)

Why is this important? Since the beginning of the coronavirus pandemic, experts have argued that the US needs the capacity for at least 500,000 Covid-19 tests a day. Controlling for population, that adds up to about 150 new tests per 100,000 people per day.

Testing is crucial to getting the coronavirus outbreak under control. When paired with contact tracing, testing lets officials track the scale of the outbreak, isolate the sick, quarantine those the sick came into contact with, and deploy community-wide efforts as necessary. Testing and tracing are how other countries, like South Korea and Germany, have managed to control their outbreaks and started to reopen their economies.

The idea, experts said, is to have enough surveillance to detect embers before they turn into full wildfires.

"States should be shoring up their testing capacity not just for what it looks like right now while everyone's in their homes, but as people start to move more," Jen Kates, the director of global health and HIV policy at the Kaiser Family Foundation, told me. "As people start doing more movement, you'll have to test more, because people are going to come into contact with each other more."

The 500,000-a-day goal is the minimum. Some experts have recommended as many as millions of tests nationwide each day. But 500,000 is the most often-cited goal, and it's, at the very least, a good start.

It's preferable if states report this number by how many people they've tested, not just the total number of tests. For containing an outbreak, it's generally more useful to test 500,000 people one time than to test one person 500,000 times. But some states report the figures for total tests, not the number of tested individuals — counting tests for a single person multiple times. That could skew the numbers.

This goal is also supposed to be for diagnostic tests, not antibody tests. Diagnostic tests gauge whether a person has the virus in their system and is, therefore, sick right at the moment of the test. Antibody tests check if someone ever developed antibodies to the virus to see if they had ever been sick in the past. Since diagnostic tests give a more recent gauge of the level of infection, they're seen as much more reliable for evaluating the current state of the Covid-19 outbreak in a state.

But some states have mixed up numbers for diagnostic and antibody tests, which could skew the data collected by the Covid Tracking Project.

R.A. 614

"The virus isn't going to care whether they were manipulating the numbers or not in order to look more favorable; it's going to continue to spread," Crystal Watson, a senior scholar at the Johns Hopkins Center for Health Security, told me. "It's better to really understand what's going on and report that accurately."

For states honestly reporting these numbers, though, they're a critical measure of their ability to detect, control, and contain coronavirus outbreaks.

Goal 4: A low test positive rate

Most states have positive rates that are too high

Positive rates for daily new coronavirus tests were mostly above 5 percent as of August 12

5% or lower
5% to 10%
10% to 15%
15% or higher
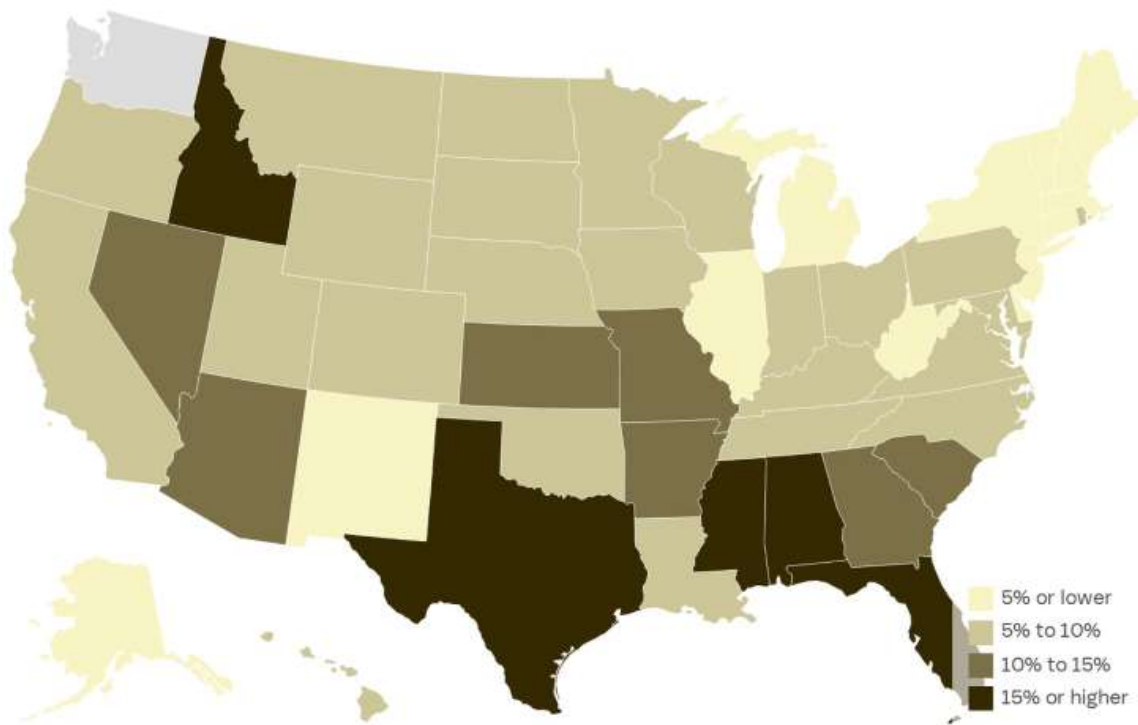
*The positive rate is based on coronavirus tests over the previous week.

Source: Covid Tracking Project

Vox

© Provided by Vox.com

What's the goal? Below 5 percent of coronavirus tests coming back positive over the past week, based on data from the Covid Tracking Project.

Which states meet the goal? Alaska, Connecticut, Delaware, Illinois, Maine, Massachusetts, Michigan, New Hampshire, New Jersey, New Mexico, New York, Vermont, and West Virginia — 13 states. Washington, DC, did as well. (Washington state is excluded due to recent errors in its test reporting.)

9/12

R.A. 615

Why is this important? The positive or positivity rate, which tracks how many tests come back positive for Covid-19, is another way to measure testing capacity.

Generally, a higher positive rate suggests there's not enough testing happening. An area with adequate testing should be testing lots and lots of people, many of whom don't have the disease or don't show severe symptoms. The positive testing rate in South Korea, for example, is below 1 percent. High positive rates indicate only people with obvious symptoms are getting tested, so there's not quite enough testing to match the scope of an outbreak.

Previously, the World Health Organization (WHO) recommended a maximum positive rate of 10 percent. But the WHO more recently recommended 5 percent, which is in line with the rate for countries that have managed to better control their outbreaks, like Germany, New Zealand, and South Korea. "Even lower is better," Shahpar said.

The positive rate data is subject to the same limitations as the overall testing data from the Covid Tracking Project. So if a state includes antibody tests in its test count, it could skew the positive rate to look better than it is. States only risk hurting themselves if they do this.

Goal 5: Availability of ICU beds

Most states' hospitals aren't ready for a Covid-19 surge

Most states reported more than 60 percent of ICU beds occupied as of August 12

20% to 40%
40% to 60%
60% to 70%
70% or higher
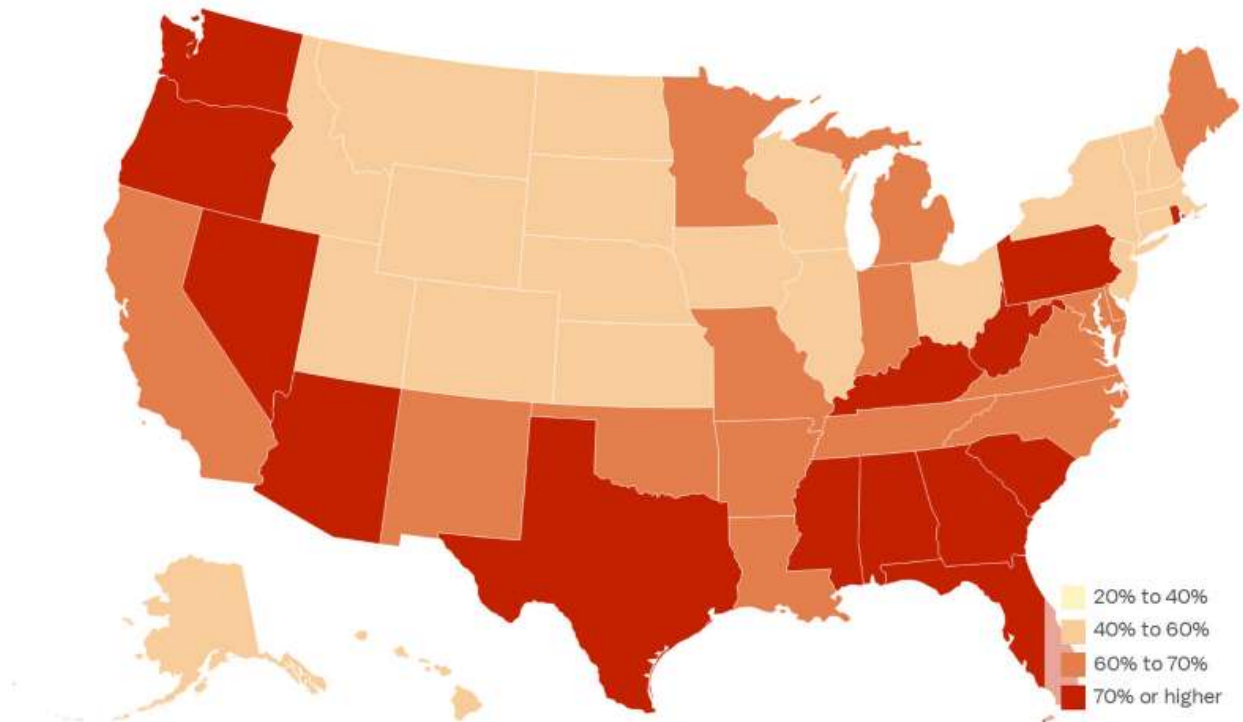
Source: US Department of Health and Human Services

Vox

10/12

R.A. 616

What's the goal? Below 60 percent occupancy of ICU beds in hospitals, based on data from the <u>US Department of Health and Human Services</u>.

Which states meet the goal? Alaska, Colorado, Connecticut, Hawaii, Idaho, Illinois, Iowa, Kansas, Massachusetts, Montana, Nebraska, New Hampshire, New Jersey, New York, North Dakota, Ohio, South Dakota, Utah, Vermont, Wisconsin, and Wyoming — 21 states.

Why is this important? If a pandemic hits, the health care system needs to be ready to treat the most severe cases and potentially save lives. That's the key goal of <u>"flattening the curve"</u> and <u>"raising the line,"</u> in which social distancing helps reduce the spread of the disease so the health care system can maintain and grow its capacity to treat an influx of Covid-19 patients.

"There's this idea that in six weeks we can open more things," Amesh Adalja, a senior scholar at the Johns Hopkins Center for Health Security, told me. "But the virus is still there. It's all about making sure that the case count isn't too immense for our hospital system to deal with."

The aim is to avoid the <u>nightmare scenario that Italy went through</u> when it had more Covid-19 cases than its health care system could handle, leading to hospitals turning away even dangerously ill patients.

To gauge this, experts recommended looking at ICU capacity, with states aiming to have at most 60 percent occupancy in their ICUs.

Hitting the benchmarks is the beginning, not the end

Vox's map is just one way of tracking success against the coronavirus. Other groups have come up with their own measures, including <u>Covid Act Now</u>, <u>Covid Exit Strategy</u>, and <u>Test and Trace</u>. Vox's model uses more up-to-date data than some of these other examples, while focusing not just on the state of the pandemic but also on states' readiness to contain Covid-19 outbreaks in the future.

Very few states hit all the marks recommended by experts. But even those that do shouldn't consider the pandemic over. They should continue to improve — for example, getting the positive rate below 1 percent, as in New Zealand — and look at even more granular metrics, such as at the city or county level.

Meeting the benchmarks, however, indicates a state is better equipped to contain future coronavirus outbreaks as it eases previous restrictions.

11/12

Experts emphasized that states have to keep hitting all these goals week after week and day after day — Covid-19 cases must remain low, testing ability needs to stay high, and hospital capacity should be good enough for an influx of patients — until the pandemic is truly over, whether thanks to a vaccine or other means. Otherwise, a future wave of coronavirus cases, as seen in past pandemics, could kill many more people.

"You need to have all the metrics met," Popescu said. "This needs to be a very incremental, slow process to ensure success."

And if the numbers do start trending in the wrong direction, states should be ready to shut down at least some parts of the economy again. Maybe not as much as before, as we learn which places are truly at risk of increasing spread. But experts caution that future shutdowns will likely be necessary to some extent.

"I do worry we're going to see surges of cases and hot spots," Watson said. "We do need to keep pushing on building those capacities. ... Otherwise, we're just rolling the dice on the spread of the virus. It's better if we have more control of the spread."

That's another reason these metrics, along with broader coronavirus surveillance, are so important: They not only help show how far along states are in dealing with their current Covid-19 outbreaks, but will help track progress to stop and prevent future crises as well.

12/12

EXHIBIT JJJ

R.A. 619

Covid ActNow

New Jersey

⌘ SHARE   🔔 RECEIVE ALERTS

COVID THREAT LEVEL

Slow disease growth

☐ COVID in New Jersey is spreading in a slow and controlled fashion, and New Jersey's COVID preparedness meets international standards.

DAILY NEW CASES
COVID not contained, but at low levels
● **4.8** PER 100K

INFECTION RATE
COVID is still spreading, but slowly
● **1.04**

POSITIVE TEST RATE
Indicates widespread testing
● **1.4%**

ICU HEADROOM USED
Can likely handle a new wave of COVID
● **12%**
Beta

TRACERS HIRED
Insufficient tracers, even if the program is run effectively
● **58%**
Beta

Updated August 16, 2020

Counties comparison
NEW JERSEY

COUNTY POPULATION	DAILY NEW CASES PER 100K	INFECTION RATE	POSITIVE TEST RATE	ICU HEADROOM USED	TRACERS HIRED
1 ● **Cumberland Co.** 150,000	● **8.4**	● 0.92	● ---	● 5%	● ---
2 ● **Passaic Co.** 500,000	● **8.3**	● 1.21	● ---	● 9%	● ---
3 ● **Gloucester Co.** 290,000	● **8.0**	● 1.06	● ---	● 13%	● ---
4 ● **Salem Co.** 62,000	● **7.3**	● 0.96	● ---	● 36%	● ---
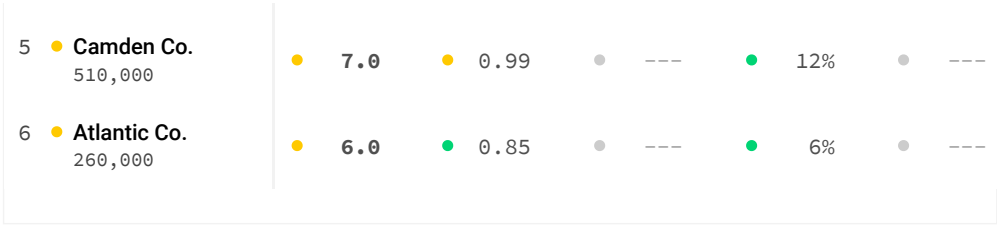
R.A. 620

5	● Camden Co. 510,000	●	**7.0**	●	0.99	●	---	●	12%	●	---
6	● Atlantic Co. 260,000	●	**6.0**	●	0.85	●	---	●	6%	●	---

Displaying **6** of **21**   View all counties in New Jersey

R.A. 621

Daily new cases per 100k population
NEW JERSEY

Over the last week, New Jersey has averaged 428 new confirmed cases per day (**4.8** for every 100,000 residents). Over the next year, this translates to around 160,000 cases and an estimated 780,000 infections (8.8% of the population).

Save   Share

Last updated 8/16/2020. Our risk levels for daily new cases are based on the "Key Metrics for Covid Suppression" by Harvard Global Health Institute and others.
When estimating the number of people who will become infected in the course of a year, we rely on the CDC's estimate that confirmed cases represent as few as 10% of overall infections. Learn more about our methodology and our data sources.

R.A. 622

Infection rate

NEW JERSEY

On average, each person in New Jersey with COVID is infecting 1.04 other people.
Because this number is around 1.0, it means that COVID continues to spread, but in a
slow and controlled fashion.
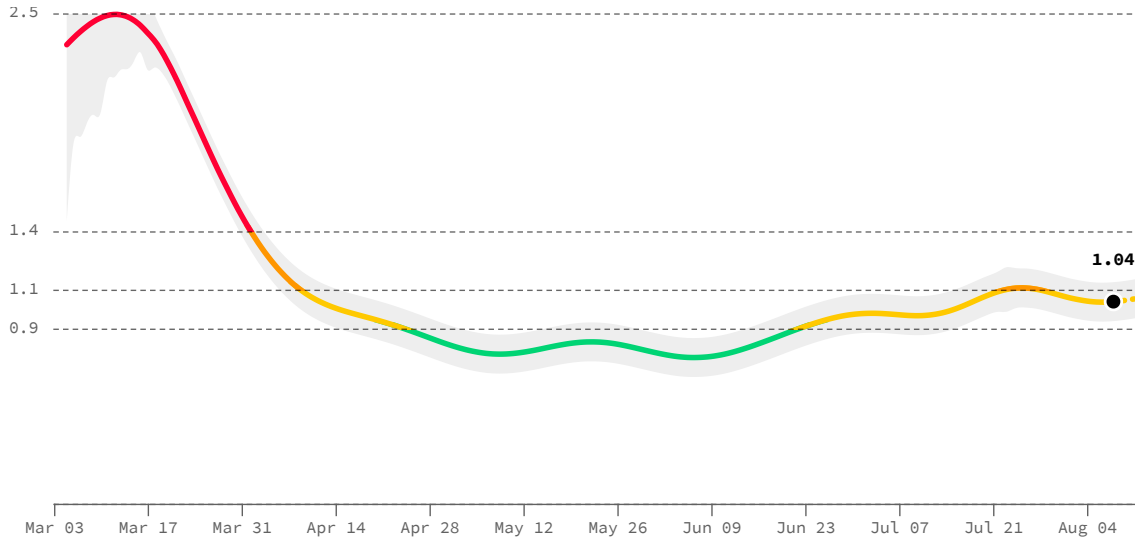
Last updated 8/16/2020. Each data point is a 14-day weighted average. We present the
most recent seven days of data as a dashed line, as data is often revised by states several
days after reporting. Learn more about our methodology and our data sources.

R.A. 623

Positive test rate

NEW JERSEY

A low percentage (1.4%) of COVID tests were positive, which suggests enough widespread, aggressive testing in New Jersey to detect most new cases. Identifying and isolating new cases can help contain COVID without resorting to lockdowns.

Save | Share

Last updated 8/16/2020. The World Health Organization recommends a positive test rate of less than 10%. The countries most successful in containing COVID have rates of 3% or less. We calculate the rate as a 7-day trailing average. Learn more about our methodology and our data sources.

R.A. 624

ICU headroom used <small>Beta</small>
NEW JERSEY

New Jersey has about 833 ICU beds. Based on best available data, we estimate that 0% (0) are currently occupied by non-COVID patients. Of the 833 ICU beds remaining, 99 are needed by COVID cases, or 12% of available beds. This suggests there is likely enough capacity to absorb a wave of new COVID infections.

Save   Share
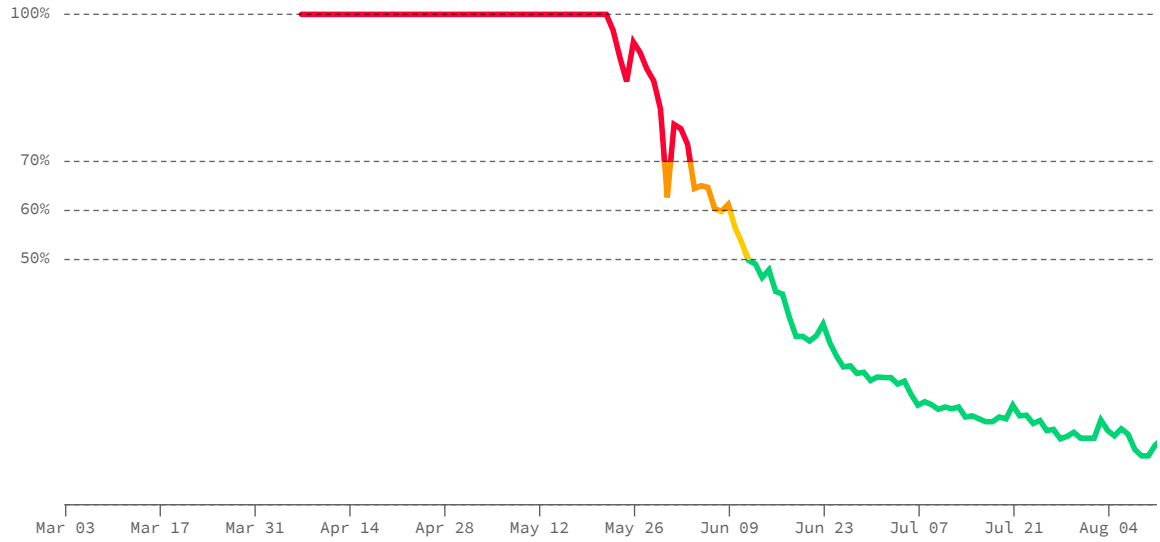
Last updated 8/16/2020. Resolve to Save Lives, a pandemic think tank, recommends that hospitals maintain enough ICU capacity to double the number of COVID patients hospitalized. Learn more about our methodology and our data sources.

R.A. 625

Tracers hired   <small>Beta</small>

NEW JERSEY

With 428 new daily cases on average, New Jersey needs an estimated 2,140 contact tracers on staff to trace each new case to a known case within 48 hours of detection. Per our best available data, New Jersey has 1,249 contact tracers, fulfilling 58% of this staffing requirement. With insufficient contact tracing staff, New Jersey is unlikely to be able to successfully identify and isolate sources of disease spread fast enough to prevent new outbreaks.
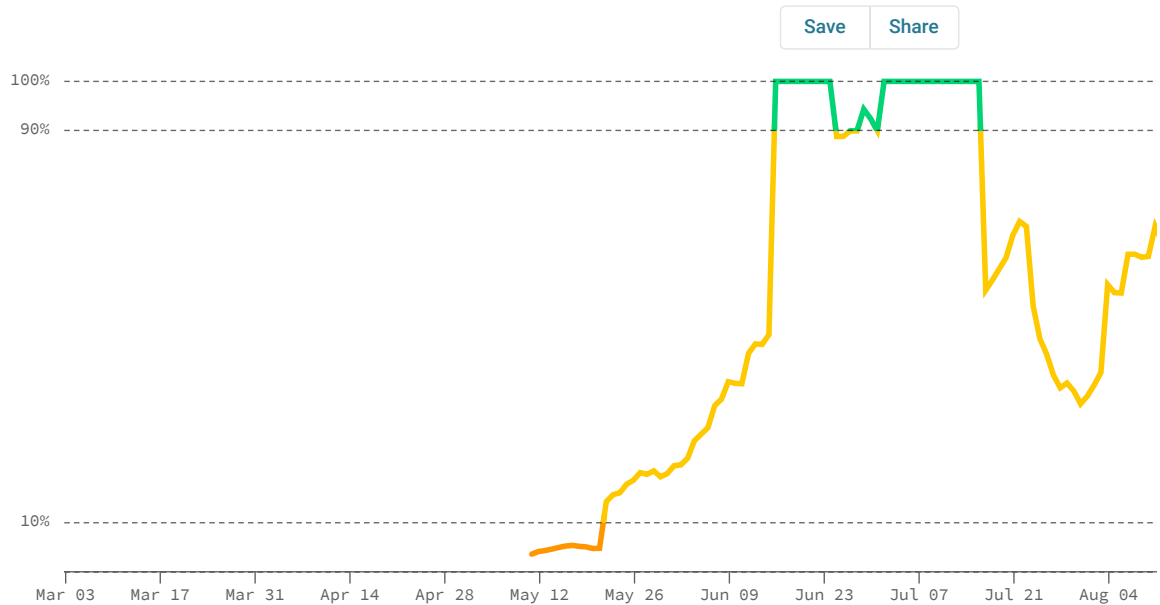
Last updated 8/16/2020. Experts recommend that at least 90% of contacts for each new case must be traced within 48 hours in order to contain COVID. Experts estimate that tracing each new case within 48 hours requires an average of 5 contact tracers per new case, as well as fast testing. Learn more about our methodology and our data sources (for contact tracing data, we partner with testandtrace.com). Learn about recent changes to how we assess contact tracing. We know that measuring contact tracing capacity solely by the number of staff is not reliable, and we are working on a more accurate metric to assess contact tracing capacity.

Looking for our future hospitalization projections? We're no longer including them here. If you have questions, let us know.

CovidActNow.org

Map

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R.A. 626

Contact Us

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EXHIBIT KKK

R.A. 628

Tracking Home

Global Map

Home   Testing Tracing By Region News & Resources About

U.S. Map

Data in Motion

COVID-19 Dashboard by the Center for Syste   ☰

Tracking Home	**Global Map** U.S. Map Data in Mot

21,755,069

Cases by Country/Region/Sovereignty

5,416,639 US
3,340,197 Brazil
2,647,663 India
925,558 Russia
587,345 South Africa
535,946 Peru
522,162 Mexico
468,332 Colombia
387,502 Chile
359,082 Spain
345,450 Iran
320,347 United Kingdom
299,914 Saudi Arabia
294,569 Argentina
289,215 Pakistan

Admin0 Admin1 Admin2

Last Updated at (M/D/YYYY)
8/17/2020, 2:27:41 PM

Cumulative Cases Active Cases Incidence Rate

188 countries/regions

Tracking

Tracking Home

Johns Hopkins experts in global public health, infectious disease, and emergency
preparedness have been at the rorefront of the international response to COVID-19.

Global Map

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U.S. Map

This website is a resource to help advance the understanding of the virus, inform the public,
Data in Motion
and brief policymakers in order to guide a response, improve care, and save lives.

Tracking Home   **Global Map**   U.S. Map   Data in Mot

TRACKING

Tracking Home

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Critical Trends

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TESTING

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EXHIBIT LLL

Coronavirus Disease 2019 (COVID-19)

MENU >

WEAR A MASK. PROTECT OTHERS.

Considerations for Wearing Masks

Help Slow the Spread of COVID-19

Updated Aug.   , 2020   Print

CDC recommends that people wear masks in public settings and when around people who don t live in your household, especially when other social distancing measures are difficult to maintain.

Masks may help prevent people who have COVID-19 from spreading the virus to others.

Masks are most likely to reduce the spread of COVID-19 when they are widely used by people in public settings.

Masks should NOT be worn by children under the age of 2 or anyone who has trouble breathing, is unconscious, incapacitated, or otherwise unable to remove the mask without assistance.

Masks with exhalation valves or vents should NOT be worn to help prevent the person wearing the mask from spreading COVID-19 to others (source control).

Eviden e or E e tiveness o Masks

Masks are recommended as a simple barrier to help prevent respiratory droplets from traveling into the air and onto other people when the person wearing the mask coughs, sneezes, talks, or raises their voice. This is called source control. This recommendation is based on what we know about the role respiratory droplets play in the spread of the virus that causes COVID-19, paired with emerging evidence from clinical and laboratory studies that shows masks reduce the spray of droplets when worn over the nose and mouth. COVID-19 spreads mainly among people who are in close contact with one another (within about 6 feet), so the use of masks is particularly important in settings where people are close to each other or where social

R.A. 634
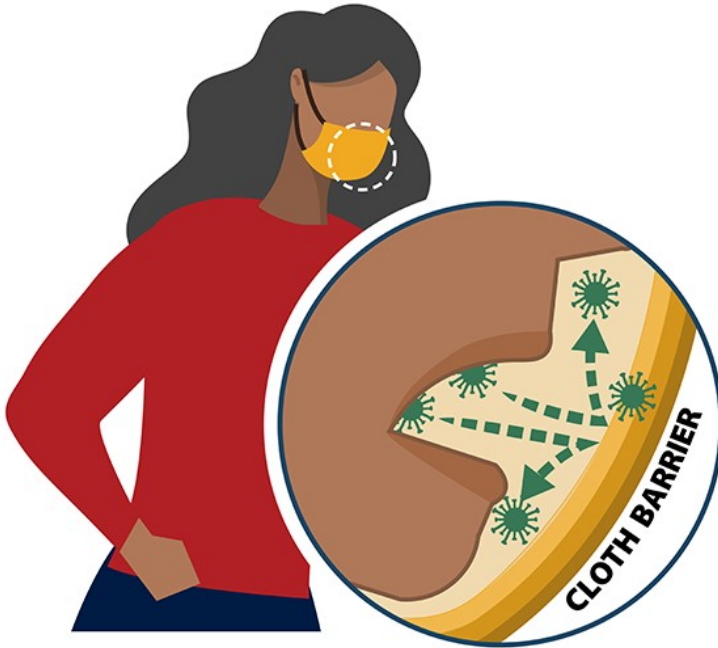
distancing is difficult to maintain. CDC s recommendations for masks will be updated as new scientific evidence becomes available.

Who   hould Wear   Mask

eneral pu li

CDC recommends all people 2 years of age and older wear a mask in public settings and when around people who don t live in your household, especially when other social distancing measures are difficult to maintain.

COVID-19 can be spread by people who do not have symptoms and do not know that they are infected. That s why it s important for everyone to wear masks in public settings and practice social distancing (staying at least 6 feet away from other people).

While masks are strongly encouraged to reduce the spread of COVID-19, CDC recognizes there are specific instances when wearing a mask may not be feasible. In these instances, adaptations and alternatives should be considered whenever possible (see below for examples).

eople who know or think they mi   ht have COVID-19

If you are sick with COVID-19 or think you might have COVID-19, do not visit public areas. Stay home except to get medical care. As much as possible stay in a specific room and away from other people and pets in your home. If you need to be around other people or animals, wear a mask (including in your home).

The mask helps prevent a person who is sick from spreading the virus to others. It helps keep respiratory droplets contained and from reaching other people.

Care ivers o   people with COVID-19

Those caring for someone who is sick with COVID-19 at home or in a non-healthcare setting may also wear a mask. However, the protective effects   how well the mask protects healthy people from breathing in the virus   are unknown. To prevent getting sick, caregivers should also continue to practice everyday preventive actions: avoid close contact as much as possible, clean hands often avoid touching your eyes, nose, and mouth with unwashed hands and frequently clean and disinfect surfaces.

Who   hould   ot Wear a Mask

Masks should **not** be worn by:

Children younger than 2 years old

Anyone who has trouble breathing

Anyone who is unconscious, incapacitated, or otherwise unable to remove the mask without assistance

easi ility and daptations

CDC recognizes that wearing masks may not be possible in every situation or for some people. In some situations, wearing a mask may exacerbate a physical or mental health condition, lead to a medical emergency, or introduce significant safety concerns. Adaptations and alternatives should be considered whenever possible to increase the feasibility of wearing a mask or to reduce the risk of COVID-19 spreading if it is not possible to wear one.

 or example,

> People who are deaf or hard of hearing   or those who care for or interact with a person who is hearing impaired   may be unable to wear masks if they rely on lipreading to communicate. In this situation, consider using a clear mask. If a clear mask isn t available, consider whether you can use written communication, use closed captioning, or decrease background noise to make communication possible while wearing a mask that blocks your lips.

> Some people, such as people with intellectual and developmental disabilities, mental health conditions or other sensory sensitivities, may have challenges wearing a mask. They should consult with their healthcare provider for advice about wearing masks.

> Younger children (e.g., preschool or early elementary aged) may be unable to wear a mask properly, particularly for an extended period of time. Wearing of masks may be prioritized at times when it is difficult to maintain a distance of 6 feet from others (e.g., during carpool drop off or pick up, or when standing in line at school). Ensuring proper mask size and fit and providing children with frequent reminders and education on the importance and proper wear of masks may help address these issues.

> People should not wear masks while engaged in activities that may cause the mask to become wet, like when swimming at the beach or pool. A wet mask may make it difficult to breathe.   or activities like swimming, it is particularly important to maintain physical distance from others when in the water.

> People who are engaged in high intensity activities, like running, may not be able to wear a mask if it causes difficulty breathing. If unable to wear a mask, consider conducting the activity in a location with greater ventilation and air exchange (for instance, outdoors versus indoors) and where it is possible to maintain physical distance from others.

> People who work in a setting where masks may increase the risk of heat-related illness or cause safety concerns due to introduction of a hazard (for instance, straps getting caught in machinery) may consult with an occupational safety and health professional to determine the appropriate mask for their setting. Outdoor workers may prioritize use of masks when in close contact with other people, like during group travel or shift meetings, and remove masks when social distancing is possible. ind more information here and below.

Masks are a critical preventive measure and are **most** essential in times when social distancing is difficult. If masks cannot be used, make sure to take other measures to reduce the risk of COVID-19 spread, including social distancing, frequent hand washing, and cleaning and disinfecting frequently touched surfaces.

Masks with Exhalation Valves or Vents

The purpose of masks is to keep respiratory droplets from reaching others to aid with source control. However, masks with one-way valves or vents allow air to be exhaled through a hole in the material, which can result in expelled respiratory droplets that can reach others. This type of mask does not prevent the person wearing the mask from transmitting COVID-19 to others. Therefore, CDC **does not recommend** using masks for source control if they have an exhalation valve or vent.

a e hields

A face shield is primarily used for eye protection for the person wearing it. At this time, it is not known what level of protection a face shield provides to people nearby from the spray of respiratory droplets from the wearer. There is currently not enough evidence to support the effectiveness of face shields for source control. Therefore, CDC **does not currently recommend** use of face shields as a substitute for masks.

However, wearing a mask may not be feasible in every situation for some people for example, people who are deaf or hard of hearing   or those who care for or interact with a person who is hearing impaired. Here are some considerations for individuals who must wear a face shield instead of a mask:

Although evidence on face shields is limited, the available data suggest that the following face shields may provide better source control than others:

ace shields that wrap around the sides of the wearer s face and extend below the chin.

Hooded face shields.

ace shield wearers should wash their hands before and after removing the face shield and avoid touching their eyes, nose and mouth when removing it.

Disposable face shields should only be worn for a single use and disposed of according to manufacturer instructions.

Reusable face shields should be cleaned and disinfected after each use according to manufacturer instructions or by following CDC face shield cleaning instructions .

Plastic face shields for newborns and infants are NOT recommended.

ur i al Masks

Masks are not surgical masks or respirators. Currently, those are critical supplies that should continue to be reserved for healthcare workers and other medical first responders, as recommended by current CDC guidance. Masks also are not appropriate substitutes for them in workplaces where surgical masks or respirators are recommended or required and available.

e ent   tudies

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Last Updated Aug. , 2020
Content source: National Center for Immunization and Respiratory Diseases (NCIRD), Division of Viral Diseases

EXHIBIT MMM

R.A. 639

CNN health   • LIVE TV ⊘ ≡

House Speaker Nancy Pelosi speaks at the Atlantic Ideas Festival

CNN 200,000 people have died from Covid-19 in the US. That's more than the US battle deaths from 5 wars combined

By Holly Yan, CNN

Graphics by Shane Csontos-Popko, CNN

Updated 1:34 PM ET, Tue September 22, 2020

(CNN) — What happened today seemed impossible to many Americans six months ago.

When Dr. Anthony Fauci predicted in March that Covid-19 could kill 200,000 people in the US, skeptics lambasted him and accused him of fearmongering.

But Fauci was right. And the US reached that bleak milestone much earlier than some experts predicted.

https://www.cnn.com/2020/09/22/health/us-coronavirus-deaths-200k/index.... 9/22/2020

R.A. 640

US **Covid-19** deaths are equal to having the 9/11 attacks every day for

66 days

Source: New York City medical examiner's office, National Park Service, US Department of Defense

Since the first known US Covid-19 death on February 6, an average of more than 858 people have died from the disease every day.

Many of those victims died without loved ones in hospital rooms. Countless others never had a proper funeral, with mourners grieving remotely online.

Since the first known US **Covid-19** death on February 6, an average of

858+ deaths

have been caused by the disease every day.

Source: Santa Clara County (California) heath officials and Johns Hopkins University

What happens next with the pandemic largely depends on personal responsibility and how much Americans are willing to fight this battle together.

Already, Covid-19 has killed more people in the US than Americans killed in battle during the five most recent wars combined: the Korean War, the Vietnam War, the Iraq War, the War in Afghanistan and the Persian Gulf War.

How US Covid-19 fatalities compare to battle deaths in recent wars

Covid-19 has killed more than 200,000 people in the United States. The death toll has surpassed the number of American combat deaths in the country's five most recent wars combined.

200K				
150K				
100K				
50K				4:
			33,739	
148	1,909	3,519		
Persian Gulf War	Afghanistan*	Iraq War	Korean War	Vietr

R.A. 642

US death toll from **Covid-19** is

109x higher

than the effects from Hurricane Katrina.

Source: NOAA

And researchers project almost 180,000 additional Covid-19 deaths by January 1.

But it doesn't have to be that way.

"Increasing mask use to 95% can save nearly 115,000 lives, reducing that expected number of deaths by 62.7%," the IHME said.

And the same mask wearing, physical distancing and hand washing that protect against Covid-19 can also help avert a flu-and-coronavirus "twin-demic" that could overwhelm the health care system.

"We have to stay strong and do the things that could decrease the spread," said pediatrician Dr. Brett Giroir, the White House coronavirus task force's testing czar.

"Number 1: Wearing a mask when we can't physically distance. Number 2: Avoiding crowds. Number 3: Hygiene. And with smart testing, we can flatten the curve and slow the spread," Giroir said.

"We do have a formula to reduce the deaths, reduce the cases. But we all have to be disciplined and diligent to make sure we obey that every single day."

EXHIBIT NNN

Coronavirus   Latest news   U.S. map   World map   FAQ   Vaccine tracker   Coronavirus Living   Extraordinary People

Health

Experts project autumn surge in coronavirus cases, with a peak after Election Day

By Joel Achenbach and
Rachel Weiner
September 5

PLEASE NOTE

The Washington Post is providing this important information about the coronavirus for free. For more free coverage of the coronavirus pandemic, sign up for our Coronavirus Updates newsletter where all stories are free to read.

Infectious-disease experts are warning of a potential cold-weather surge of coronavirus cases — a long-feared "second wave" of infections and deaths, possibly at a catastrophic scale. It could begin well before Election Day, Nov. 3, although researchers assume the crest would come weeks later, closer to when fall gives way to winter.

An autumn surge in covid-19, the disease caused by the novel coronavirus, would not be an October surprise: It has been hypothesized since early in the pandemic because of the patterns of other respiratory viruses.

"My feeling is that there is a wave coming, and it's not so much whether it's coming but how big is it going to be," said Eili Klein, an epidemiologist at Johns Hopkins University School of Medicine.

The pandemic is already a dominant campaign issue, and it's not clear that even a spike in deaths would apply much torque to the presidential race. Outbreaks in some states could also bring pressure further down the ballot and conceivably affect turnout if there is so much community spread that voters who planned to cast ballots in person feel unsafe going to the polls.

The warnings from researchers come at a moment when, despite a rise in cases in the Upper Midwest, national numbers have been trending downward at a slow pace for several weeks following the early-summer surges in the Sun Belt.

Respiratory viruses typically begin spreading more easily a couple of weeks after schools resume classes. Although the pandemic has driven many school districts to remote learning, there is a broad push across the country to return to something like normal life.

The Labor Day holiday weekend is a traditional time of travel and group activities, and, like Independence Day and Memorial Day, could seed transmission of the virus if people fail to take precautions. And viruses tend to spread more easily in cooler, less humid weather, which allows them to remain viable longer. As the weather cools, people tend to congregate more indoors.

The coronavirus has a relatively long incubation period, and the disease progression in patients with severe illnesses also tends to be drawn out over several weeks. As a result, any spike in deaths will lag weeks behind a spike in infections. And the infection surges have consistently followed the loosening of shutdown orders and other restrictions.

A model produced by the University of Washington's Institute for Health Metrics and Evaluation and published Friday forecasts a "most likely" daily death toll of 1,907 on Election Day, roughly double the current toll. Under the IHME forecast, the numbers would continue to rise until early December, peaking at more than 2,800 deaths daily.

By year's end, 410,000 people in the United States will have died under the model's most-likely scenario. That's more than double current fatalities. The model also produced best-case and worst-case

R.A. 645

scenarios — ranging from 288,000 to 620,000 deaths by Jan. 1 — depending on the degree to which people wear masks, adhere to social distancing and take other precautions.

"I firmly believe we will see distinct second waves, including in places that are done with their first waves. New York City, I'm looking at you," said Andrew Noymer, an epidemiologist at the University of California at Irvine who studied the October surge in cases when the mild pandemic influenza virus circulated in 2009.

"I expect fall waves starting in mid-October and getting worse as fall heads into winter, and reaching a crescendo certainly after the election," he said. "Some places will peak around Thanksgiving, some places will peak around Christmas, some places not until January and February."

If that's correct, the worst impacts will occur after the campaigning is over and the ballots have been cast. The exact timing is unlikely to be a political factor, contended David Rubin, the director of PolicyLab at Children's Hospital of Philadelphia, who said that most people have already made judgments about the candidates' handling of the pandemic.

"I wouldn't foresee anything happening between now and the election that would change the dynamics of the election," Rubin said.

President Trump's approval rating has been remarkably consistent through the pandemic, noted Kyle Kondik of the University of Virginia Center for Politics. Though Trump lost some ground in May and June, he is no less popular than he was last fall, when the economy was strong and people could travel freely.

"There has been a little bit of erosion, but not a ton," Kondik said. Of course, in a close election, even a small shift "could be a difference between victory and defeat."

Rubin raised another possible consequence of increased viral transmission in advance of the election: Candidates could become sick.

"The candidates are campaigning. They're mixing with people," Rubin said. "I would not be surprised to see a couple people get sick, and whether that goes all the way to the presidential candidates could be a game changer. This virus has got pretty close to the president a couple of times."

The timing of the pandemic remains unpredictable in part because it is not yet a seasonal virus. Seasonal viruses, such as those that cause influenza, and the coronaviruses that cause common colds, are remarkably faithful to the calendar, with most typically flaring in the fall a couple of weeks after children go back to school and start bringing their newly acquired infections into their homes, said Ellen Foxman, an immunologist at the Yale School of Medicine and expert on respiratory viruses.

But most people still have no immunity to the novel coronavirus. It spreads opportunistically in all kinds of weather. Despite millions of infections and more than 184,000 deaths, most people in the United States remain susceptible.

"A pandemic virus is different, because most of us do not have prior immunity to this virus," Foxman said. "That means it's a lot more contagious than a typical virus that we get every year."

There is a small body of evidence that a person who gets the virus acquires a limited amount of immunity. And there also are indications that some people can become infected a second time.

It's possible that some people suffer minimal or no effects from the coronavirus because of exposure to other viruses, which prime the body's immune system against pathogens generally. This is seen as one plausible explanation for the unusual percentage of people — the Centers for Disease Control and Prevention estimates 40 percent — who become infected with the novel coronavirus but are asymptomatic. But there still is no approved vaccine. Most experts do not expect one to be distributed, at least in any significant numbers, before the end of the year at the earliest, and broad distribution could take many months.

Meanwhile, the country's health departments are reporting roughly 40,000 positive test results every day — more than double the number in May when many states began reopening after the first wave of infections. Epidemiologist Jeffrey Shaman of Columbia University said a good target for the entire country would be to drive transmission down to 500 infections a day. At that level, contact tracing and testing could keep outbreaks under control.

"The question is, is it going to spread out of control broadly?" Shaman said. "Are we going to get us down to 10,000 cases, then under 1,000, and then to my magical number of 500? The thing about this disease, it really spins out of control."

Klein, the Hopkins epidemiologist, warns the fall wave is likely to be more intense than the peak in the spring. Maryland had 2,000 covid-19 patients in hospitals at its peak in April, he said, and his midrange scenario envisions twice that many hospitalized patients at the next peak.

At Hopkins, doctors are discussing what they call "Surge 2.0." They are envisioning outbreaks that could potentially overwhelm hospitals with covid-19 patients. Even less catastrophic surges could hamper other kinds of non-covid-19 medical care, said Lisa Lockerd Maragakis, an associate professor of medicine and infectious diseases.

"Even though we have had so many cases and we have had so many tragic deaths, we have the vast majority of people who are not immune to this virus," Maragakis said. "Without a therapeutic or a vaccine, we are still in a position where the transmission of the virus depends heavily on our behaviors every day."

That is a common refrain among those working around-the-clock to understand this pandemic.

"We are collectively in control of how many cases or deaths there are," Marc Lipsitch, an epidemiologist at Harvard, said in an email. "Forecasts more than a month from now make sense only if they are conditional on how we behave."

"People's behavior is a dramatic determinant here," said Christopher Murray, the director of IHME. "Look at what happened in Florida [after the spike in cases]. People got scared. They started wearing masks, they stopped going to bars."

But the converse is also true: If people stop being vigilant, the virus bounces back.

Joel Achenbach
Joel Achenbach covers science and politics for the National desk. He has been a staff writer for The Post since 1990. Follow ✪

Rachel Weiner
Rachel Weiner tries to cover Alexandria's federal court from a small windowless room with no cellphone access. She sometimes ventures outside to write about crime in Alexandria

R.A. 647

EXHIBIT OOO

IHME

COVID-19 Projections

Regions shown are the World Bank regional aggregates.

Last updated September 18, 2020 (Pacific Time)

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United States of America

To see results within this country, select a subnational location   X

Total deaths   Daily deaths   Infections and testing   Hospital resource use   Mask use

⌁ Trend   ⌁ Compare   🌐 Map

Total deaths

378,321 COVID-19 deaths

based on Current projection scenario by January 1, 2021

Scenario ⓘ

Projection   Easing   Masks   ⌄

Observed (smoothed)

Current projection

Mandates easing

Universal masks

All deaths specific to COVID-19 patients.

~ Trend   ⌁ Compare   🌐 Map
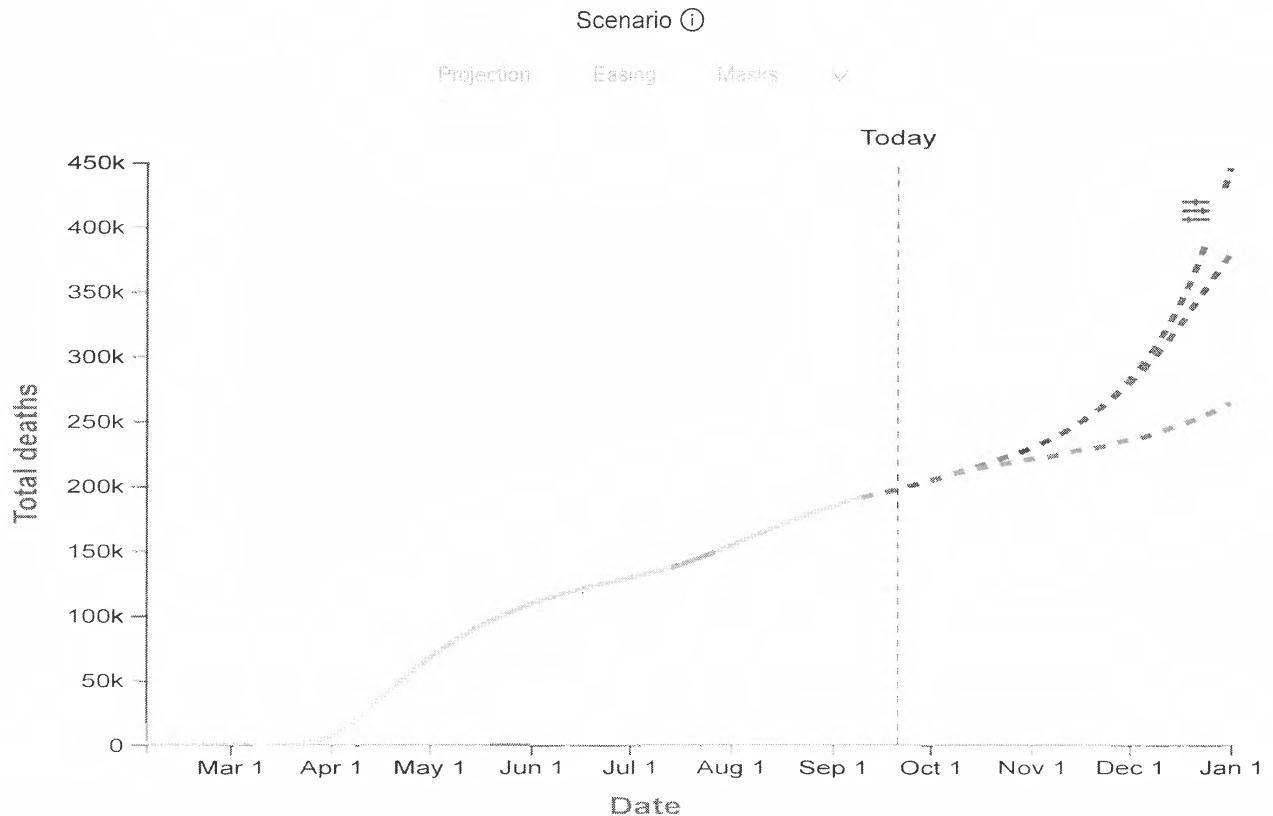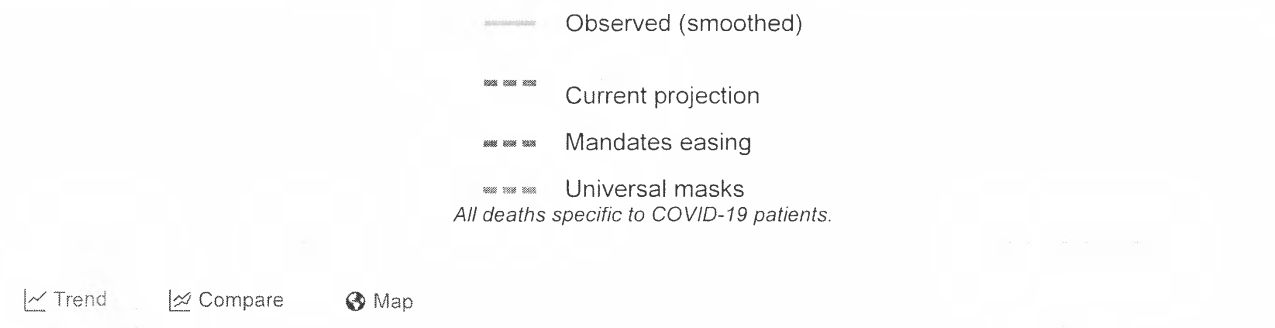
Daily deaths

Daily deaths is the best indicator of the progression of the pandemic, althou…   ∨

Scenario ⓘ

Projection   Easing   Masks   ∨

All deaths specific to COVID-19 patients.

~ Trend   ⌁ Compare   🌐 Map

Daily infections and testing

R.A. 650

Estimated infections are the number of people we estimate are infected wit... ∨

| Estimated infections | Confirmed infections | Tests |

Scenario ⓘ

| Projection | Easing | Masks | ∨ |

- Current projection
- Mandates easing
- Universal masks
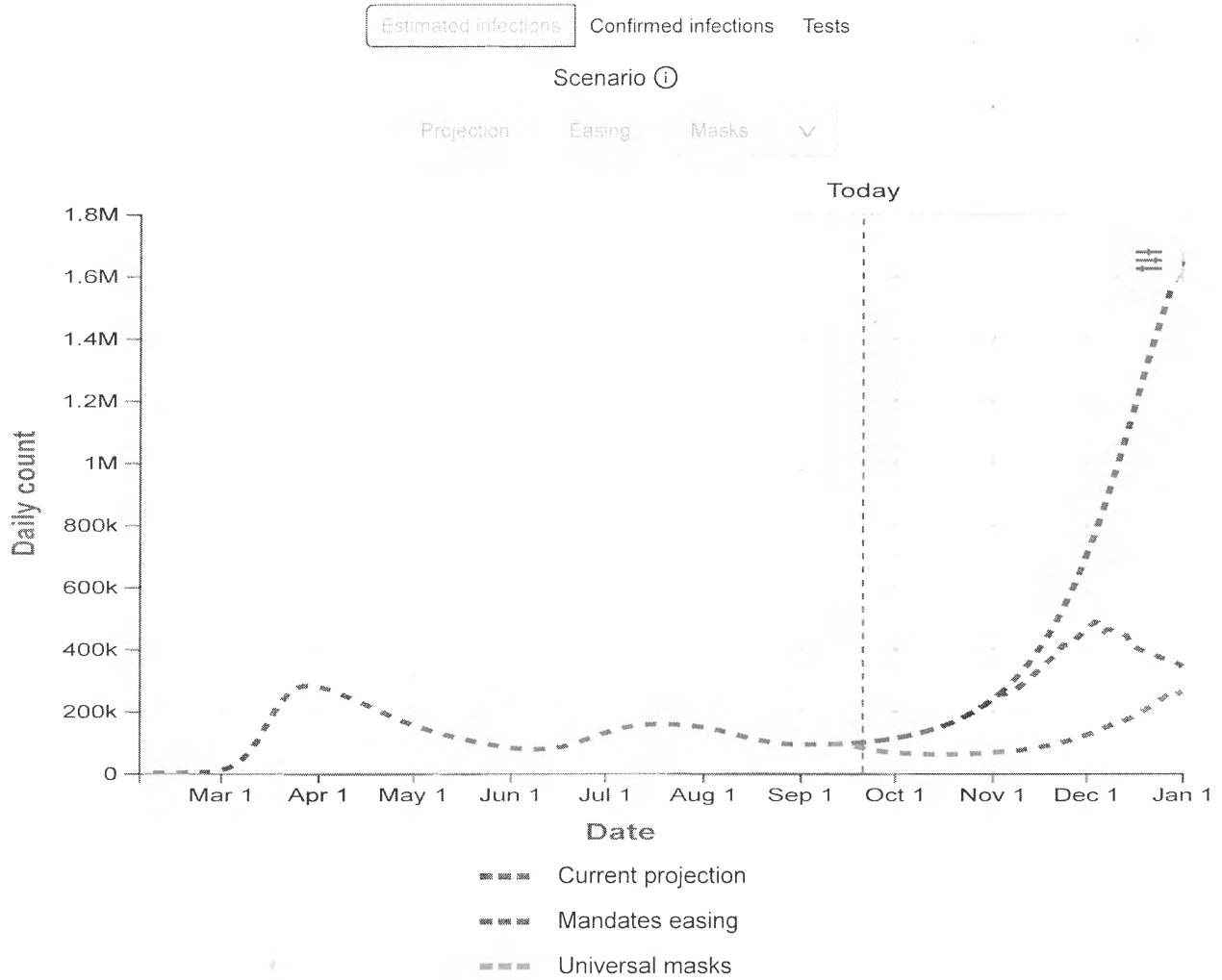
� Trend   � Compare   🌐 Map

Hospital resource use

Hospital resource use indicates how equipped a location is to treat COVID-19... ∨

| All resources | All beds | ICU beds | Invasive ventilators |

R.A. 651

All beds needed (Current projection)

ICU beds needed (Current projection)

Invasive ventilators needed (Current projection)

All resources specific to COVID-19 patients.
Shaded area indicates 95% uncertainty interval. ⓘ

Trend   Compare   Map
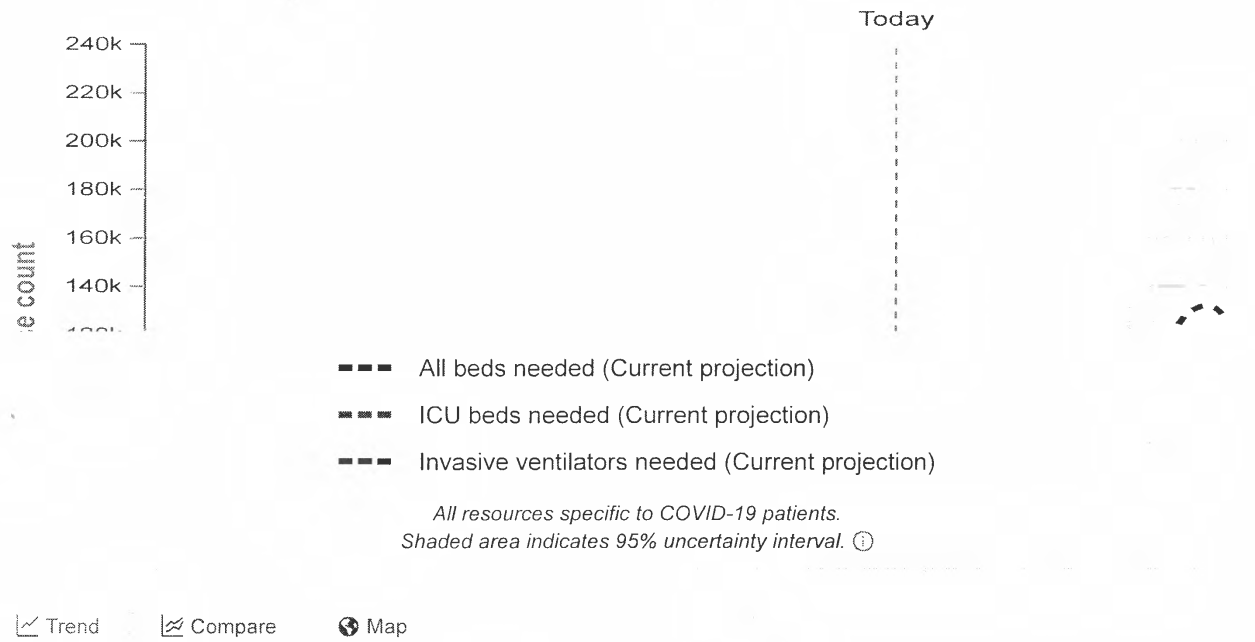
Mask use

Mask use represents the percentage of the population who say they always ... ∨

Scenario ⓘ
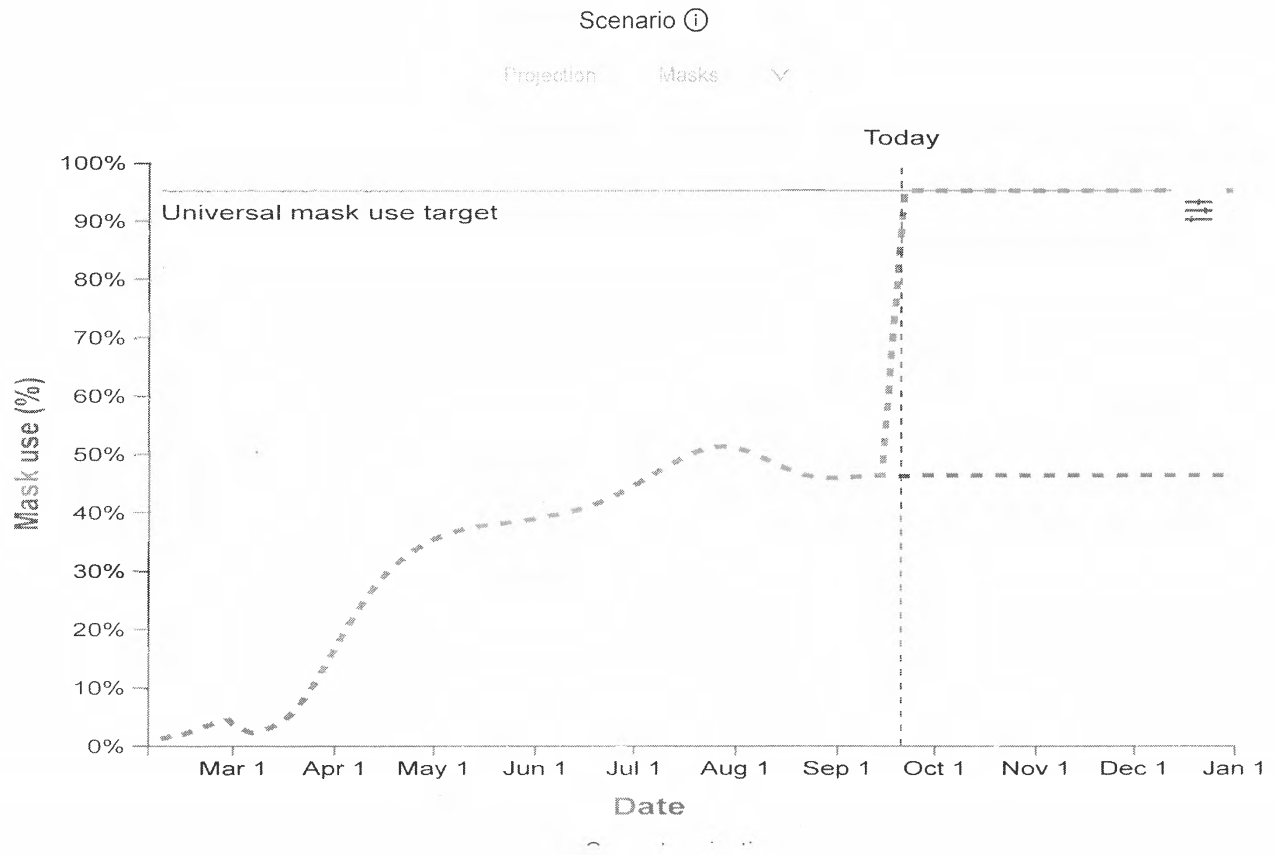
Projection   Masks   ∨

Current projection
Universal masks

Data sources: Premise; Facebook Global symptom survey (This research is based on survey results from University of Maryland Social Data Science Center.); Kaiser Family Foundation; YouGov COVID-19 Behaviour Tracker survey.

Trend   Compare   Map

Social distancing

Reducing human contact (as measured by cell phone **mobility** data) can driv... ∨

Scenario ⓘ

Projection   Easing   Masks   ∨

Observed
Current projection
Mandates easing
Universal masks
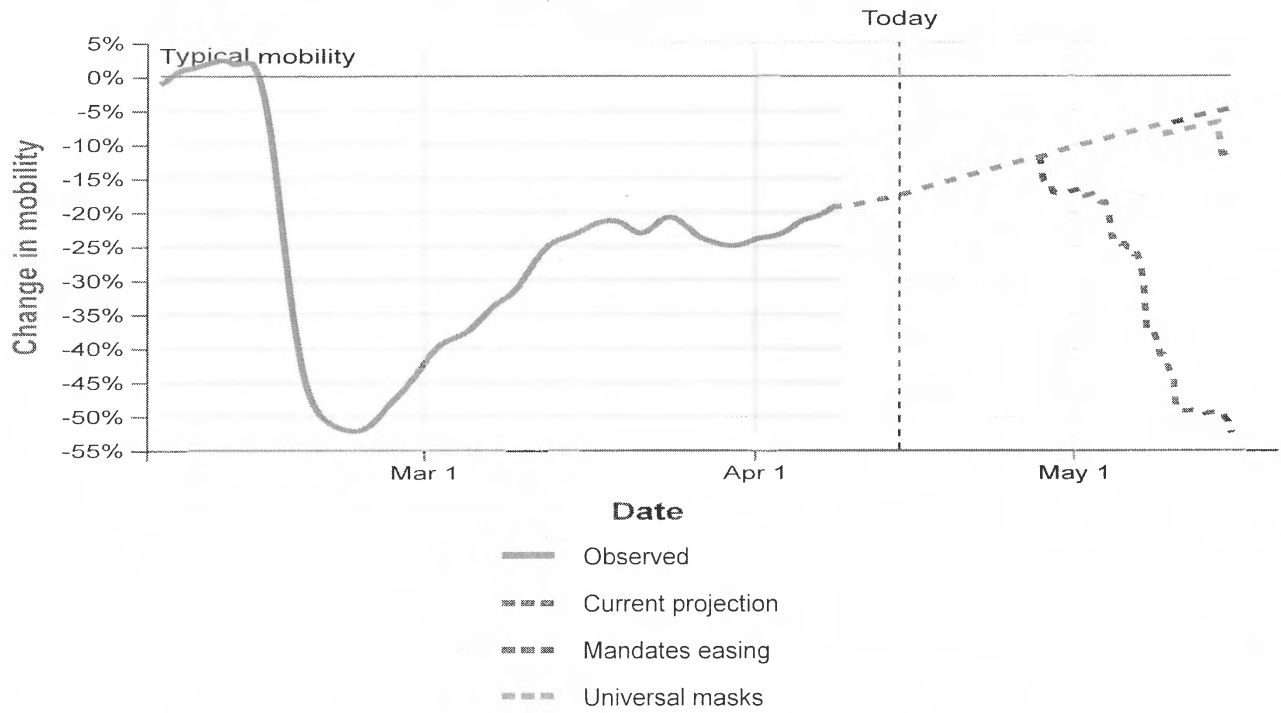
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Institute for Health Metrics and Evaluation
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R.A. 653

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Coronavirus second wave: Which countries in Europe are experiencing a fresh spike in COVID-19 cases?

COMMENTS(#SPOTIM-LAUNCHER-WIDGET-1171300)

By **Mathieu Pollet** (https://twitter.com/plt_mathieu) • last updated: 22/09/2020 - 13:03

Workers of a nursing home "DomusVi Arturo Sona" hold a minute of silence in support of the social and health sector and its workers in Madrid, Spain - Copyright AP Photos (#)

Countries across Europe are seeing a resurgence in COVID-19 cases after successfully slowing outbreaks early in the year.

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RELATED • Coronavirus: Europe must prepare for rise in COVID-19 deaths in October and November, warns WHO (https://www.euronews.com/2020/09/14/coronavirus-europe-must-prepare-for-rise-in-covid-19-deaths-in-october-and-november-warns-)

Some countries — such as Albania, Bulgaria, Czech Republic, Montenegro, North Macedonia — are seeing higher case numbers in August than they did earlier in the year.

Belgium, Italy and the UK — among Europe's worst-hit countries — are seeing a resurgence but, so far at least, nothing like March and April. Of the three, the UK's figures look the most worrying. It registered 4,368 cases yesterday.

France, Poland, the Netherlands and Spain are likely dealing with the much-feared second wave and have started taking action to curb it. France, for example, declared 13,498 new cases on Saturday and the Netherlands 2,215 yesterday — the highest figures they have recorded.

RELATED • Coronavirus: France sets another daily record for infections with 13,500 new COVID-19 cases (https://www.euronews.com/2020/09/19/coronavirus-france-sets-another-daily-record-for-infections-with-13-500-new-covid-19-cases)

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"We have a very serious situation unfolding before us," said Dr Hans Kluge, the World Health Organization's regional director for Europe, on Thursday. He was speaking as he revealed Europe's number of weekly infections was higher now than at the first peak in March.

RELATED • WHO warns of 'serious' COVID-19 surge in Europe as global cases pass 30 million (https://www.euronews.com/2020/09/17/who-warns-weekly-covid-19-infections-in-europe-are-now-higher-than-the-first-peak-in-march)

While on the face of it infection numbers might be higher, it could be accounted for by the increase in testing - many countries didn't have the capacity to carry out tests in such a high volume earlier in the year.

*ECDC Methodology

The European Centre for Disease Prevention and Control reports the number of deaths by the date of report whereas the national authorities may report deaths by date of death. Some countries also chose not to report deaths over the weekends and may proceed to minor rectifications afterwards. It may lead to minor discrepancies regarding the dates of the report.

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8th death linked to wedding outbreak; 'Big Papi' had COVID

September 19, 2020 GMT

BOSTON (AP) — A look at developments related to the coronavirus in New England on Saturday.

MAINE

Disease Control and Prevention said Saturday.

The wedding and reception in the Millinocket area on Aug. 7 is linked to more than 270 cases of COVID-19, resulting in an outbreak at a nursing home in Madison and a jail.

The Maine CDC said Saturday that the number of deaths related to an outbreak at the Maplecrest Rehabilitation and Living Center in Madison is now seven.

In other developments, the number of coronavirus cases at a Rumford paper mill has increased to 18, the company said Friday.

ND Paper mill has said it was testing the more than 600 workers.

In March, the company said it implemented stringent requirements for employees and added a mask mandate in May, WMTW-TV reported.

The head of the union that represents the workers has urged all community members to follow protocols to limit the spread of the virus.

"You're killing us. You're putting me and everybody else out of work. Not just in the mill but in the community, and people are gonna die," Gary Hemingway said. "It's not funny. You don't want to wear a mask, you're the idiot, but you're hurting us."

___

MASSACHUSETTS

Retired Boston Red Sox player David Ortiz says he's recovering after being diagnosed with COVID-19.

AP NEWS

Yankees on Friday.

"This is no joke," Ortiz said. "You don't realize how crazy this is until it hits home. And I learned so much about this COVID-19 thing while I was going through the process. It's an experier   )e honest with you."

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RHODE ISLAND

City officials are thanking the Providence College administration for taking quick action after a surge of about 120 new coronavirus cases among students.

Rev. Kenneth Sicard, the school's president, announced Friday that the private Roman Catholic college was moving to remote-only learning for at least two weeks. Students who live off campus cannot leave their apartments, and students who live on campus are not allowed to leave campus, with gatherings of any kind are banned, he said.

The college has been in constant contact with the Health Department and city of Providence since the incident started, said Providence Mayor Jorge Elorza and Providence City Council majority leader Jo-Ann Ryan.

"We all have a role to play in keeping our community safe, including the student population that live in close quarters," they said in a written statement. "That's why it is so important for our student population to adhere to social distancing mandates and the number of people that can gather at any one time. To not only keep themselves safe, but the residents that live around and work on the campus."

———

Center so legislators can follow COVID-19 guidelines for social distancing.

Speaker Steve Shurtleff said he learned that some representatives were drinking beer in the hall after the Wec   y's meeting and others were outside the center without wearing marks, which vi   the ordinances of the town and school, WMUR-TV reported.

——

CONNECTICUT The University of Connecticut on Saturday placed a second dormitory under medical quarantine after several students tested positive for the coronavirus.

UConn officials notified all 96 residents of the Willard C. Eddy residence hall that they were being placed under medical quarantine as of 4 p.m. Saturday because four students living in the dorm tested positive for the virus over the past week.

UConn officials said 28 students living in Eddy were already in quarantine or isolation.

Nearly 150 UConn students living on the main campus have tested positive for the virus since returning to Storrs last month.

——

VERMONT

Vermont reported two new cases of the coronavirus on Saturday for a statewide total to date of 1,710 since the pandemic began. Two people were currently in the hospital with COVID-19, the Health Department said. The total number of deaths remained at 58.

EXHIBIT RRR

Anatomy of an outbreak: Church revival blamed for many of rural county's COVID-19 cases

By Rachel Needham | Rappahannock News
Aug 29, 2020

Massanova Pentecostal Church

Many of Rappahannock County's 49 cases of COVID-19 and both deaths can be traced to the Massanova Pentecostal Church in Castleton and a week-long revival held there in late June, according to Virginia Department of Health documents.

The Rappahannock News received copies of dozens of internal emails from the VDH from a source who obtained them after filing a Freedom of Information Act request for all communications related to the outbreak at Massanova Pentecostal Church.

EXCERPTS FROM VIRGINIA DEPARTMENT OF HEALTH EMAILS
After its pastor died, Massanova Pentecostal Church initially wanted to hold a large funeral service.
That raised concerns from Virginia Department of Health epidemiologist Daniel Ferrell.

Yikes, this is a mess all the way around. I would not recommend a gathering of 4-500 and I believe such a gathering is still not currently allowed. They may want to set up shifts or multiple dates and times to cut down the overall number of folks in attendance. We need to figure out what funeral home will be having the service. Let me ask my regional epi for more guidance on how they should proceed.

Emails, obtained through a FOIA request, between state and local health officials describe the revival in late June at a Castleton church, which attracted large gatherings and led to COVID-19 cases in multiple counties. (Note: One of the emails mistakenly located the church in Fauquier County.)

A patient returned my call this evening, and her one investigation turned into 3 investigations! Herself, her husband and her son... They are apparently part of a large outbreak that originated in Fauquier County. They attended a large church revival on a daily basis from 6/21 thru 6/30. The daily gatherings (of 50-100 people each day), were held at their church near Warrenton. Massanova Pentecostal Church- Address- 691 Aaron Mountain Rd. Castleton, VA 22716. Pt states that there were attendees there from multiple churches besides her own, including churches from Bealeton, Stephens City, Winchester, and Prince William Cty. She states that the pastor from the Bealeton church told his members not to attend, as they had known positive cases within their congregation, but they came out anyway!

I spoke to another case (VEDSS [redacted]) that was present at the Massanova Pentecostal revival. Apparently the Revival started when a traveling pastor arrived on June 21. The Revival went on for over a week, from about June 21 to June 30, with events every night. Apparently few people were wearing masks or following the 6-feet distancing guideline.

Excerpts from Virginia Department of Health emails (click to enlarge).

Between June 21 and June 30, the church hosted 50 to 100 worshipers "from multiple churches … including churches from Bealeton, Stephens City, Winchester, and Prince William City," according to health department communications.

Wrote one health official in an email, "the pastor from the Bealeton church told his members not to attend [the revival], as they had known positive cases within their congregation, but they came anyway! There were no masks or social distancing during the gatherings."

By June 30, the VDH had linked the first case of COVID-19 to the revival at Massanova.

A week later, on July 8, COVID-19 case investigator Daisy Banta sent an email to Rappahannock Rapidan District epidemiologist Daniel Ferrell saying she had found "another case that came into contact with Massanova Pentecostal Church. The case and their three children all tested positive. The case told me their partner also tested positive."

Banta then asked Ferrell: "Is this officially considered an outbreak?"

Indeed it was.

That same day, Ferrell gave the Massanova outbreak an official identification number, reporting that at least 15 residents and two Massanova Pentecostal Church staff members had tested positive for the SARS-CoV-2 antigen.

Ferrell immediately recommended closing the church, conducting a deep cleaning and suspending services for two weeks. Massanova complied.

R.A. 666

The following week, Ferrell sent an email to Trish Bair, VDH northwest regional epidemiologist, and Denise Sockwell, the Northern Virginia regional epidemiologist. He wrote:

"We are currently sitting at 3 confirmed and 19 probable cases (Ag [antigen] tests). 1 death in a Rappahannock resident and [redacted] is now hospitalized in Culpeper. We were not aware that there were other churches in attendance at the week-long revival. After the first couple of cases surfaced it became difficult to get additional information out of the head pastor."

Within days, Massanova's pastor, Rev. Lindsey D. Savage, died.

The mourning church wanted to hold a funeral where, according to environmental health specialist Medge Carter, "there could be as many as 4-500 people."

In an email to Ferrell, Carter wrote that Massanova's new pastor, Kelsey Villines, suggested "having all the people who have tested positive sit on one side of the church, and those who had not had COVID or a positive test sit on the other side" reasoning that half the congregation had recovered from the virus.

"Yikes," Ferrell wrote back. "This is a mess all the way around. I would not recommend a gathering of 4-500 and I believe such a gathering is still not currently allowed."

After several back-and-forth exchanges between Villines, Carter and Ferrell, it was agreed that the funeral could take place at Bible Holiness Church in Elkton and that as many related events as possible would be held outdoors.

Massanova Pentecostal Church is moving forward. The church resumed services in early August, requiring masks to be worn and social distancing to be practiced, under the guidance of Ferrell and Carter. Villines said they blocked off certain pews to encourage spacing and made hand sanitizer widely available.

"We're doing our best," Villines told the Rappahannock News. "The majority of our congregation has already had COVID … I think around 32 people in our church tested positive … [so] we're all hopefully carrying antibodies and we can't get it again."

Yet, Villines said they have relaxed the mask requirement and that today not all of the church-goers wear masks during service "because the Governor didn't mandate masks for ritual service. But we complied with the health department because they wanted us to wear masks for up to two weeks

and evaluate us. And we have done that."

Farrell said Tuesday that "even though there were a large proportion of individuals that have tested positive and recovered, I would still say they're still susceptible to getting infected." He stressed that worshipers should still continue to wear masks when six feet of social distance cannot be achieved, and especially while singing.

MORE INFORMATION

New COVID-19 cases down slightly from recent days in Northern Virginia, statewide

EXHIBIT SSS

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After Philly's first church-linked COVID-19 outbreak, pastors urge prayers for the sick

by Aubrey Whelan and Ellie Silverman, Updated: August 21, 2020

YONG KIM / STAFF PHOTOGRAPHER

Editor's Note

News about the coronavirus is changing quickly. The latest information can be found at
inquirer.com/coronavirus

In the first outbreak of COVID-19 traced to a place of worship in Philadelphia, a dozen congregants at a church in the Northeast have tested positive for the virus, the city's health department said Thursday.

After restricting services to online-only since March, CityReach Philly in Tacony resumed in-person worship in July. Within less than a month, a church member began exhibiting symptoms, health officials said.

Soon after that early August diagnosis, contact tracers from the health department noticed a cluster of positive COVID-19 tests in the church's zip code, and eventually traced the outbreak to CityReach. Besides the 12 congregants who have contracted the virus, 14 people have been identified as having come into contact with them. The 12 live in seven households.

CityReach halted in-person services again on Aug. 13, Senior Pastor Mark Novalés said in a statement Wednesday. Novalés declined multiple interview requests, saying he did not trust reporters to accurately quote him. Parishioners contacted on social media, some of whom posted about being sick with COVID-19, did not respond to requests for comment.

In a prayer meeting streamed on Facebook Live on Thursday night, church leaders acknowledged the unwelcome attention.

"CityReach church, what we want to see all over the media is, 'Jesus is the answer to our problems,'" Pastor Wanda Novalés, Mark Novalés' wife, said. "Wouldn't you love to see that in The Inquirer?"

CityReach Philly
about 2 months ago
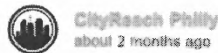
One moment in God's presence can change everything. Join us tonight at 7pm as we press in God through prayer and worship. We will also be celebrating the launch of our Evangelism ministry. You don't want to miss this, see you soon!

10   2   4

The small church in a former storefront on Torresdale Avenue has become part of a nationwide pandemic trend, as some houses of worship that closed or went virtual during the early days of the pandemic and then reopened for in-person services are now seeing cases spread among congregants.

EXHIBIT TTT

68°

TOP STORIES

Chemung County releases new details in Lighthouse Baptist Church COVID-19 cluster death

by: George Stockburger

Posted: Sep 17, 2020 / 12:02 PM EDT / Updated: Sep 17, 2020 / 03:42 PM EDT

HORSEHEADS, N.Y. (WETM-TV) – Officials in Chemung County say that a 76-year-old man has died after a cluster of COVID-19 cases connected to Lighthouse Baptist Church broke out.

County Executive Chris Moss tell 18 News that the person was not a member of the church, but they are related to someone who recently attended a service.

> *We regret to inform you that one of our citizens, an 76 year old male, has passed away as a result of a COVID-19 infection. We want to send our condolences to the individual's family and friends.*

On Tuesday 18 new cases of COVID-19 had been connected to Lighthouse Baptist Church in Horseheads, according to Chemung County Public Health Director Peter Buzzetti.

There are currently 40 Chemung County residents connected to the church who have contracted the virus. Steuben County has reported one case as of Monday afternoon and on Friday Schuyler County was at two cases connected to the church.

On Friday, the Steuben County Public Health Department reported that there were 45 total cases, but that number is believed to have gone up since then.

68°

tested on Wednesday and more than half tested positive, according to Chemung County Executive Chris Moss.

Last week Chemung County announced that 80 people may have come in contact with those infected and all 80 voluntarily quarantined.

Officials added that several members of the church who tested positive attended a wedding in another county. It's unknown where the cluster started, according to Buzzetti, who called the situation "pretty concerning from a community transmission standpoint."

18 News has reached out to the church for comment but have not heard back at this time.

Anyone who attended the church for any events (services, bible study, etc.) between August 18 and September 6 should:

- Get tested for COVID-19. Anyone who visited the church is encouraged to visit a testing site and provide current identification · https://coronavirus.health.ny.gov/find-test-site-near-you to find another testing location.
- Those tested are required to quarantine for 14 days from the test date. Stay home and limit contact with others. If you must be in the same room as someone else, wear a mask and keep your distance. School age children and school staff who attended during this time period should not attend school in person.
- Monitor yourself for COVID-19 symptoms. If you develop symptoms at any point during the 14-day period, get tested – even if you already tested negative earlier in your self-quarantine.

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EXHIBIT UUU

R.A. 675

Covid
ActNow

New Jersey

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COVID RISK LEVEL

Slow disease growth

☐ COVID in New Jersey is spreading in a slow and controlled fashion, and New Jersey's COVID preparedness meets international standards.

NEW FEATURE

Explore COVID Trends. View raw case, death, and hospitalization data for New Jersey and compare it against other locations in our new Trends chart.
See it below

DAILY NEW CASES
COVID not contained, but at low levels   **5.1** PER 100K

INFECTION RATE
COVID is still spreading, but slowly   **1.09**

POSITIVE TEST RATE
Indicates widespread testing   **1.7%**

ICU HEADROOM USED
Can likely handle a new wave of COVID   **10%**
Beta

TRACERS HIRED
Insufficient tracers, even if the program is run effectively   **81%**
Beta

Updated September 22, 2020

Compare

Save   Share

COUNTIES IN NEW JERSEY

Counties
Metro & Non-metro ⌄

COUNTY POPULATION	DAILY NEW CASES	INFECTION RATE	POSITIVE TEST RATE	ICU HEADROOM USED	TRACERS HIRED

R.A. 676

9/22/2020   New Jersey (NJ) - America's COVID Warning System - Covid Act Now

1	● Ocean Co. 610,000	●	**12.8**	●	1.23	---	●	10%	---
2	● Gloucester Co. 290,000 **College**	●	**12.1**	●	1.12	---	●	13%	---
3	● Monmouth Co. 620,000	●	**7.5**	●	1.16	---	●	4%	---
4	● Salem Co. 62,000	●	**7.1**	●	0.96	---	●	0%	---
5	● Burlington Co. 450,000	●	**6.4**	●	1.08	---	●	12%	---
6	● Camden Co. 510,000	●	**6.3**	●	1.07	---	●	10%	---

Displaying **6** of **21**

View all counties in New Jersey

FAQ ⊘

R.A. 677

Daily new cases per 100k population
NEW JERSEY

Over the last week, New Jersey has averaged 455 new confirmed cases per day (**5.1** for every 100,000 residents). Over the next year, this translates to around 170,000 cases and an estimated 830,000 infections (9.4% of the population).

Save   Share

Last updated 9/22/2020. Our risk levels for daily new cases are based on the "Key Metrics for Covid Suppression" by Harvard Global Health Institute and others.
When estimating the number of people who will become infected in the course of a year, we rely on the CDC's estimate that confirmed cases represent as few as 10% of overall infections. Learn more about our methodology and our data sources.

R.A. 678

Infection rate

NEW JERSEY

On average, each person in New Jersey with COVID is infecting 1.09 other people. Because this number is around 1.0, it means that COVID continues to spread, but in a slow and controlled fashion.

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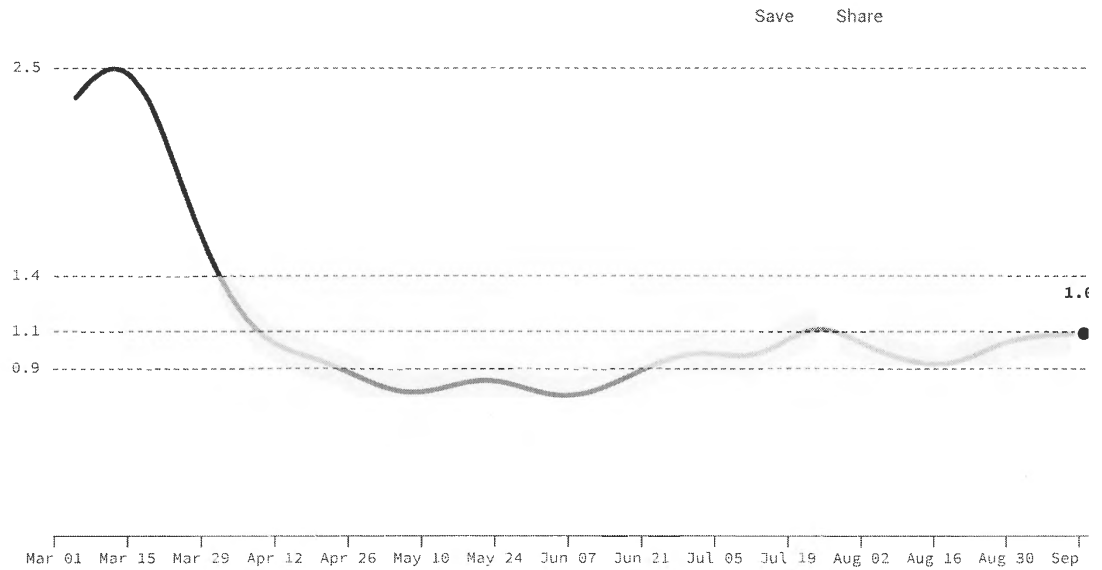
Last updated 9/22/2020. Each data point is a 14-day weighted average. We present the most recent seven days of data as a dashed line, as data is often revised by states several days after reporting. Learn more about our methodology and our data sources.

R.A. 679

Positive test rate

NEW JERSEY

A low percentage (1.7%) of COVID tests were positive, which suggests enough widespread, aggressive testing in New Jersey to detect most new cases. Identifying and isolating new cases can help contain COVID without resorting to lockdowns.

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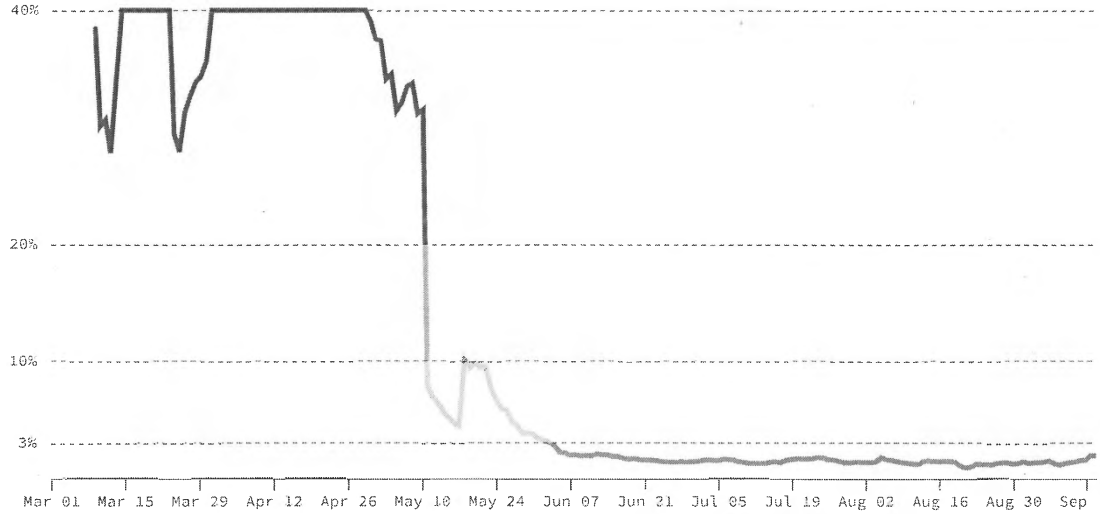
Last updated 9/22/2020. The World Health Organization recommends a positive test rate of less than 10%. The countries most successful in containing COVID have rates of 3% or less. We calculate the rate as a 7-day trailing average. Learn more about our methodology and our data sources.

R.A. 680

ICU headroom used   Beta

NEW JERSEY

New Jersey has about 833 ICU beds. Based on best available data, we estimate that -3% (-27) are currently occupied by non-COVID patients. Of the 860 ICU beds remaining, 87 are needed by COVID cases, or 10% of available beds. This suggests there is likely enough capacity to absorb a wave of new COVID infections.

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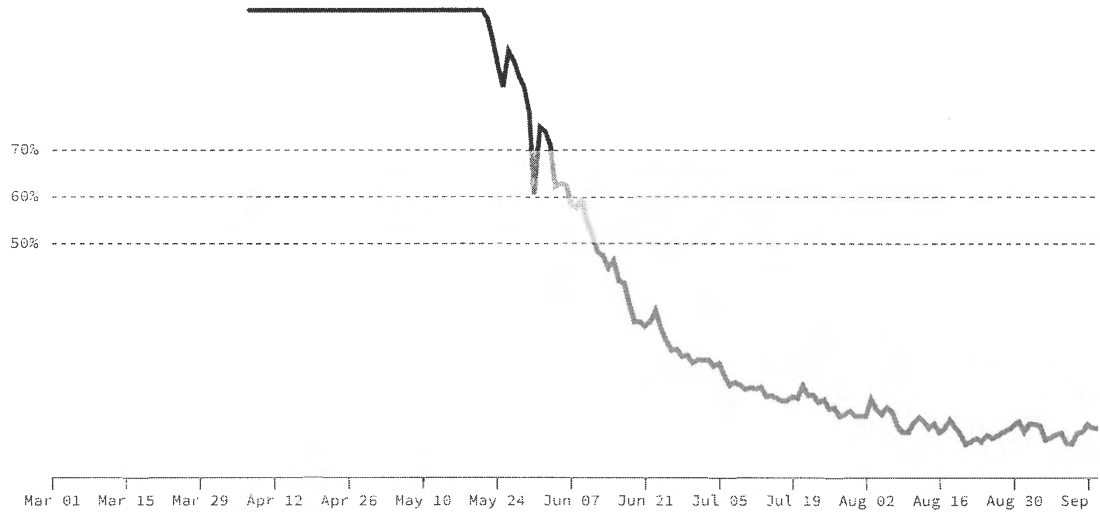
Last updated 9/22/2020. Resolve to Save Lives, a pandemic think tank, recommends that hospitals maintain enough ICU capacity to double the number of COVID patients hospitalized. Learn more about our methodology and our data sources.

R.A. 681

New Jersey (NJ) - America's COVID Warning System - Covid Act Now

Tracers hired   Beta

NEW JERSEY

With 455 new daily cases on average, New Jersey needs an estimated 2,275 contact tracers on staff to trace each new case to a known case within 48 hours of detection. Per our best available data, New Jersey has 1,835 contact tracers, fulfilling 81% of this staffing requirement. With insufficient contact tracing staff, New Jersey is unlikely to be able to successfully identify and isolate sources of disease spread fast enough to prevent new outbreaks.

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Mar 01 Mar 15 Mar 29 Apr 12 Apr 26 May 10 May 24 Jun 07 Jun 21 Jul 05 Jul 19 Aug 02 Aug 16 Aug 30 Sep
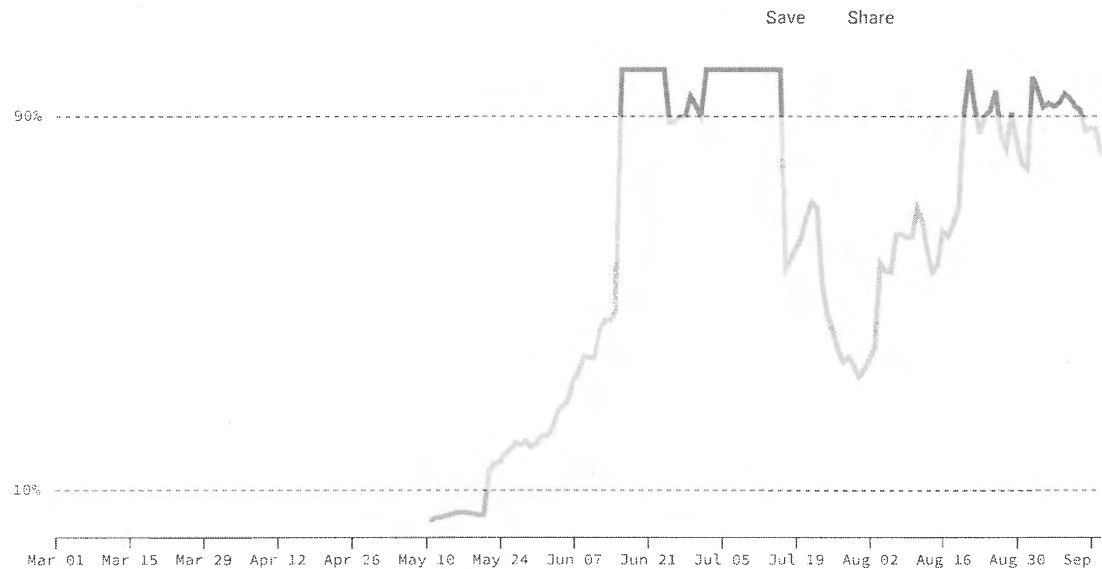
Last updated 9/22/2020. Experts recommend that at least 90% of contacts for each new case must be traced within 48 hours in order to contain COVID. Experts estimate that tracing each new case within 48 hours requires an average of 5 contact tracers per new case, as well as fast testing. Learn more about our methodology and our data sources (for contact tracing data, we partner with testandtrace.com). Learn about recent changes to how we assess contact tracing. We know that measuring contact tracing capacity solely by the number of staff is not reliable, and we are working on a more accurate metric to assess contact tracing capacity.

Trends

CASES IN NEW JERSEY.

Save   Share

Cases   Deaths   Hospitalizations   ICU Hospitalizations

COMPARE STATES OR COUNTIES

Cases   ▬ 7 Day Average

R.A. 682

New Jersey (NJ) - America's COVID Warning System - Covid Act Now
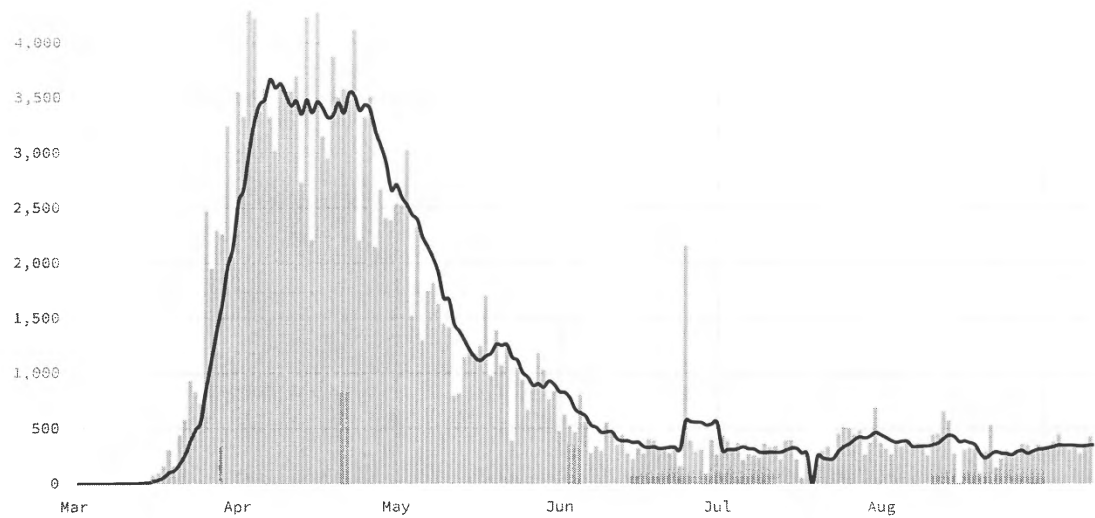
Last updated 9/22/2020. Learn more about our data sources.

CovidActNow.org

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R.A. 683

EXHIBIT VVV

Centers for Disease
Control and Prevention

Coronavirus Disease 2019 (COVID-19)

CDC COVID Data Tracker

Maps, charts, and data provided by the CDC

Case Trends ▼   Laboratory ▼   Community Impact ▼   Unique Populations ▼

COVID-19 Home

Cases and Deaths by State

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Trends in ED Visits

United States COVID-19 Cases and Deaths by State

Reported to the CDC since January 21, 2020

USA

6,825,6

TOTAL CASES

+39,345
New Cases

USA
Updated:
Sep 22 2020

199,46

TOTAL DEATHS

+438 New
Deaths

CDC |
Updated:

Cases in Last 7 Days	Total Cases	Cases per 100,000	Deaths in Last 7 Days	Total Deaths

COVID-19 Case Rate in the US Reported to the CDC, by State/Territory (cases per 100,000)

CDC COVID Data Tracker

Sep 22 2020
12:16PM

USA

2,063

**Cases per
100,000
People**

Case Rate by CDC |
State/Territory

Sep 22 2020
State/Terr.

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View
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Death
Data

Data Sources, References & Notes: Total cases are based on aggregate counts of COVID-19 cases reported by state and territorial jurisdictions to the Centers for Disease Control and Prevention (CDC) since January 21, 2020, with the exception of persons repatriated to the United States from Wuhan, China, and Japan. The numbers are confirmed and probable COVID-19 cases as reported by U.S. states, U.S. territories, New York City, and the District of Columbia from the previous day. *Counts for New York City and New York state are shown separately; data for New York State show total cases and deaths for the State excluding data for NYC. When not available to CDC this is annotated by N/A. Rates are calculated using U.S. Census Bureau, 2018 American Community Survey 1-year estimates and are shown as cases/100,000 people. The map shows total cases per state, new cases in the last 7 days per state, and the rate (cases/100,000) per state. The 7-day moving average of new cases (current day + 6 preceding days / 7) was calculated to smooth expected variations in daily counts. Demographic data for deaths is based on a subset of cases where case-level data is

R.A. 686

available. Case numbers reported on other websites may differ from what is posted on CDC's website because CDC's overall case numbers are validated through a confirmation process with each jurisdiction. Differences between reporting jurisdictions and CDC's website may occur due to the timing of reporting and website updates. The process used for finding and confirming cases displayed by other sites may differ.

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Cases and Deaths by State

US and State Trends   Compare State Trends   Demographics

Cases and Deaths by County   Forecasting   Trends in ED Visits

United States COVID-19 Cases and Deaths by State

Reported to the CDC since January 21, 2020

USA

6,825,697

TOTAL CASES

+39,345 New Cases

CDC | Updated:
Sep 22 2020
16 PM

USA

199,462

TOTAL DEATHS

+438 New Deaths

CDC | Updated:
Sep 22 2020
16 PM

USA

288,02

Cases in Last 7 Days

Cases Last 7 Days	Total Cases	Cases per 100,000	Deaths in Last 7 Days	Total Deaths	Dea pe 100

US COVID-19 Cases Reported to the CDC in the Last 7 Days, by State/Territory

Montana
Total Cases:
10,696
Cases in Last 7 days: 1,589
Cases/100K: 1,007
Deaths/100K: 15

R.A. 689

CDC COVID Data Tracker

CDC | Updated:
Sep 22 2020
12:16PM

Cases in Last 7 ⬇ ⤢

Days by

State/Territory ⌃

State/Territor ⌄

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CDC | Updated:
Sep 22 2020

View
Historic
Case
and
Death
Data

Data S___ ___ces & Notes: Total cases are based on aggregate counts of COVID-19 cases reported by state and territo____ ___ the Centers for Disease Control and Prevention (CDC) since January 21, 2020, with the exception of persor___ ___e United States from Wuhan, China, and Japan. The numbers are confirmed and probable COVID-19 cases ____ ___. states, U.S. territories, New York City, and the District of Columbia from the previous day. *Counts for New York City and New York state are shown separately; data for New York State show total cases and deaths for the State excluding data for NYC. When not available to CDC this is annotated by N/A. Rates are calculated using U.S. Census Bureau, 2018 American Community Survey 1-year estimates and are shown as cases/100,000 people. The map shows total cases per state, new cases in the last 7 days per state, and the rate (cases/100,000) per state. The 7-day moving average of new cases (current day + 6 preceding days / 7) was calculated to smooth expected variations in daily counts. Demographic data for deaths is based on a subset of cases where case-level data is available. Case numbers reported on other websites may differ from what is posted on CDC's website because CDC's overall case numbers are validated through a confirmation process with each jurisdiction. Differences between reporting jurisdictions and CDC's website may occur due to the timing of reporting and website updates. The process used for finding and confirming cases displayed by other sites may differ.

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Coronavirus Disease 2019 (COVID-19)

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COVID-19 Home

Cases and Deaths by State

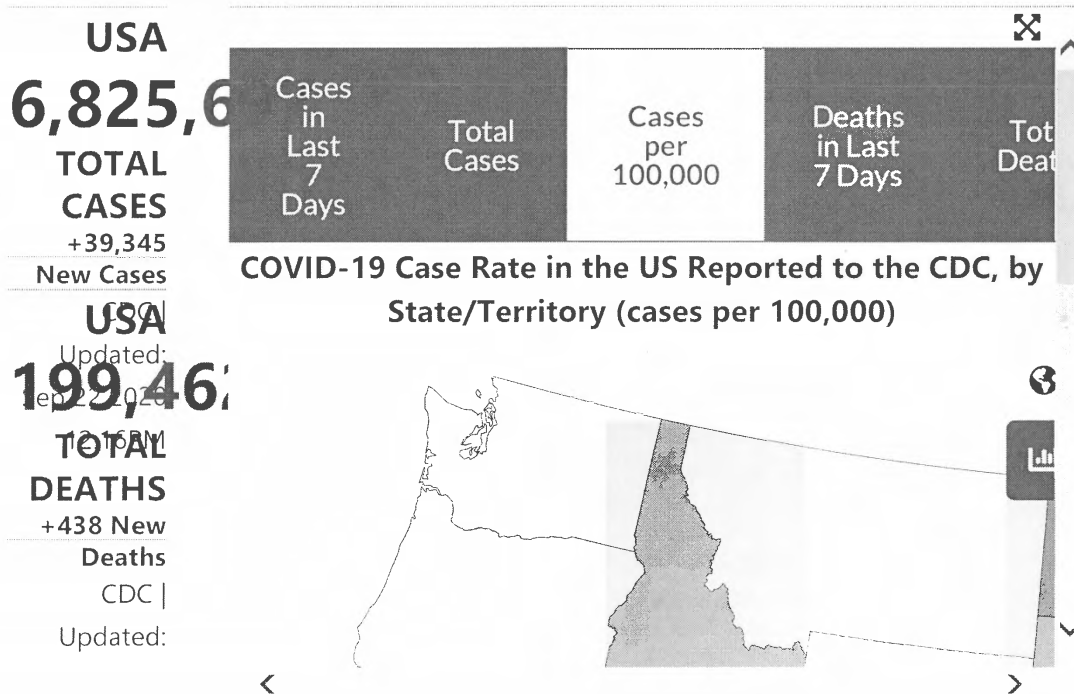US and State Trends   Compare State Trends

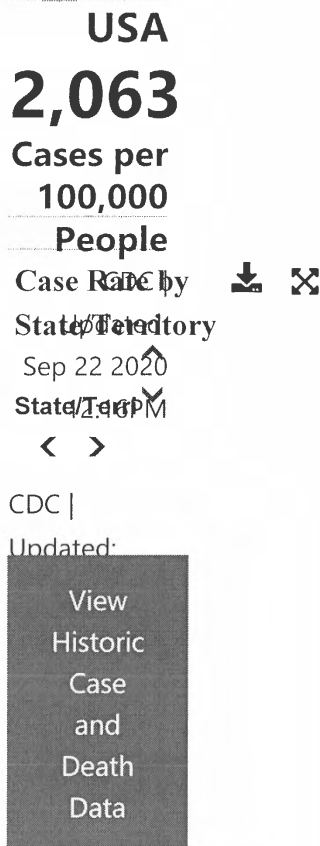Demographics   Cases and Deaths by County   Forecasting

Trends in ED Visits

United States COVID-19 Cases and Deaths by State

Reported to the CDC since January 21, 2020

USA

6,825,6

TOTAL CASES

+39,345
New Cases

USA

Updated:
Sep 22, 2020

199,46

TOTAL DEATHS

+438 New Deaths

CDC |
Updated:

Cases in Last 7 Days	Total Cases	Cases per 100,000	Deaths in Last 7 Days	Tot Deat

COVID-19 Case Rate in the US Reported to the CDC, by State/Territory (cases per 100,000)

Sep 22 2020
12:16PM

USA

2,063

Cases per 100,000 People

Case Rate by State/Territory

Sep 22 2020
State/Terr.

‹ ›

CDC |
Updated:

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R.A. 693

available. Case numbers reported on other websites may differ from what is posted on CDC's website because CDC's overall case numbers are validated through a confirmation process with each jurisdiction. Differences between reporting jurisdictions and CDC's website may occur due to the timing of reporting and website updates. The process used for finding and confirming cases displayed by other sites may differ.

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R.A. 694

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Coronavirus Disease 2019 (COVID-19)

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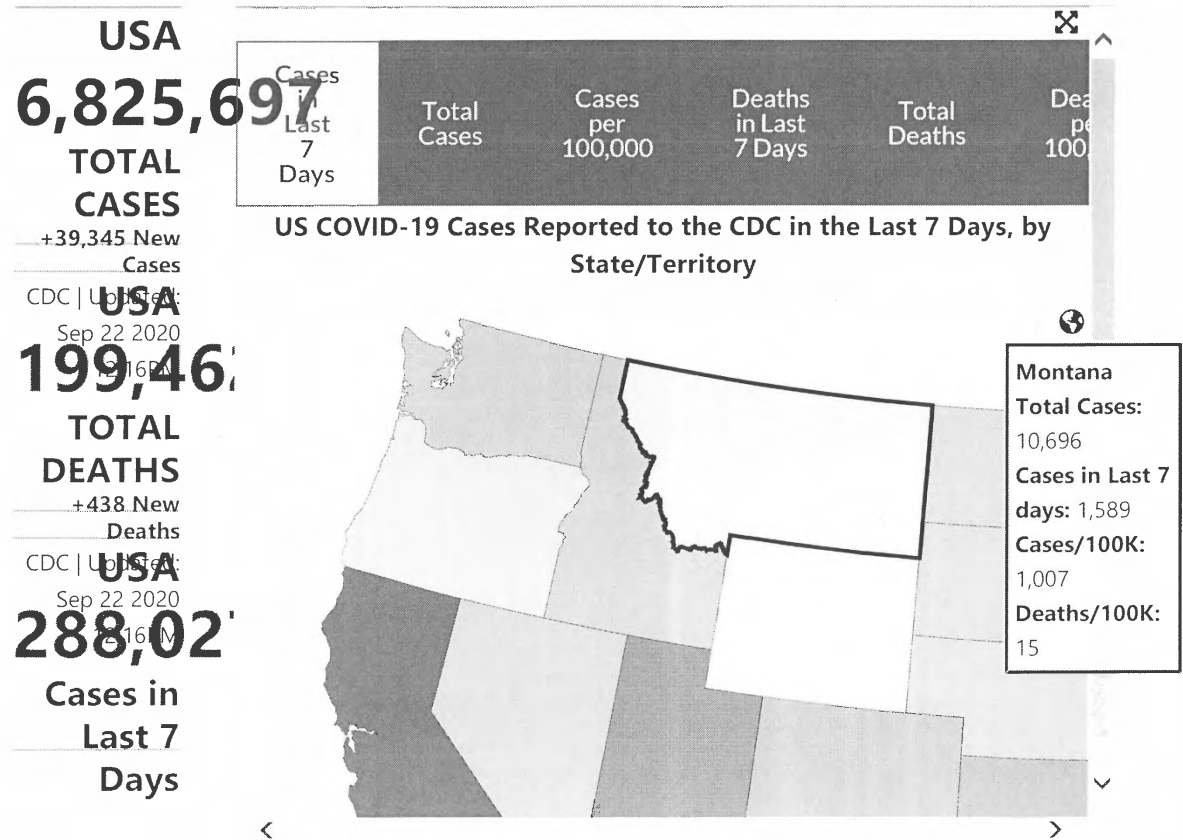Maps, charts, and data provided by the CDC

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United States COVID-19 Cases and Deaths by State

Reported to the CDC since January 21, 2020

USA

6,825,6

**TOTAL
CASES**

+39,345 New
Cases

CDC | Updated:
Sep 22 2020

USA

199,46

**TOTAL
DEATHS**

+438 New
Deaths

CDC | Updated:
Sep 22 2020

USA

288,02

**Cases in
Last 7
Days**

Total Cases by
CDC | Updated:
State/Territory
Sep 22 2020
State/Territory
12:16PM

California

< >

Cases in Last 7 Days	Total Cases	Cases per 100,000	Deaths in Last 7 Days	Total Deaths	Deaths per 100,000

Total Number of COVID-19 Cases in the US Reported to the CDC, by State/Territory

CDC COVID Data Tracker

CDC | Updated:
Sep 22 2020

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Historic
Case and
Death
Data

Data Sources, References & Notes: Total cases are based on aggregate counts of COVID-19 cases reported by state and territorial jurisdictions to the Centers for Disease Control and Prevention (CDC) since January 21, 2020, with the exception of persons repatriated to the United States from Wuhan, China, and Japan. The numbers are confirmed and probable COVID-19 cases as reported by U.S. states, U.S. territories, New York City, and the District of Columbia from the previous day. *Counts for New York City and New York state are shown separately; data for New York State show total cases and deaths for the State excluding data for NYC. When not available to CDC this is annotated by N/A. Rates are calculated using U.S. Census Bureau, 2018 American Community Survey 1-year estimates and are shown as cases/100,000 people. The map shows total cases per state, new cases in the last 7 days per state, and the rate (cases/100,000) per state. The 7-day moving average of new cases (current day + 6 preceding days / 7) was calculated to smooth expected variations in daily counts. Demographic data for deaths is based on a subset of cases where case-level data is available. Case numbers reported on other websites may differ from what is posted on CDC's website because CDC's overall case numbers are validated through a confirmation process with each jurisdiction. Differences between reporting jurisdictions and CDC's website may occur due to the timing of reporting and website updates. The process used for finding and confirming cases displayed by other sites may differ.

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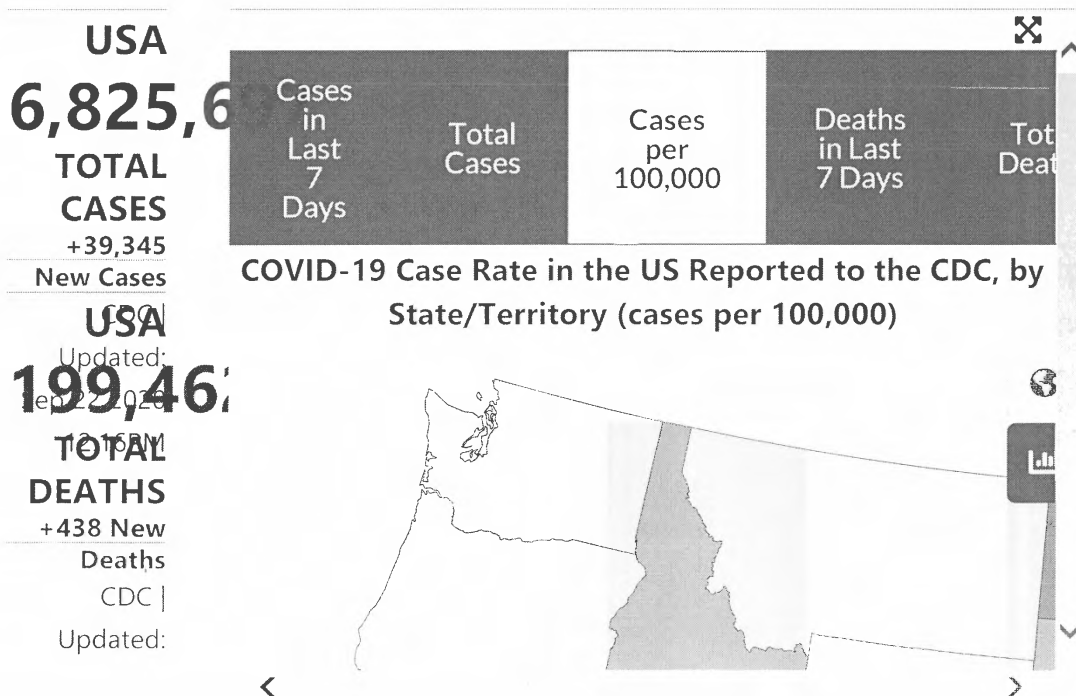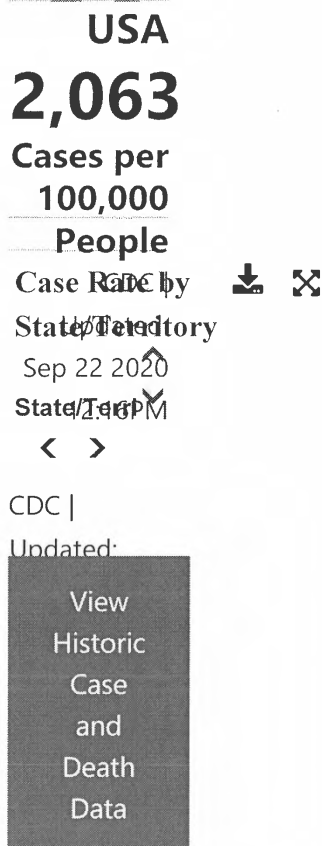Demographics   Cases and Deaths by County   Forecasting

United States COVID-19 Cases and Deaths
Trends in ED Visits
by State

Reported to the CDC since January 21, 2020

USA
6,825,697
**TOTAL
CASES**
+39,345
New Cases
CDC |
USA
Updated:
Sep 22, 2020
199,46
12:15PM
**TOTAL
DEATHS**
+438 New
Deaths
CDC |
Updated:

Cases in Last 7 Days	Total Cases	Cases per 100,000	Deaths in Last 7 Days	Tot Dea

US COVID-19 Cases Reported to the CDC in the Last 7 Days, by State/Territory
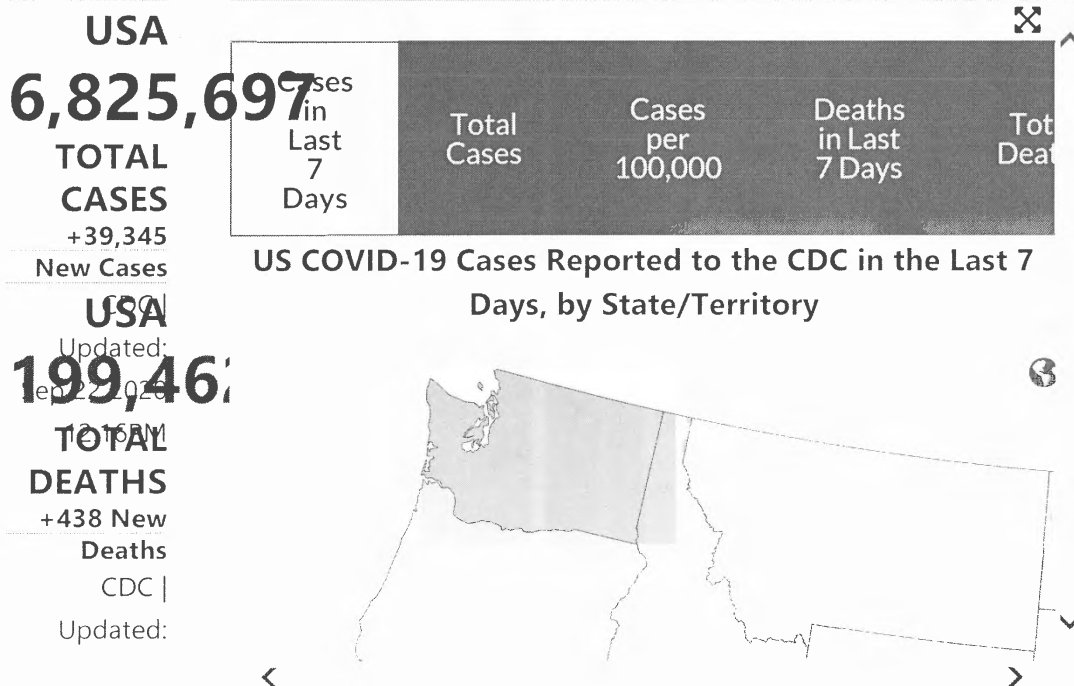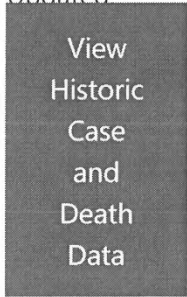
Sep 22 2020
12:16PM

USA

288,027

**Cases in
Last 7
Days**

Cases in Last 7
Days

State/Territory
State/Terr.

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Data Sources, References & Notes: Total cases are based on aggregate counts of COVID-19 cases reported by state and territorial jurisdictions to the Centers for Disease Control and Prevention (CDC) since January 21, 2020, with the exception of persons repatriated to the United States from Wuhan, China, and Japan. The numbers are confirmed and probable COVID-19 cases as reported by U.S. states, U.S. territories, New York City, and the District of Columbia from the previous day. *Counts for New York City and New York state are shown separately; data for New York State show total cases and deaths for the State excluding data for NYC. When not available to CDC this is annotated by N/A. Rates are calculated using U.S. Census Bureau, 2018 American Community Survey 1-year estimates and are shown as cases/100,000 people. The map shows total cases per state, new cases in the last 7 days per state, and the rate (cases/100,000) per state. The 7-day moving average of new cases (current day + 6 preceding days / 7) was calculated to smooth expected variations in daily counts. Demographic data for deaths is based on a subset of cases where case-level data is

R.A. 698

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Sep 16, 2020 - Health

CDC director suggests face masks offer more C(

Orion Rummler

CDC director Robert Redfield suggested in a Senate Appropriations subcommittee hearing on Wednesday that face masks are "more guaranteed" to protect against the coronavirus than a vaccine, citing the potential for some people to not become immune to the virus after receiving the shot.

What he's saying: "These face masks are the most important, powerful public health tool we have. And I will continue to appeal for all Americans, all individuals in our country, to embrace these face coverings. I've said if we did it for 6, 8, 10, 12 weeks, we'd bring this pandemic under control," he said.

- "I might even go so far as to say that this face mask is more guaranteed to protect me against COVID than when I take a COVID vaccine. Because the immunogenicity may be 70%, and if I don't get an immune response, the vaccine's not going to protect me. This face mask will."

The big picture: While face masks are one of the best COVID-19 mitigation strategies we currently have, a vaccine remains the best long-term solution. A number of coronavirus vaccines are now in phase 3 trials, including candidates from Oxford and Moderna that produced immune responses in tests this summer.

R.A. 701

- Wearing face masks "could result in a large reduction in risk of infection," according to a June review of 172 studies looking at the effectiveness of masks in reducing the spread of SARS-CoV-2 and other coronaviruses.

- Mask mandates in 15 states plus D.C. early in the pandemic may have helped to avert at least 230,000 coronavirus cases by May 22, according to a study published in *Health Affairs*.

What to watch: Redfield told the subcommittee that he believes there will be a "very limited supply" of a vaccine between November and December, and that "we're probably looking at late second quarter, third quarter of 2021" for widespread distribution.

- That's in line with comments from NIAID director Anthony Fauci, who has said he believes a coronavirus vaccine will be widely available to the public by late 2020 or early 2021 — allowing the U.S. and other countries to get back to "a degree of normality."

The vast majority of people in the U.S. and U.K. worry that the pandemic will deepen inequality for students, reports Pearson's Global Learner Survey.

The reason: Those surveyed agreed – 87% in the U.S. and 88% in the U.K. – that it's up to schools to do more to address inequality.

Get the details.

% who agree schools should address inequality

88%

87%
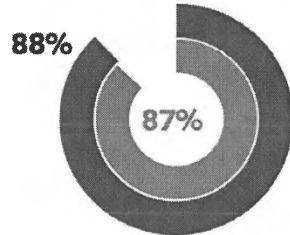
% who believe the pandemic will deepen inequality

72%

73%
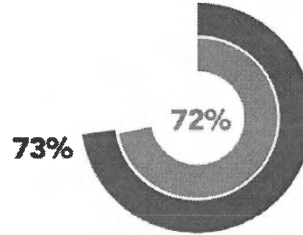
Data: Pearson/Harris   US   UK

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Masks Save Lives

Posted on August 25th, 2020 by Dr. Francis Collins
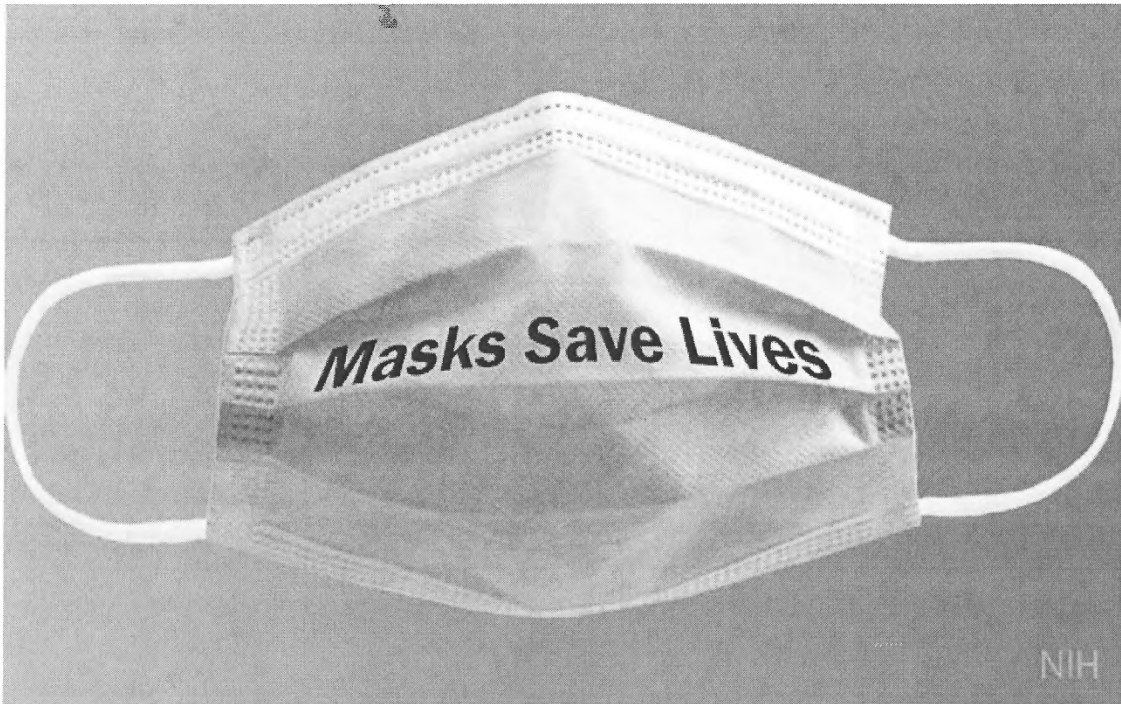
Reminding others that "masks save lives" isn't just sound advice. It's a scientific fact that wearing one in public can help to slow the spread of SARS-CoV-2, the virus responsible for the coronavirus disease 2019 (COVID-19) pandemic.

I'm very careful to wear a mask outside my home whenever I'm out and about. I do it not necessarily to protect myself, but to protect others. If by chance I've been exposed to the virus and am currently incubating it, I wouldn't want to spread it to other people. And any of us could be an unknowing superspreader. We owe it to everyone we encounter, especially those who are more vulnerable, to protect them. As my NIH colleague Tony Fauci recently demonstrated ⌘, it's possible to wear your mask even while you're outside exercising.

But there are still skeptics around. So, just how much does a facial covering protect those around you? Quite a bit, according to researchers who created a sophisticated mathematical model to take a more detailed look [1]. Their model shows that even if a community universally adopted a crude cloth covering that's far less than 100 percent protective against the virus, this measure alone could significantly help to reduce deaths.

These findings, funded partly by NIH, were published recently in *Nature Communications*. They come from Colin Worby, Broad Institute of MIT and Harvard, Cambridge, MA, and Hsiao-Han Chang, National Tsing Hua University, Taiwan.

R.A. 705

The researchers noted several months ago that recommendations on wearing a mask varied across the United States and around the world. To help guide policymakers, the researchers simulated outbreaks in a closed, randomly interacting population in which the supply and effectiveness of crude cloth or disposable, medical-grade masks varied.

Under different outbreak scenarios and mask usages, the researchers calculated the total numbers of expected SARS-CoV-2 infections and deaths from COVID-19. Not surprisingly, they found that the total number of deaths and infections declined as the availability and effectiveness of face masks increased.

The researchers' model primarily considered the distribution of medical-grade, surgical masks. But because such masks are currently available in limited supply, they must be prioritized for use by health care workers and others at high risk. The researchers go on to note that the World Health Organization and others now recommend wearing homemade face coverings in public, especially in places where the virus is spreading. While it's true the ability of these face coverings to contain the virus is more limited than medical-grade masks, they can help and will lead to many fewer deaths.

Another recent paper also suggests that while wearing a mask is primarily intended to prevent the wearer from infecting others, it may also help lower the dose, or inoculum, of SARS-CoV-2 that the wearer might receive from others, resulting in milder or asymptomatic infections [2]. If correct, that's another great reason to wear a mask.

Already, more than 175,000 people in the United States have died from COVID-19. The latest estimates [3] from the Institute for Health Metrics and Evaluation (IHME) at the University of Washington's School of Medicine, Seattle, predict that the COVID-19 death toll in the U.S. may reach nearly 300,000 by December 1.

But that doesn't have to happen. As this new study shows, face coverings—even those that are far from perfect—really can and do save lives. In fact, IHME data also show that consistent mask-wearing—starting today—could save close to 70,000 lives in the months to come. Saving those lives is up to all of us. Don't leave home without your mask.

References:

[1] Face mask use in the general population and optimal resource allocation during the COVID-19 pandemic. Worby CJ, Chang HH. Nat Commun. 2020 Aug 13;11(1):4049.

[2] Masks Do More Than Protect Others During COVID-19: Reducing the Inoculum of SARS-CoV-2 to Protect the Wearer ☑. Gandhi M, Beyrer C, Goosby E. J Gen Intern Med. 2020 Jul 31.

[3] New IHME COVID-19 forecasts see nearly 300,000 deaths by December 1 ☑. Institute for Health Metrics and Evaluation. August 6, 2020.

Links:

Coronavirus (COVID-19) (NIH)

Colin Worby ☑ (Broad Institute of MIT and Harvard, Cambridge, MA)

Hsiao-Han Chang ☑ (National Tsing Hua University, Taiwan)

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17 Comments

Noel McDevitt says:
August 25, 2020 at 10:06 am
Thank you, Dr. Collins ..please continue your work and your efforts to continue the informational and educational activity of the NIH to inform the public of the most current scientific reports and the practical application of this information. Hopefully, all our fellow citizens and our leaders will listen and include the recommendations into daily life.

Reply

Ron Psimas says:
August 31, 2020 at 11:11 am

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Face mask use in the general population and optimal resource allocation during the COVID-19 pandemic

Colin J. Worby ✉ & Hsiao-Han Chang ✉

Abstract

The ongoing novel coronavirus disease (COVID-19) pandemic has already infected millions worldwide and, with no vaccine available, interventions to mitigate transmission are urgently needed. While there is broad agreement that travel restrictions and social distancing are beneficial in limiting spread, recommendations around face mask use are inconsistent. Here, we use mathematical modeling to examine the epidemiological impact of face masks, considering resource limitations and a range of supply and demand dynamics. Even with a limited protective effect, face masks can reduce total infections and deaths, and can delay the peak time of the epidemic. However, random distribution of masks is generally suboptimal; prioritized coverage of the elderly improves outcomes, while retaining resources for detected cases provides further mitigation under a range of scenarios. Face mask use, particularly for a pathogen with relatively common asymptomatic carriage, is an effective intervention strategy, while optimized distribution is important when resources are limited.

Introduction

The rapid global spread of SARS-CoV-2 and the resulting coronavirus disease (COVID-19) pandemic has led to urgent efforts to contain and mitigate transmission, leading to significant, and widespread socioeconomic disruption[1]. By July 2020, over 10 million cases have been reported worldwide, as well as over 500,000 deaths, with ongoing spread in most parts of the world[2]. While infection is frequently asymptomatic, or associated with only mild symptoms in many people[3,4], it can cause severe and life-threatening illness in the immunocompromised and the elderly, with a case fatality ratio of over 10% in the latter group[4,5,6]. The rapid spread of the virus has raised concerns that healthcare systems lack sufficient resources and will be unable to bear the burden of accommodating patients suffering from COVID-19[7], resulting in significantly increased morbidity and mortality. There is an urgent need to better understand the effectiveness of potential interventions to limit the spread of the disease, especially in the context of resource limitations.

In order to mitigate the burden of infection, many countries have imposed both international and domestic travel restrictions, closed schools and nonessential businesses, and strictly limited public gatherings[8]. Such measures are designed to minimize person-to-person exposures, reducing the effective reproduction number, and thus the growth rate of the epidemic. Furthermore, individual behavior such as social distancing, self-isolation while symptomatic, handwashing and disinfecting surfaces can further mitigate transmission. Interventions such as these can offer protection (reduction in risk of infection) to susceptible individuals, and/or containment (reduction in risk of onward transmission) to infected individuals. While such measures are near universally encouraged by governments and public health departments[9], there has been limited international consensus on the use of face masks – whether surgical masks or simple reusable cloth masks—among the general public. The use of surgical masks as an infection control measure is common in East and South East Asia, and was recommended early on in the pandemic by governments in China, Hong Kong, and Taiwan for healthy persons in crowded public spaces, while masks were also recommended for symptomatic persons in Japan and Singapore[10,11]. In contrast, Western countries have been slower to encourage any adoption of masks, although there

is a growing recognition that this should be part of public health policy for mitigating the spread of COVID-19[12,13]. The United States' CDC recommended cloth face coverings in April 2020[14], after many other control measures had already been implemented, while the UK government recommended cloth masks in June, limited to public transport settings only[15]. The WHO also updated their guidance in June to recommend face coverings in public, as well as medical grade masks for both high risk and symptomatic individuals, in areas with known or suspected community transmission[16]. With conflicting national guidelines and variable public compliance, self-reported mask use differs considerably between countries[17].

Some countries have seen an enormous demand for face masks from the public, with supplies being diminished and shortages reported[10]. Even with lesser public demand, the United States reported mask shortages among healthcare workers[18]. Recognizing the need for masks, several countries banned exportation of face masks[10], and the Central Epidemic Command Center in Taiwan made efforts to increase mask production in January[19]. In facing such resource shortages, it is vital that limited supplies are used effectively. Clearly, protection of staff at healthcare facilities is of critical importance, but allocating additional resources optimally among the general population can offer further benefits.

In this study, we investigate the role of face mask use and distribution among the general public during a coronavirus outbreak using mathematical modeling, in order to better understand (1) the overall reduction in infections and deaths associated with mask distribution and use, (2) how best to optimize distribution in a resource-limited setting, and (3) the role of dynamic supply and demand during an ongoing outbreak. In order to explore both the population-level effects of distributing face masks to different subpopulations, as well as capturing the supply and demand dynamics during an ongoing epidemic, we propose two models (Fig. 1). Firstly, the "resource allocation" model allows a limited number of masks to be distributed among the initial susceptible population, or allocated to symptomatic individuals while supplies are available. This allows us to compare distribution strategies in terms of final numbers of infections and deaths. Secondly, the "supply & demand" model captures dynamic mask availability, which varies in response to increased demand among the entire population as the number of reported cases increase, as well as mask production rates. We primarily assess the impact of disposable medical

grade masks (i.e. a resource-limited supply; unless otherwise stated, "face masks" in this paper refer to this type) rather than homemade, reusable cloth face coverings, although we do consider implementation of both mask types in a comparison of public health policies.

Fig. 1: The compartmental structure common to both models.
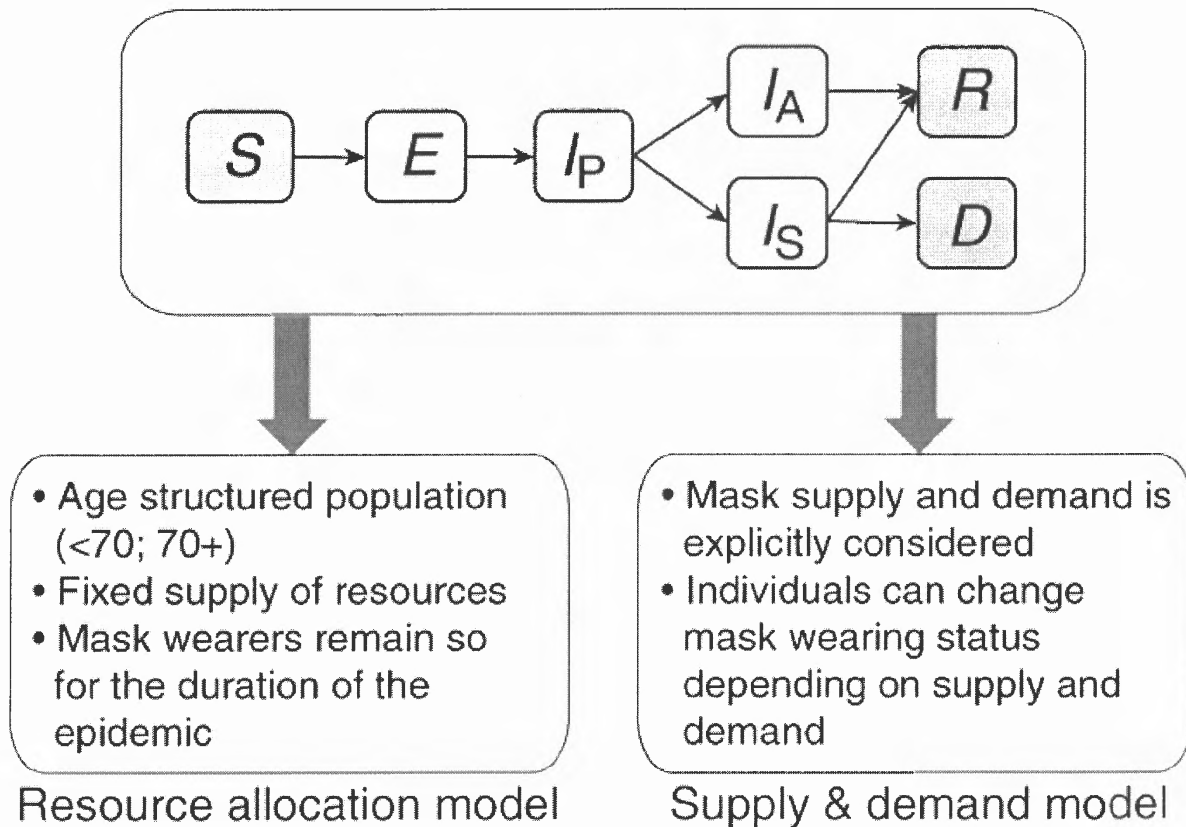
Susceptible hosts (S) become exposed (E) and progress to presymptomatic infectious (I_P). Infected hosts can become either asymptomatic or mildly symptomatic (I_A), or symptomatic (I_S). Recovery (R) or death (D) follow. The resource allocation model and the supply & demand model then have unique additional features and dynamics. A schematic of the supply & demand compartmental model is shown in Supplementary Fig. 11. For a full description of each model and the specification of dynamics between compartments, see the Supplementary Methods.

Here, we demonstrate that the use of face masks among the general public is an effective strategy in mitigating transmission of SARS-CoV-2 under a range of scenarios. Nonmedical masks, when deployed widely, can also reduce total cases and deaths. We show that with a limited public supply, medical grade masks should be prioritized for vulnerable and infected individuals in order to optimize the reduction in morbidity and mortality. With no available vaccine and limited therapeutic options, face mask use is an important component of public health measures to limit the ongoing spread of COVID-19.

Results

Targeted distribution of limited resources can reduce deaths

We simulated outbreaks under a variety of parameter values associated with mask effectiveness (protection and containment) and mask supply, and identified the resulting total numbers of infections and deaths. Consistently, we found the reduction in total deaths and infections increased with mask effectiveness and availability. While immediate provision to the healthy population provided maximal impact, delayed implementation of a general mask-wearing policy could still provide reductions in total infections. The epidemic peak could be increasingly delayed with earlier adoption of mask use (Supplementary Fig. 1).

We considered a range of strategies to distribute a limited supply of masks, including (1) random distribution across the population (naive), (2) prioritized distribution to the elderly, (3) distribution to both the elderly and detected cases, and (4) distribution only to detected cases, while mask supplies last (see "Methods"). Figure 2 shows the impact of mask distribution in terms of reduced mortality under each strategy, for different levels of availability. Even limited distribution of masks offering only 25% protection and containment could result in an appreciable reduction; 10% adoption in the population could result in 5% fewer deaths (Fig. 2c). Naive distribution of masks among the general population was usually suboptimal; indeed, for a mask providing better containment than protection, this is the least optimal of the strategies we tested unless resources were plentiful (Fig. 2i). While prioritizing allocation to elderly persons only slightly reduced the total number of infections beyond that achieved with naive distribution

(Supplementary Fig. 2), the number of deaths was generally considerably lower with this strategy. The benefit of prioritizing the elderly population was largest in scenarios with a limited supply of protective masks, diminishing gradually with masks offering more limited protection. With plentiful resources, the difference between prioritizing the elderly population and random distribution became limited.

Fig. 2: Reduction in total deaths under each distribution strategy for a range of mask availability levels.
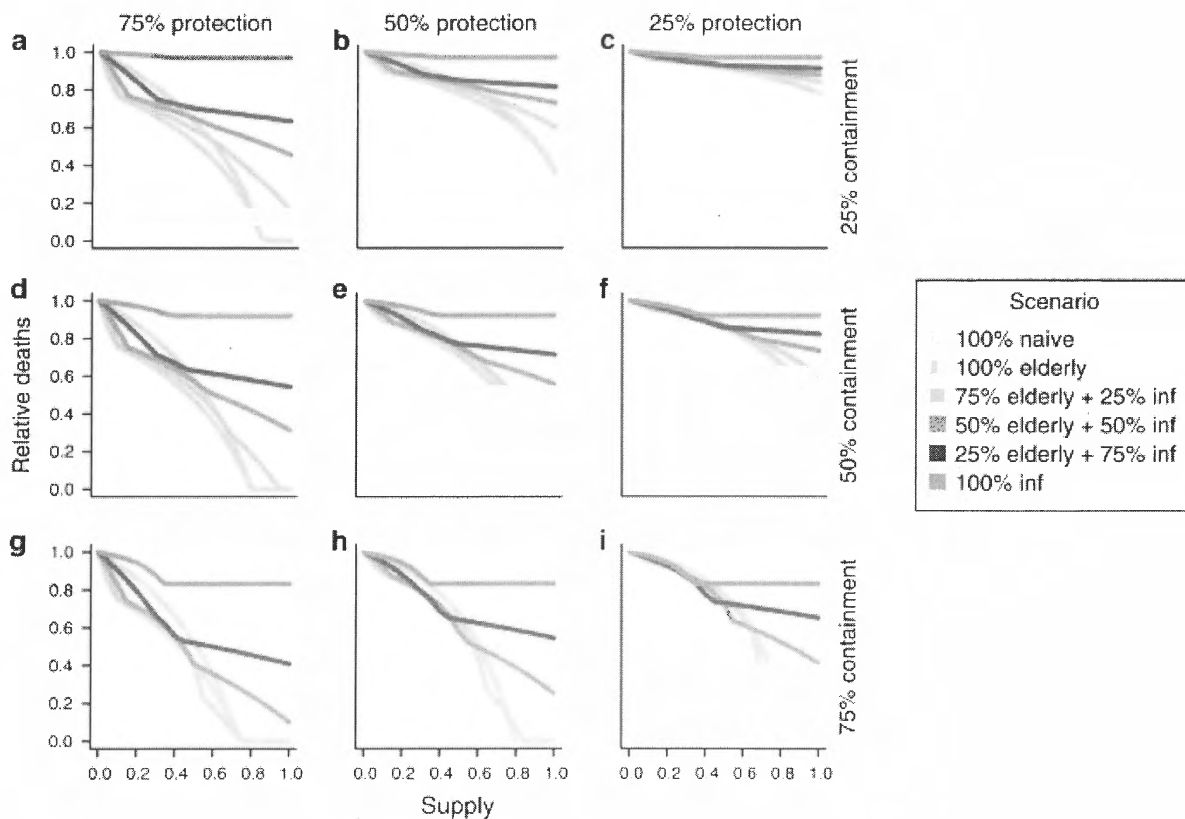
Each panel represents mask effectiveness in terms of relative protection and containment. Containment levels of 25% **a–c**, 50% **d–f**, and 75% **g–i** are shown with varying protection levels; **c** represents the least effective mask and **g** represents the most effective mask. Masks are provided naively (pink), prioritized to the elderly (yellow), saved for detected cases (red), or balanced at different levels between healthy individuals, prioritizing the elderly, and detected cases (blue). Inflection points occur at the point where supplies are exhausted, and the outbreak continues

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with no new individuals adopting masks. Here, 30% of infections are assumed to be undetected. See "Methods" for further details.

It is understood that there are many other risk factors for COVID-19 morbidity and mortality in addition to advanced age[20,21]; indeed, over 20% of the population in England may be considered high risk[22]. We explored a range of dynamics in which up to 25% of the population were at elevated risk of symptomatic illness and death (vs. the 7.6% elderly population considered in previous scenarios). The relative reduction in deaths associated with prioritized distribution increased when the high risk population was larger in most scenarios (Supplementary Fig. 3), suggesting that resource prioritization is especially important in populations with common comorbidities or with many elderly people.

Provision only to detected cases typically has limited effect

While it is likely that masks offer a greater degree of containment than protection, providing masks only to detected cases generally offer limited benefits, particularly when resources are plentiful (Fig. 2, red lines). Since many infections are not detected, this strategy fails to provide any containment to the large, undetected reservoir, and the benefits associated with increasing supply reach a maximum once there are sufficient resources for all detected cases. As such, this policy offers the least optimal distribution for a range of mask effectiveness parameters. By providing a mask offering intermediate levels of containment (50%) to all detected infectious cases, the number of deaths can be reduced by up to 10%, reaching this level with resources to cover 30% of the population (Fig. 2d–f). Increasing the case detection rate can further increase the benefits of this strategy (Supplementary Fig. 4).

Optimal distribution depends on mask type and availability

For masks offering high levels of containment, achieving a balance between providing resources to infective persons and the elderly population offers the optimal outcome in terms of total infections and deaths (Fig. 2. blue lines). These strategies offer containment focused on detected

cases, but also mitigate transmission from a proportion of undetected asymptomatic carriers. In addition, protection is granted to susceptible individuals, with a focus on the more vulnerable elderly population. Figure 3 shows the optimal distribution strategy over the full range of mask effectiveness parameters with resources to cover 40% of the population, as well as the corresponding reduction in total infections and deaths, relative to the naive strategy of random distribution. The optimal balance of mask distribution varied according to supply and mask effectiveness. Generally, while resources are plentiful, providing the majority of available supplies to the healthy population (prioritizing the elderly) was optimal for reducing infections and deaths.

Fig. 3: Optimal distribution of resources for different levels of mask effectiveness.

a The strategy which minimized the number of infections is indicated for each level of intervention protection and containment. With a supply of masks for 40% of the

population, resources are provided under each of the strategies described in "Methods". **b** The reduction in infections under the optimal strategy is shown relative to the numbers under the naive strategy. Here we assume 30% of cases to be undetected. **c** and **d** show the equivalent plots for total deaths.

Optimizing distribution of masks offering limited protection and containment unsurprisingly had a minimal additional reduction in morbidity and mortality beyond random distribution in the healthy population (Fig. 3b, d). However, we found that while total infections remained similar, optimizing distribution had the effect of delaying the peak time of the outbreak (e.g. Supplementary Fig. 5). In practice, this is a desirable outcome which may reduce the immediate burden on healthcare facilities.

Panic buying prevents stockpiling and increases morbidity

In the previous model, new mask production and ongoing supply is not explicitly considered. Here, we investigate the role of these dynamics. We explored different scenarios of mask availability and demand by varying the parameterization of the demand function described in "Methods," as well as the rate of production of new masks. Unsurprisingly, regardless of demand dynamics, a higher production rate of masks increased availability, and therefore coverage of the population. Supplementary Fig. 6 shows the reduction in total infections given different levels of protection and mask production, highlighting that a greater number of less effective masks were required to achieve the same impact as fewer, but more effective, masks. A "panic buying" scenario, in which maximum demand for masks is attained very early in the epidemic, generally had a detrimental impact on the resulting outbreak (Supplementary Fig. 7). Unless production is ramped up during the outbreak, an inability to build a stockpile of available resources prevents people from obtaining masks readily during peak transmission (Fig. 4a, c). In contrast, a gradual increase in demand, or equivalently, a managed distribution of resources, allows for an accumulation of supplies in the early stages of the epidemic, leading to a greater availability of masks during peak transmission, and fewer overall infections (Fig. 4b, d). Specifically, a "managed demand" scenario allows a greater proportion of susceptible individuals to be covered

during peak transmission, leading to fewer infections than under the panic buying scenario (Fig. 4).

Fig. 4: Early demand management can limit the total number of infections.

While prioritizing masks for infectious cases, epidemic curves (pink) and mask supply (blue) are shown in **a** a "panic buying" demand curve and **b** a more gradual "managed demand" curve. Demand is shown as a dashed gray line, while the proportion of the susceptible and symptomatically infected population wearing masks are shown as green and orange lines, respectively. (k_1, k_2) are (1, 100) and (10^{-6}, 5×10^6) for "panic buying" and managed demand, respectively (see "Methods"). The dynamics shown here are based on mask production rate, B/N,

equal to 30%. Equivalent plots are provided showing dynamics when infectious cases are not prioritized under **c** "panic buying" and **d** "managed demand" scenarios.

With a high rate of mask production, prioritizing infectious cases allows high mask coverage to be maintained in this group during peak transmission, even in a panic buying scenario, and can reduce total infections (Fig. 4, top vs. bottom). The benefit of prioritizing masks to infectious cases gets smaller if the proportion of asymptomatic infections is higher (Supplementary Fig. 8). While building up supplies in the early phase of the epidemic can be beneficial, high levels of production were required to avoid shortages during peak demand (Supplementary Fig. 9).

Universal face covering in public can further reduce cases

Until now, we have only considered the distribution of resource-limited face masks (i.e. surgical masks). However, a number of countries, as well as the WHO, have introduced recommendations for the use of homemade masks, or face coverings, in public, in areas where community transmission is occurring. While the effectiveness of face coverings is likely to be limited, universal adoption would result in a reduction of R_0 by a factor of $r_t r_s$, where r_t and r_s are the relative transmission and relative susceptibility associated with face masks, respectively. A universally adopted homemade mask offering just 5% protection and containment would thus reduce R_0 from 2.5 to 2.26. Adoption of universal face coverings provided a considerable reduction in total deaths (Fig. 5). This reduction was comparable to that achieved with a targeted distribution of surgical masks, even with supplies limited to 10% of the population. For a population with a universal recommendation for face covering in public (e.g. the United States post April 2020), a reduction of 3–5% in deaths may be expected; an additional targeted distribution of surgical masks to the elderly and symptomatic (e.g. WHO guidelines post June 2020) can at least double this effect.

Fig. 5: Universal face covering combined with targeted surgical mask deployment reduces total deaths.
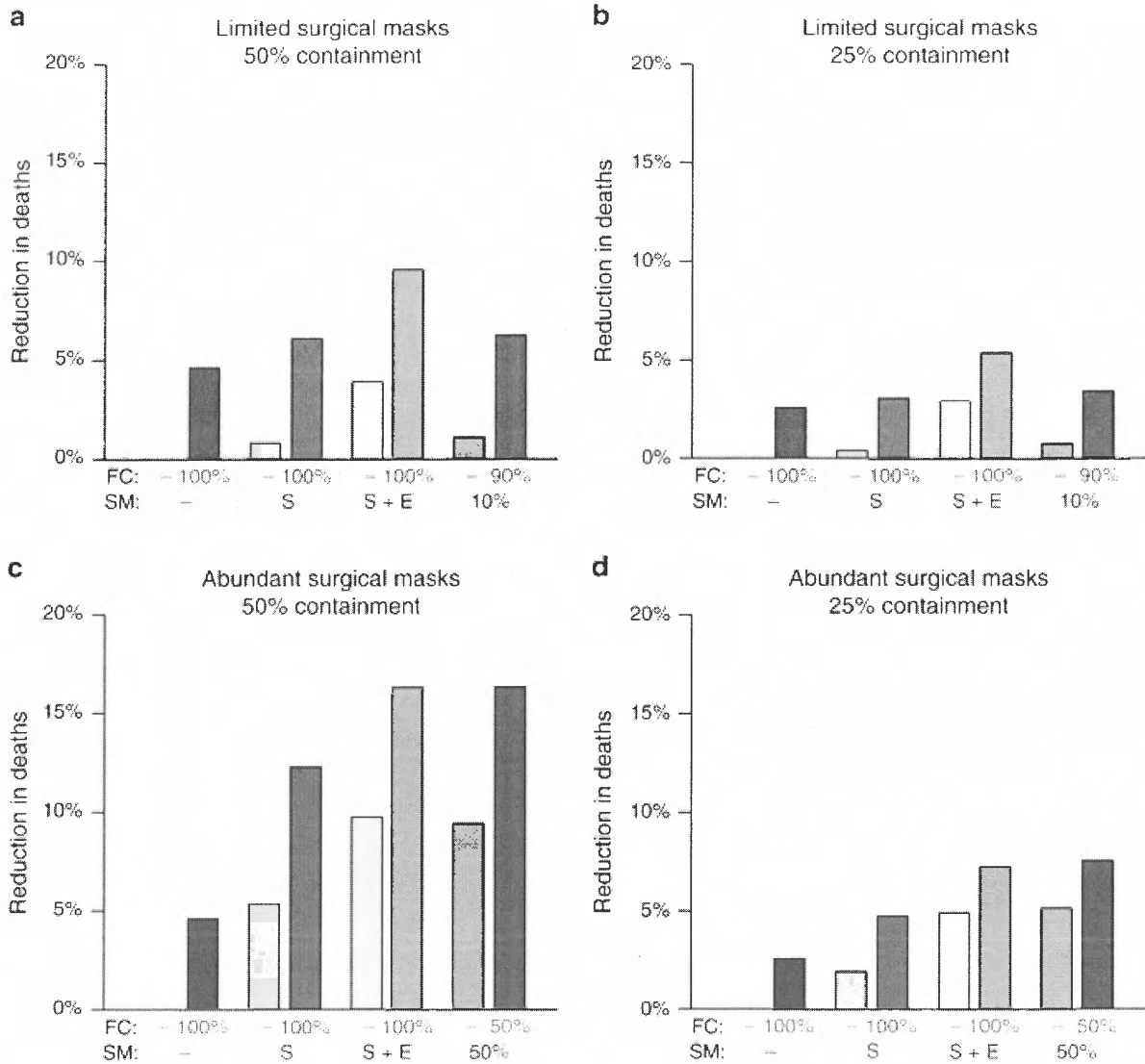
Eight face mask policies were compared under scenarios where surgical mask (SM) supplies were limited to cover 10% **a**, **b** or 50% **c**, **d** of the population, and where surgical mask containment was high (50%, **a**, **c**) or low (25%, **b**, **d**). Available surgical masks were either not used (gray), provided to symptomatic persons (S; blue), provided to elderly and symptomatic persons (S + E; orange), or distributed randomly to the susceptible population (purple). These policies are compared with and without universal face coverings (FC) for the remaining population (darker and lighter colors, respectively). Surgical masks are assumed to confer 25% protection in all settings, and are three times more effective than face coverings.

Discussion

During a pandemic such as COVID-19, mitigating the spread of infections is essential in the absence of a vaccine and limited critical care resources. In this study, we have shown that face mask use in the general population can have a beneficial impact in reducing the total number of infections and deaths, and that this impact naturally increases with mask effectiveness. The benefits of mask deployment are apparent even with low effectiveness and limited resources. In such cases, though mask deployment may not have a large impact on total infections and deaths, indirect benefits for outbreak management are achieved by delaying the epidemic peak. Importantly, however, the overall impact of mask deployment hinges on appropriate distribution strategies. We consistently observed that the random distribution of masks throughout the general population is a suboptimal strategy. In contrast, prioritizing the elderly population, and retaining a supply of masks for identified infectious cases generally leads to a larger reduction in total infections and deaths than a naive allocation of resources.

While there remains much uncertainty around the true effectiveness of face masks—especially when factoring in differences in mask types, levels of adherence, and patterns of human behavior —there is evidence to suggest that masks can provide a measure of protection and containment for respiratory viruses. Systematic reviews have considered the reduction of transmission associated with mask wearing for respiratory viruses (odds ratio 0.32)[23], as well as SARS-CoV-2 and other betacoronaviruses (adjusted odds ratio 0.15)[24]. Cluster randomized trials involving households with diagnosed influenza cases showed significant reductions in transmission associated with mask wearing[25], with an infection odds ratio of 0.33 when combined with handwashing[26]. Mathematical models have also suggested that the number of influenza A cases can be reduced significantly even if just a small proportion of the population wear masks[27].

Laboratory studies have also demonstrated the efficacy of masks and other fabrics as a barrier to small particles and microbes. Surgical and N95 masks limit and redirect the projection of airborne droplets[28]. Filtration efficiency, which may correlate with containment, has been estimated to be 80% for fitted surgical masks against small particles[29], or up to 96% against microbes[30]. Surgical masks were three times more effective than homemade masks, though droplet transmission from

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infected individuals wearing the latter was nevertheless reduced[30]. Surgical masks were estimated to significantly reduce detection of coronavirus RNA in aerosols[31], and can reduce influenza viral aerosol shedding more than threefold[32]. Generally, however, the theoretical protective effect of masks may be diminished by a number of factors. Compliance and effective use may be inadequate[25], masks may not be replaced frequently enough to prevent contamination[33], and finally, COVID-19 infection may even occur via alternative routes, such as ocular transmission[34].

In this study, we have deliberately allowed parameters in our models to vary across the full range of potential values due to the uncertainty in true mask effectiveness. A recent modeling study used effectiveness parameters of 50%, though noted the limited evidence available in setting these values[35]. Further studies are required to obtain improved estimates for mask effectiveness among the public during the COVID-19 pandemic.

Although personal protection is a leading motivator for mask wearing[36], it is generally thought that face masks are more effective in providing containment, limiting onward transmission from infectious carriers. COVID-19 is thought to have a significant proportion of mildly symptomatic or asymptomatic infections[37,38,39], and therefore infectious persons unaware of their status may continue to expose others. As such, even if masks offer limited personal protection, a general recommendation to wear masks in public may be particularly beneficial by containing transmission from unknowingly infectious persons.

Our models show that the more effective a mask is, the fewer masks are required to suppress an epidemic. Under a strategy in which masks are retained for infectious persons, this is particularly important. As a higher proportion of infectious persons—both symptomatic and asymptomatic (and possibly unaware)—are wearing masks offering a high level of containment, a smaller number of onward transmissions occur, requiring fewer masks to be provided for newly diagnosed individuals. As human behavior and compliance are a significant component of how effective mask use is, it is essential that public health recommendations concerning face masks in the general population occur in tandem with clear education on proper use and application, such that limited resources are used as effectively as possible[10].

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While mask use can help to mitigate transmission, the supply & demand model suggests that panic buying at the very early phase of an epidemic can be detrimental, and that managing demand or increasing mask production in the early stages of the outbreak could be beneficial. In Taiwan, the government increased mask production rate and implemented such a resource management strategy in early February 2020, limiting the number of masks each person can buy per week with their National Health Insurance cards[19]. As of April 1, 2020, Taiwan was producing up to 13 million face masks a day (equivalent to $B/N \approx 0.5$), accumulating a large enough stockpile to begin exporting masks globally[40]. Since it is recommended that disposable masks should be replaced when they are soiled[41], we assumed that masks are on average worn for one day. In reality, the average lifespan of a disposable mask is likely longer due to reuse. In our model, the same dynamics are achieved by increasing mask duration or by decreasing demand. As such, a three day mask lifespan would allow a threefold reduction in mask production, resulting in equivalent epidemic dynamics, assuming no degradation in effectiveness.

Optimized deployment of resources is essential during a pandemic such as COVID-19. Our models concern the distribution of resources in the general population, under the assumption that healthcare workers and key personnel have adequate protection. If production of surgical masks can be increased such that a supply can be made available to the general population, an optimized deployment of these resources is essential. While we considered the elderly population in our model, as well as a general class of "high risk" individuals, we did not explicitly consider heterogeneity within this population. Further stratification levels for resource prioritization may lead to further reductions in infections. In addition, we did not consider heterogeneity in population mixing; in reality, there are clusters of particularly vulnerable persons (e.g., hospitals, nursing homes, prisons) which pose an elevated risk; failing to protect such communities could lead to rapid and highly localized spread. Mask provision to persons interacting with such populations (care givers, visitors, custodial staff) would likely offer greater benefits than general distribution to the public. It is likely that face mask use is also more beneficial in populations with higher contact rates. Future modeling work could consider meta-populations of different population densities to optimize resource deployment in urban vs. rural settings.

The use of face masks can be implemented simultaneously with other strategies, including social distancing, travel restrictions and self-isolation, to mitigate the spread of a pandemic disease such as COVID-19. Even during lockdown measures in which people are only rarely leaving their homes, many still face high exposure settings (e.g., conducting essential work, trips to the supermarket or drug stores) albeit less frequently. Face mask use could be a particularly important component of transmission mitigation during such activities, and widespread adoption would allow for a greater degree of interaction as more stringent lockdown measures are relaxed, while keeping the effective reproduction number below 1. Preparing an adequate supply of face masks for such a transitionary period could help to prevent a potentially costly second peak.

Methods

Compartmental models

Both the resource allocation and supply & demand models share the same basic epidemic SEIRD model structure (Fig. 1) and the assumption of a closed, randomly mixing population of size N, similar to the model structure proposed by Anderson et al.[8]. Upon infection, susceptible individuals (S) enter the exposed (E) compartment in which a person is noninfectious, before progressing to "presymptomatic" (I_P) in which a person is infectious, but exhibiting no symptoms. Together, these categories represent the incubation period, after which individuals progress either to mildly symptomatic/asymptomatic (I_A) or symptomatic (I_S). Infected persons in either category can then recover (R), or if symptomatic, may die (D). Each compartment is partitioned into those wearing masks and those not. Masks reduce susceptibility to infection in healthy individuals; mask wearers' susceptibility relative to nonwearers is denoted by r_s, where $r_s = 0$ represents a fully protective mask. Similarly, masks are assumed to decrease transmissibility in infectious persons; a mask wearer has a relative transmissibility of r_t, with $r_t = 0$ representing a mask completely restricting onward transmission. For convenience, we also define the terms "protection" and "containment" as $1 - r_s$ and $1 - r_t$, respectively, and use "mask effectiveness" to refer to these properties collectively. We obtained epidemiological parameter estimates from the available literature, summarized in Supplementary Table 1. Given that

estimates for the proportion of asymptomatic infections vary considerably[37,38,39], we allowed this parameter to vary over a plausible range; likewise, we explored a range of mask effectiveness parameters.

Resource allocation model

In this model, the compartments described above are further partitioned by age group (young, <70 and elderly, 70+, with the latter representing 7.6% of the population[42]). While there is currently limited evidence on the progression of infection in different age groups, we assumed that the proportion of asymptomatic infections in the elderly was half the proportion in the younger population, and that the death rate among symptomatic elderly cases was 9.7%, versus 1.3% in younger cases[43]. All symptomatic infections are assumed to be detected, while asymptomatic/mild infections are detected with a given probability δ. We assume a fixed supply of masks, sufficient to protect M_0 persons in the population for the duration of the epidemic. Masks may be adopted by the healthy population at the start of the epidemic, while a certain proportion may be withheld for detected cases during the outbreak. Mask wearers remain as such for the duration of the epidemic. We explore a variety of distribution strategies to determine how masks may affect epidemic dynamics:

- Strategy 1: M_0 of the susceptible population wear masks at the start of the epidemic.

- Strategy 2: M_0 of the susceptible population wear masks at the start of the epidemic, with prioritized coverage of the elderly.

- Strategy 3a: $0.25M_0$ susceptible individuals wear masks at the start of the epidemic, prioritizing the elderly. Remaining masks are distributed to detected infectious individuals until supplies are diminished.

- Strategy 3b: $0.5M_0$ susceptible individuals wear masks at the start of the epidemic, prioritizing the elderly. Remaining masks are distributed to detected infectious individuals until supplies are diminished.

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- Strategy 3c: $0.75M_0$ susceptible individuals wear masks at the start of the epidemic, prioritizing the elderly. Remaining masks are distributed to detected infectious individuals until supplies are diminished.

- Strategy 4: All available masks are distributed to detected infectious individuals.

For a range of mask effectiveness parameters, we identify the distribution strategy which minimizes both the number of infections and the number of deaths in the population. Full model details are described in Supplementary Methods. While we do not explicitly model individual mask use and manufacture here, this can be thought of as continuous production to provide an equilibrium number of masks which may effectively be used by up to the fraction M_0 of the population for the duration of the epidemic. We consider these dynamics more explicitly in the following model.

Supply & demand model

To understand the interplay between mask availability and disease dynamics, we model the supply and demand of face masks in a population, allowing masks to be produced at a given rate B, while demand may increase as the reported number of cases increases[10,44]. In this model, we allow for movement between mask-wearing and nonmask-wearing status, depending on availability and demand. Masks must be continually acquired to remain a mask wearer. We assume that the mask is worn on average for μ days before requiring replacement, and the rate of nonwearers acquiring masks depends on both demand (ω_A for healthy and asymptomatic individuals, or ω_S for symptomatic individuals) and current supply (M/N, the proportion of mask in the overall population). We assume that demand for masks increases with the number of reported cases, up to a certain plateau, and as such model the relationship between the demand and the number of symptomatic infections in the following sigmoidal function, with shape parameters k_1 and k_2:

$$\omega _A = \frac{1}{{1 + e^{ - k_1\left({I_S - k_2} \right)}}}.$$
(1)

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The range of ω_A is [0, 1], k_1 represents the rate of demand increase, and k_2 represents the timing of demand, defined as the number of reported cases when half the population seeks face masks (i.e., higher k_2 means mask demand increases later in the outbreak). This parameterization allows us to explore different demand dynamics, for example, "panic buying" (high k_1), delayed response to epidemic threat (high k_2), a gradual increase in demand ("managed demand") (low k_1, high k_2) (Supplementary Fig. 10).

Comparison of face mask policies

Guidance around the use of face masks varies widely, and several countries in Europe and North America recommend, or mandate, the use of homemade face coverings in public. In order to compare such recommendations to the deployment of resource-limited surgical masks, we ran a further set of simulations under the resource allocation model, incorporating universal face covering. Specifically, we considered (1) no surgical mask use, (2) provision of surgical masks to symptomatic cases, (3) provision of surgical masks to the elderly population as first priority and then symptomatic cases if available, and (4) random surgical mask distribution. Each policy was considered both with and without universal face covering for the remainder of the population. We compared these eight policies for different levels of surgical mask availability and effectiveness. Surgical masks were assumed to be three times more effective than face coverings[30], both in terms of protection and containment.

Reporting summary

Further information on research design is available in the Nature Research Reporting Summary linked to this article.

Data availability

No datasets were generated or analyzed in this modeling study. Parameter values for models were obtained from the literature as described in Supplementary Table 1.

Code availability

All models and analyses were run in R[45], using the deSolve package[46]. Code to run both models described in this paper is available at github (https://github.com/hhc-lab/mask_covid-19).

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Contributions

H-.H.C. conceptualized the study. C.J.W. and H-.H.C. designed and implemented models, performed analyses, interpreted results, and wrote the manuscript.

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The authors declare no competing interests.

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EXHIBIT CCCC

CDC Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

Coronavirus Disease 2019 (COVID-19)

MENU >

WEAR A MASK. PROTECT OTHERS.

Social Distancing
Keep a Safe Distance to Slow the Spread.

Updated July 15, 2020   Print

Limiting close face-to-face contact with others is the best way to reduce the spread of coronavirus disease 2019 (COVID-19).

What is social distancing?

Social distancing, also called "physical distancing," means keeping a safe space between yourself and other people who are not from your household.

To practice social or physical distancing, stay at least 6 feet (about 2 arms' length) from other people who are not from your household in both indoor and outdoor spaces.

Social distancing should be practiced in combination with other everyday preventive actions to reduce the spread of COVID-19, including wearing masks, avoiding touching your face with unwashed hands, and frequently washing your hands with soap and water for at least 20 seconds.

Why practice social distancing?

COVID-19 spreads mainly among people who are in close contact (within about 6 feet) for a prolonged period. Spread happens when an infected person coughs, sneezes, or talks, and droplets from their mouth or nose are launched into the air and land in the mouths or noses of people nearby. The droplets can also be inhaled into the lungs. Recent studies indicate that people who are infected but do not have symptoms likely also play a role in the spread of COVID-19. Since people can spread the virus before they know they are sick, it is important to stay at least 6 feet away from others when possible, even if you—or they—do not have any symptoms. Social distancing is especially important for people who are at higher risk for severe illness from COVID-19.

If you are sick with COVID-19, have symptoms consistent with COVID-19, or have been in close contact with someone who has COVID-19, it is important to stay home and away from other people until it is safe to be around others.

COVID-19 can live for hours or days on a surface, depending on factors such as sunlight, humidity, and the type of surface. It may be possible that a person can get COVID-19 by touching a surface or object that has the virus on it and then touching their own mouth, nose, or eyes. However, this is not thought to be the main way the virus spreads. Social distancing helps limit opportunities to come in contact with contaminated surfaces and infected people outside the home.

Although the risk of severe illness may be different for everyone, anyone can get and spread COVID-19. Everyone has a role to play in slowing the spread and protecting themselves, their family, and their community. In addition to practicing everyday steps to prevent COVID-19, keeping space between you and others is one of the best tools we have to avoid being exposed to this virus and slowing its spread in communities.

Tips for Social Distancing

When going out in public, it is important to stay at least 6 feet away from other people and wear a mask to slow the spread of COVID-19. Consider the following tips for practicing social distancing when you decide to go out.

- **Know Before You Go:** Before going out, know and follow the guidance from local public health authorities where you live.

- **Prepare for Transportation:** Consider social distancing options to travel safely when running errands or commuting to and from work, whether walking, bicycling, wheelchair rolling, or using public transit, rideshares, or taxis. When using public transit, try to keep at least 6 feet from other passengers or transit operators – for example, when you are waiting at a bus station or selecting seats on a bus or train. When using rideshares or taxis, avoid pooled rides where multiple passengers are picked up, and sit in the back seat in larger vehicles so you can remain at least 6 feet away from the driver. Follow these additional tips to protect yourself while using transportation.

- **Limit Contact When Running Errands:** Only visit stores selling household essentials in person when you absolutely need to, and stay at least 6 feet away from others who are not from your household while shopping and in lines. If possible, use drive-thru, curbside pick-up, or delivery services to limit face-to-face contact with others. Maintain physical distance between yourself and delivery service providers during exchanges and wear a mask.

- **Choose Safe Social Activities:**It is possible to stay socially connected with friends and family who don't live in your home by calling, using video chat, or staying connected through social media. If meeting others in person (e.g., at small outdoor gatherings, yard or driveway gathering with a small group of friends or family members), stay at least 6 feet from others who are not from your household. Follow these steps to stay safe if you will be participating in personal and social activities outside of your home.

- **Keep Distance at Events and Gatherings:** It is safest to avoid crowded places and gatherings where it may be difficult to stay at least 6 feet away from others who are not from your household. If you are in a crowded space, try to keep 6 feet of space between yourself and others at all times, and wear a mask. Masks are especially important in times when physical distancing is difficult. Pay attention to any physical guides, such as tape markings on floors or signs on walls, directing attendees to remain at least 6 feet apart from each other in lines or at other times. Allow other people 6 feet of space when you pass by them in both indoor and outdoor settings.

- **Stay Distanced While Being Active**: Consider going for a walk, bike ride, or wheelchair roll in your neighborhood or in another safe location where you can maintain at least 6 feet of distance between yourself and other pedestrians and cyclists. If you decide to visit a nearby park, trail, or recreational facility, first check for closures or restrictions. If open, consider how many other people might be there and choose a location where it will be possible to keep at least 6 feet of space between yourself and other people who are not from your household.

Many people have personal circumstances or situations that present challenges with practicing social distancing to prevent the spread of COVID-19. Please see the following guidance for additional recommendations and considerations:

- Households Living in Close Quarters: How to Protect Those Who Are Most Vulnerable
- Living in Shared Housing

- People with Disabilities
- People Experiencing Homelessness

More Information

How to Protect Yourself

Cleaning and Disinfecting Your Home

Gatherings and Community Events

Last Updated July 15, 2020

Content source: National Center for Immunization and Respiratory Diseases (NCIRD), Division of Viral Diseases

EXHIBIT DDDD

How COVID-19 Spreads

COVID-19 is thought to spread mainly through close contact from person to person, including between people who are physically near each other (within about 6 feet). People who are infected but do not show symptoms can also spread the virus to others. Cases of reinfection with COVID-19 have been reported but are rare. We are still learning about how the virus spreads and the severity of illness it causes.

COVID-19 spreads very easily from person to person

How easily a virus spreads from person to person can vary. The virus that causes COVID-19 appears to spread more efficiently than influenza but not as efficiently as measles, which is among the most contagious viruses known to affect people.

COVID-19 most commonly spreads during close contact

- People who are physically near (within 6 feet) a person with COVID-19 or have direct contact with that person are at greatest risk of infection.
- When people with COVID-19 cough, sneeze, sing, talk, or breathe they produce **respiratory droplets**. These droplets can range in size from larger droplets (some of which are visible) to smaller droplets. Small droplets can also form particles when they dry very quickly in the airstream.
- Infections occur mainly through exposure to respiratory droplets when a person is in close contact with someone who has COVID-19.
- Respiratory droplets cause infection when they are inhaled or deposited on mucous membranes, such as those that line the inside of the nose and mouth.
- As the respiratory droplets travel further from the person with COVID-19, the concentration of these droplets decreases. Larger droplets fall out of the air due to gravity. Smaller droplets and particles spread apart in the air.
- With passing time, the amount of infectious virus in respiratory droplets also decreases.

COVID-19 can sometimes be spread by airborne transmission

- Some infections can be spread by exposure to virus in small droplets and particles that can linger in the air for minutes to hours. These viruses may be able to infect people who are further than 6 feet away from the person who is infected or after that person has left the space.
- This kind of spread is referred to as **airborne transmission** and is an important way that infections like tuberculosis, measles, and chicken pox are spread.
- There is evidence that under certain conditions, people with COVID-19 seem to have infected others who were more than 6 feet away. These transmissions occurred within enclosed spaces that had inadequate ventilation. Sometimes the infected person was breathing heavily, for example while singing or exercising.
  - Under these circumstances, scientists believe that the amount of infectious smaller droplet and particles produced by the people with COVID-19 became concentrated enough to spread the virus to other people. The people who were infected were in the same space during the same time or shortly after the person with COVID-19 had left.

- Available data indicate that it is much more common for the virus that causes COVID-19 to spread through close contact with a person who has COVID-19 than through airborne transmission. [1]

COVID-19 spreads less commonly through contact with contaminated surfaces

- Respiratory droplets can also land on surfaces and objects. It is possible that a person could get COVID-19 by touching a surface or object that has the virus on it and then touching their own mouth, nose, or eyes.
- Spread from touching surfaces is not thought to be a common way that COVID-19 spreads

COVID-19 rarely spreads between people and animals

- It appears that the virus that causes COVID-19 can spread **from people to animals** in some situations. CDC is aware of a small number of pets worldwide, including cats and dogs, reported to be infected with the virus that causes COVID-19, mostly after close contact with people with COVID-19. Learn what you should do if you have pets.
- At this time, the risk of COVID-19 spreading **from animals to people** is considered to be low. Learn about COVID-19 and pets and other animals.

Protect yourself and others

The best way to prevent illness is to avoid being exposed to this virus. You can take steps to slow the spread.

- Stay at least 6 feet away from others, whenever possible. This is very important in preventing the spread of COVID-19.
- Cover your mouth and nose with a mask when around others. This helps reduce the risk of spread both by close contact and by airborne transmission.
- Wash your hands often with soap and water. If soap and water are not available, use a hand sanitizer that contains at least 60% alcohol.

- Avoid crowded indoor spaces and ensure indoor spaces are properly ventilated by bringing in outdoor air as much as possible. In general, being outdoors and in spaces with good ventilation reduces the risk of exposure to infectious respiratory droplets.

- Stay home and isolate from others when sick.
- Routinely clean and disinfect frequently touched surfaces.

Pandemics can be stressful, especially when you are staying away from others. During this time, it's important to maintain social connections and care for your mental health.

Learn more about what you can do to protect yourself and others.

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[1]Pathogens that are spread easily through airborne transmission require the use of special engineering controls to prevent infections. Control practices, including recommendations for patient placement and personal protective equipment for health care personnel in healthcare settings, can be found in Section 2 of Interim Infection Prevention and Control Recommendations for Healthcare Personnel During the COVID-19 Pandemic.

More Information

Scientific Brief: SARS-CoV-2 and Potential Airborne Transmission
ASL Video Series: How does COVID-19 Spread?

Top of Page

EXHIBIT EEEE

Nevada Governor Steve Sisolak

DECLARATION OF EMERGENCY DIRECTIVE 022

WHEREAS, on March 12, 2020, I, Steve Sisolak, Governor of the State of Nevada, issued a Declaration of Emergency to facilitate the State's response to the COVID-19 pandemic; and

WHEREAS, on March 15, 2020, I directed that" ... [a]ll kindergarten through 12th grade schools will close to students effective March 16, 2020 ... " and " ... may reopen no earlier than April 6, 2020, and only upon the approval of the Chief Medical Officer of the State of Nevada after a review of the risk of transmissions within the geographic areas defined by the Chief Medical Officer"; and

WHEREAS, on March 20, 2020, I issued Declaration of Emergency Directive 005 directing the closure of all County School District school buildings, Charter School buildings and Private School buildings until April 16, 2020, requiring all County Districts and Charter Schools to submit a Request for an Emergency Program of Distance Education to the Superintendent of Public Instruction, and enrolling each pupil then enrolled in the County School District or Charter School in the Emergency Programs upon approval of said Programs; and

WHEREAS, on March 31, 2020, I issued Declaration of Emergency Directive 014 directing that County School Districts, Charter Schools, and Private Schools may reopen no earlier than April 30, 2020; and

WHEREAS, on April 28, 2020, I issued Declaration of Emergency Directive 015, directing that all kindergarten through 12th grade school buildings would remain closed for onsite education for the duration of the 2019-2020 instructional year; and

WHEREAS, on April 30, 2020, I introduced the *Nevada United: Roadmap to Recovery* plan that outlined a phased approach to reopening Nevada businesses and industry; and

WHEREAS, the *Nevada United: Roadmap to Recovery* plan set forth a collaborative partnership between state and local governments that included the formation of the Local Empowerment Advisory Panel ("LEAP") to serve as a resource to local governments and local communities; and

WHEREAS, the Nevada Department of Education (NDE) released its Path Forward Plan - Response to CO VID-19 on April 29, 2020, and announced the creation of the Re-Opening of Schools Committee (Committee) whose members include State health officials, district superintendents and staff, charter school leaders, school safety experts, and social and emotional learning and school counseling experts who created the *Nevada's Framework for a Safe, Efficient, and Equitable Return to School Buildings* (Framework) and presented the Framework to the State Board of Education on June 4,2020;and

WHEREAS, Nevada Revised Statutes Chapter 385B authorizes the Nevada Interscholastic Activities Association, which is composed of all of the school districts of the State for the purposes of controlling, supervising, and regulating all interscholastic athletic events and other interscholastic events in the public schools; and

WHEREAS, Nevada's medical experts indicate that the rate at which COVID-19 is spreading in the State of Nevada has effectively slowed to a level that does not jeopardize the state's healthcare system at the present time due, in part, to Nevadans following strict social distancing measure individually and pursuant to Directives I issued pursuant to the March 12, 2020, Declaration of Emergency; and

WHEREAS, our state has experienced a consistent and sustainable downward trajectory in the percentage of positive COVID-19 cases, a decrease in confirmed COVID hospitalizations over the last month, and a decline in our cumulative test positivity rate from a maximum rate of 12.2% on April 24, 2020, to 5.4% on June 7, 2020; and

WHEREAS, the State Medical Officer has reviewed the risk of transmission in Nevada and determined that schools may reopen subject to the conditions set forth in this Directive and any subsequent directives that may be issued based on any change in the risk of transmission in Nevada; and

WHEREAS, social distancing and behavioral change measures were effective in reducing individual and community risk for spreading and contracting COVID-19, the disease has not been eliminated and measures that protect safety, wellbeing, and public health of Nevadans must remain in effect; and

NOW, THEREFORE, by the authority vested in me as Governor by the Constitution and the laws of the State of Nevada and the United States, pursuant to the March 12, 2020, Emergency Declaration,

IT IS HEREBY ORDERED THAT:

SECTION 1:	In consultation with the State Superintendent of Public Instruction, county school districts, charter schools, and private schools shall develop plans for reopening school buildings, providing instruction, and related activities for the 2020-2021 school year based on Nevada's Path Forward: A Framework for a Saft, Efficient, and Equitable Return to School Buildings and pursuant to any requirements prescribed pursuant to Section 6 of this directive and any additional guidance issued by the Nevada Department of Education. County school districts, charter schools and private schools shall communicate their plans to their school communities, including parents and staff, and present their plans for the 2020- 2021 school year to their governing body as follows: 1. County school districts shall present their plans to the trustees for the county school district for approval in a public meeting at least 20 days before the first day of the 2020-2021 school year; 2. Charter schools shall present their plans for approval in a manner prescribed by their sponsor at least 20 days before the first day of the 2020-2021 school year; and 3. Private schools· shall present their plans for approval in the manner prescribed by their governing body at least 20 days before the first day of the 2020-2021 school year.

SECTION 2:	Effective 12:01 am on June 10, 2020, all Pre-kindergarten through 12th grade school facilities may reopen to students, staff, and parents/ guardians subject to the conditions set forth in this directive, Directive 021, and guidelines issued by the Nevada Department of Education in consultation with school districts related to the reopening of schools and social distancing guidelines for the following purposes: 1. In-person instruction involving students and staff, including summer school, high school credit recovery, career and technical education, and extended school ye programming; 2. Other instructional activities such as special education evaluations and individualized tutoring; 3. Administrative activities by educators, staff, or students such as locker/ classroom clean out and returning/ retrieving devices and instruments; 4. Planning activities by educators and staff such as professional development and instructional planning; and 5. Family and community engagement activities such as school registration, Individualized Education Plan (IEP) meetings, volunteer and partnership planning.
SECTION 3:	County school districts, charter schools, and private schools that reopen school buildings or facilities must ensure that occupancy shall not exceed the lesser of 50% of the listed fire code capacity of a single space within a school site or fifty persons in an appropriately sized space that enables all social distancing requirements to be satisfied.
SECTION 4:	Sections 2 through 10 of Emergency Directive 005 and shall remain in effect through the conclusion of each county school district or charter school's summer learning and 2019-20 extended school year programming. Emergency Programs of Distance Education approved by the Superintendent of Public Instruction may continue through the conclusion of each county school district or charter school's summer learning and 2019-2020 extended school year programming.
SECTION 5:	County school districts and charter schools may offer summer instruction and 2019-2020 extended school year programming through: 1. Distance education under an approved Emergency Program of Distance Education; 2. In-person instruction following strict social distancing protocols; or 3. A combination of distance education and in-person instruction. Any summer learning opportunities offered in-person must be optional for students; if the learning opportunity is credit-bearing, a distance education option must be provided.
SECTION 6:	The Superintendent of Public Instruction shall prescribe minimum requirements and a timeline for each county school district and charter school to develop, receive governing board approval for, and submit to the Department of Education a plan for a Path Forward Program of Distance Education. Such plans will contemplate 2020-2021 school year instruction offered through: 1. Distance education under an approved Path Forward Program of Distance Education; 2. In-person instruction following strict social distancing protocols; or 3. A combination of distance education and in-person instruction.
SECTION 7:	County school districts, charter schools, and private schools may reopen school athletic fields and facilities for student athletics training, practices, and competition in accordance with guidance promulgated by the Nevada Interscholastic Activities Association (NIAA) and any applicable conditions set forth by directive regarding athletic events. In promulgating guidance, the NIAA shall consider relevant medical guidance and expertise, including but not limited to guidance issued by the Centers for Disease Control and Prevention (CDC) and the National Federation of State High School Associations (NFHS) Sports Medicine Advisory Committee (SMAC).

SECTION 8:	County school districts, charter schools, and private schools may reopen school athletic fields and facilities, including tennis courts, golf courses, swimming pools, and gyms to the public in accordance with all applicable reopening guidelines and protocols for such facilities promulgated by the Nevada State Occupational Safety and Health Association (NV OSHA), the Local Empowerment Advisory Panel (LEAP), and the CDC.
SECTION 9:	County school districts, charter schools, and private schools should adhere to all applicable re-opening guidelines and protocols promulgated by NV OSHA, LEAP, and the CDC regarding cleaning practices, quarantine protocols, and social distancing to the maximum extent practicable.
SECTION 10:	County school districts, charter schools, and private schools, may keep any school buildings, facilities, or athletic fields closed to students, staff, parents, guardians, or the public at their discretion in the interest of the health and safety of their school community.
SECTION 11:	This Directive may be renewed by a subsequent Directive promulgated pursuant to the March 12, 2020 Declaration of Emergency to facilitate the State's response to the COVID-19 pandemic.

DECLARATION OF EMERGENCY 022 ORDERS

IN WITNESS WHEREOF, I have hereunto set my hand and caused the Great Seal of the State of Nevada to be affixed at the State Capitol in Carson City, this 9th day of June, in the year two thousand twenty.

Governor of the State of Nevada

Secretary of State

Deputy Secretary of State

Nevada's Path Forward: A Framework for a Safe, Efficient, and Equitable Return to School Buildings
Nevada Summer Learning & Activity Guidance
Nevada Interscholastic Activities Association Re-Opening Guidance

Executive	**Legislature**	**Alerts**
Governor	Legislature Website	Amber Alerts
Lt. Governor	NELIS	Consumer Affairs
Secretary of State	Legislature Meetings	Weather Alerts
Attorney General	Find Your Legislator	211- Service Information
State Treasurer	Nevada State Senate	511 - Road Conditions
State Controller	Nevada State Assembly	911 - Emergency Help
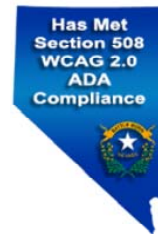
Has Met Section 508 WCAG 2.0 ADA Compliance

R.A. 749

EXHIBIT FFFF

Interim Guidance: Get Your Mass Gatherings or Large Community Events Ready for Coronavirus Disease 2019 (COVID-19)

Summary of Recent Changes

This interim guidance is based on what is currently known **about the Coronavirus Disease 2019 (COVID-19)** (https://www.cdc.gov/coronavirus/2019-ncov/about/index.html). The Centers for Disease Control and Prevention (CDC) will update this interim guidance as needed and as additional information becomes available.

This interim guidance is intended for organizers and staff responsible for planning mass gatherings or large community events in the United States. **A mass gathering is a planned or spontaneous event with a large number of people in attendance that could strain the planning and response resources of the community hosting the event, such as a concert, festival, conference, or sporting event**. Guidance specific to schools and childcare settings, institutions of higher education, and community- and faith-based organizations can be found on **CDC's website focused on prevention COVID-19 spread in communities** (https://www.cdc.gov/coronavirus/2019-ncov/community/index.html).

COVID-19 is an emerging respiratory disease and there is more to learn about its transmission, clinical course, and populations at increased risk of disease and complications (see **How COVID-19 Spreads** (https://www.cdc.gov/coronavirus/2019-ncov/about/transmission.html). Everyone can do their part to help plan, prepare, and respond to this emerging public health threat.

In This Document

- Considerations for Cancelling or Postponing a Mass Gathering

- Steps to Plan, Prepare, and Proceed with a Mass Gathering

- Follow-up After a COVID-19 Outbreak has Ended

- Readiness Resources

Older adults and persons with severe underlying health conditions (https://www.cdc.gov/coronavirus/2019-ncov/specific-groups/high-risk-complications.html) are considered to be at increased risk of more serious illness after contracting COVID-19. Priority should be given to ensuring the safety of these groups of people, particularly for any mass gatherings that are expected to have a large number of older adults or persons with underlying conditions.

As the COVID-19 outbreak evolves, CDC strongly encourages event organizers and staff to prepare for the possibility of outbreaks in their communities. Creating an emergency plan for mass gatherings and large community events can help protect you and the **health of your event,** participants and the local community.

CDC has developed recommended actions for preventing the spread of COVID-19 at mass gatherings and large community events. This guidance suggests strategies to help you plan for and implement ways in which to better protect all involved in a mass gathering.

Organizers should continually assess, based on current conditions, whether to postpone, cancel, or significantly reduce the number of attendees (if possible) for mass gatherings. Listed below are some considerations organizers should keep in mind as they make decisions about whether to postpone or cancel an event. If organizers decide to proceed with an event they should consult the "Steps to Plan, Prepare, and Proceed with a Mass Gathering" section of this document.

cdc.gov/coronavirus

R.A. 751

Considerations for Postponing or Cancelling a Mass Gathering

There are a number of factors to consider when determining the need to postpone or cancel a large gathering. These include:

- **The overall number of attendees.** Larger gatherings (for example, more than 250 people) offer more opportunities for person-to-person contact and therefore pose greater risk of COVID-19 transmission.
- **The number of people attending who are at greater risk of more serious illness after contracting COVID-19.** Older adults and persons with severe pre-existing health conditions are thought to be at increased risk.
- **The density of attendees within a confined area.** Based on what is currently known about the virus, spread from person-to-person happens most frequently among close contacts (within 6 feet).
- **The potential economic impact to participants, attendees, staff, and the larger community**.
- **The level of transmission in your local community and the level of transmission in the areas from which your attendees will travel.** To better understand the level of community transmission in your community (and in the communities from which your attendees will be traveling), consult with your local and/or state public health department.
- **If there are ways in which to significantly reduce the number of attendees**. For example, for sporting events or school concerts, organizers could consider holding the event but significantly reduce the number of audience members.

At a minimal-to-moderate level of community transmission, it is recommended to:

- Cancel community-wide mass gatherings (for example, >250 people; **the cutoff threshold is at the discretion of community leadership based on the current circumstances the community is facing and the nature of the event** (https://www.cdc.gov/coronavirus/2019-ncov/downloads/community-mitigation-strategy.pdf) or move to smaller groupings.
- Cancel gatherings of more than 10 people for organizations that serve higher-risk populations.

At a substantial level of community transmission, it is recommended to cancel mass gatherings of any size.

Steps to Plan, Prepare, and Proceed with a Mass Gathering

The details of your emergency operations plan should be based on the size and duration of your events, demographics of the participants, complexity of your event operations, and type of on-site services and activities your event may offer.

Review the existing emergency operations plans for your venues

- **Meet with the emergency operations coordinator or planning team at your venues.** Discuss the emergency operations plans and determine how they may impact aspects of your events, such as personnel, security, services and activities, functions, and resources. Work with the emergency operations coordinator or planning team to prepare for the key prevention strategies outlined in this guidance. Develop a contingency plan that addresses various scenarios described below which you may encounter during a COVID-19 outbreak.
- **Establish relationships with key community partners and stakeholders.** When forming key relationships for your events, include relevant partners such as the local public health department, community leaders, faith-based organizations, vendors, suppliers, hospitals, hotels, airlines, transportation companies, and law enforcement. Collaborate and coordinate with them on broader planning efforts. Clearly identify each partner's role, responsibilities, and decision-making authority. Contact your local public health department for a copy of their outbreak response and mitigation plan for your community. Participate in community-wide emergency preparedness activities.

R.A. 752

Address key prevention strategies in your emergency operations plan

- **Promote the daily practice of everyday preventive actions**. Use **health messages and materials developed by credible public health sources such as CDC** (https://www.cdc.gov/coronavirus/2019-ncov/communication/factsheets.html), or your local public health department to encourage your event staff and participants to practice good personal health habits. Consider displaying signs (physical and/or electronic) throughout the event to provide frequent reminders to participants to engage in **everyday preventive actions** (https://www.cdc.gov/coronavirus/2019-ncov/about/prevention-treatment.html) to help prevent the spread of COVID-19. These include:

  » Stay home when you are sick, except to get medical care.
  » Cover your coughs and sneezes with a tissue, then throw the tissue in the trash.
  » Wash your hands often with soap and water for at least 20 seconds, especially after going to the bathroom; before eating; and after blowing your nose, coughing, or sneezing. If soap and water are not available, use hand sanitizer that contains at least 60% alcohol.
  » Avoid touching your eyes, nose, and mouth with unwashed hands.
  » **Clean frequently touched surfaces and objects daily** (https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/cleaning-disinfection.html).

  Handshakes and "high-fives" are often exchanged at meetings and sporting events, and these can be ways in which COVID-19 can be transmitted from person to person. As a way of decreasing the social pressure to engage in these common behaviors, consider displaying signs (physical and/or electronic) that discourage these actions during the gathering.

Note: Use culturally appropriate messages, materials, and resources.

- **Provide COVID-19 prevention supplies to event staff and participants.** Ensure that your events have supplies for event staff and participants, such as hand sanitizer that contains at least 60% alcohol, tissues, trash baskets, disposable facemasks, and cleaners and disinfectants. Clean frequently touched surfaces and objects with detergent and water prior to disinfection, especially surfaces that are visibly dirty.

  » Routinely clean and disinfect surfaces and objects that are frequently touched. Clean with the cleaners typically used. Use all cleaning products according to the directions on the label.
  » For disinfection most common EPA-registered household disinfectants should be effective.
    - A list of products that are EPA-approved for use against the virus that causes COVID-19 is available **here** (https://www.epa.gov/sites/production/files/2020-03/documents/sars-cov-2-list_03-03-2020.pdf). Follow the manufacturer's instructions for all cleaning and disinfection products (e.g., concentration, application method and contact time, etc.).
    - Additionally, diluted household bleach solutions can be used if appropriate for the surface. Follow manufacturer's instructions for application and proper ventilation. Check to ensure the product is not past its expiration date. Never mix household bleach with ammonia or any other cleanser. Unexpired household bleach will be effective against coronaviruses when properly diluted. Prepare a bleach solution by mixing:
      › 5 tablespoons (1/3rd cup) bleach per gallon of water or
      › 4 teaspoons bleach per quart of water
  » Additional information on cleaning and disinfection of community facilities can be found on **CDC's website** (https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/cleaning-disinfection.html).

*Note: **Disposable facemasks** (https://www.cdc.gov/niosh/npptl/pdfs/UnderstandDifferenceInfographic-508.pdf) should be kept on-site and used only if someone (worker or attendee) becomes sick at your event. Those who become sick should be immediately isolated from staff and participants who are not sick and given a clean disposable facemask to wear.*

- **Plan for staff absences.** Develop and implement flexible attendance and sick-leave policies. Event staff need to stay home when they are sick, or they may need to stay home to care for a sick household member or care for their children in the event of school dismissals. Allow staff to work from home when possible. Identify critical job functions and positions and plan for alternative coverage by cross-training staff (similar to planning for holiday staffing). Provide instructions about how and when to safely return to work.

- **Implement flexible staff attendance and sick-leave policies (if possible)**. Require staff to stay home if they are sick or caring for a sick household member. Notify staff when you plan to implement COVID-19 leave policies.

Note: Direct staff who get sick with COVID-19 symptoms to avoid contact with others and to seek medical advice.

3

R.A. 753

- **Consider alternatives for event staff and participants who are at increased risk for complications from COVID-19**. Currently, **older adults and persons with severe underlying health conditions** (https://www.cdc.gov/coronavirus/2019-ncov/specific-groups/high-risk-complications.html) are considered to be at increased risk for severe illness and complications from COVID-19. Event organizers can consider reassigning duties for higher-risk staff to have minimal contact with other persons. People in higher-risk groups should consult with their healthcare provider about attending large events. Consider providing refunds to event participants who are unable to attend because they are at high risk and/or provide information on alternative viewing options.

- **Promote messages that discourage people who are sick from attending events**. This could include electronic messages sent to attendees prior to travel to the event as well as messages requesting that people leave events if they begin to have symptoms of COVID-19, which include fever, cough, and shortness of breath. Attendees should be encouraged to seek medical advice promptly by calling ahead to a doctor's office or emergency room to get guidance. See CDC guidance on **what to do when sick with COVID-19** (https://www.cdc.gov/coronavirus/2019-ncov/about/steps-when-sick.html).

Note: Use culturally appropriate messages, materials, and resources.

- **If possible, identify a space that can be used to isolate staff or participants who become ill at the event.** Designate a space for staff and participants who may become sick and cannot leave the event immediately. Work with partners, such as local hospitals, to create a plan for treating staff and participants who do not live nearby. Include a **plan for separating and caring for vulnerable populations** (https://www.cdc.gov/coronavirus/2019-ncov/specific-groups/high-risk-complications.html). If any staff member or participant becomes sick at your event, separate them from others as soon as possible. Establish procedures to help sick staff or participants leave the event as soon as possible. Provide them with clean, **disposable facemasks** (https://www.cdc.gov/niosh/npptl/pdfs/UnderstandDifferenceInfographic-508.pdf) to wear, if available. Work with the local public health department and nearby hospitals to care for those who become sick. If needed, contact emergency services for those who need emergency care. Public transportation, shared rides, and taxis should be avoided for sick persons, and disposable facemasks should be worn by persons who are sick at all times when in a vehicle. Read more about **preventing the spread of COVID-19 if someone is sick**. (https://www.cdc.gov/coronavirus/2019-ncov/if-you-are-sick/steps-when-sick.html).
Note: Providing a sick staff member or event participant with a disposable facemask to wear does not replace the need for that person to leave as soon as possible, stay home, and seek medical advice. Wearing a disposable facemask in the workplace or while participating in a large event is not a sufficient infection control measure.

- **Plan ways to limit in-person contact for staff supporting your events.** Several ways to do this include offering staff the option to telework if they can perform their job duties off-site, using email, and conducting meetings by phone or video conferencing. Reduce the number of staff needed such as staggering shifts for staff who support essential functions and services during events.

- **Develop flexible refund policies for participants.** Create refund policies that permit participants the flexibility to stay home when they are sick, need to care for sick household members, or are at high risk for complications from COVID-19.

- **Identify actions to take if you need to postpone or cancel events.** Work closely with local public health officials to assess local capacities in the area. During a COVID-19 outbreak, resource limitations among local healthcare systems and/or law enforcement can influence the decision to postpone or cancel your events. If possible, plan alternative ways for participants to enjoy the events by television, radio, or online.

Communicate about COVID-19

- **Stay informed about the local COVID-19 situation.** Get **up-to-date information** (https://www.cdc.gov/coronavirus/2019-ncov/index.html) about local COVID-19 activity from public health officials. Be aware of temporary school dismissals in your area because these may affect event staff.

*Note: Early in the outbreak, local public health officials may recommend schools **dismiss temporarily** (https://www.cdc.gov/coronavirus/2019-ncov/specific-groups/guidance-for-schools.html).*

4

- **Update and distribute timely and accurate emergency communication information.** Identify everyone in your chain of communication (for example, event staff, participants, suppliers, vendors, and key community partners and stakeholders) and establish systems for sharing information with them. Maintain up-to-date contact information for everyone in the chain of communication. Identify platforms, such as a hotline, automated text messaging, and a website to help disseminate information. Update key community partners and stakeholders regularly. Share information about how you and the emergency operations coordinator or planning team for the venues are responding to the outbreak.
- **Identify and address potential language, cultural, and disability barriers associated with communicating COVID-19 information to event staff and participants.** Information you share should be easily understood by everyone attending the events. Learn more about reaching people of diverse languages and cultures by visiting: **Know Your Audience** (http://www.cdc.gov/healthcommunication/Audience/index.html). You also can learn more about communicating to staff in a crisis at: **Crisis Communications Plan** (http://www.ready.gov/business/implementation/crisis).

Follow-up After a COVID-19 Outbreak has Ended

Remember, a COVID-19 outbreak could last for a long time. When public health officials determine that the outbreak has ended in your local community, work with them to identify criteria for scaling back COVID-19 prevention actions at your events. Base the criteria on slowing of the outbreak in your local area. If your events were cancelled, work with your venues to reschedule your events.

Evaluate the effectiveness of your emergency operations and communication plans

- **Meet with the emergency operations coordinator or planning team for your venues to discuss and note lessons learned.** Gather feedback from event staff, participants (if possible), community partners, and stakeholders to improve plans. Identify any gaps in the plans and any needs you may have for additional resources.
- **Maintain and expand your planning team.** Look for ways to expand community partnerships. Identify agencies or partners needed to help you prepare for infectious disease outbreaks in the future and try to add them to your planning team.
- **Participate in community-wide emergency preparedness activities**.

COVID-19 Readiness Resources

Visit www.cdc.gov/COVID19 for the latest information and resources about COVID-19

COVID 2019 Situation Summary
https://www.cdc.gov/coronavirus/2019-nCoV/summary.html

Prevention and Treatment
https://www.cdc.gov/coronavirus/2019-ncov/about/prevention-treatment.html

What to Do If You Are Sick
https://www.cdc.gov/coronavirus/2019-ncov/about/steps-when-sick.html

Pregnant Women and COVID-19 FAQs
https://www.cdc.gov/coronavirus/2019-ncov/specific-groups/pregnancy-faq.html

FAQs: Coronavirus Disease-2019 (COVID-19) and Children
https://www.cdc.gov/coronavirus/2019-ncov/specific-groups/children-faq.html

Handwashing: A Family Activity
https://www.cdc.gov/handwashing/handwashing-family.html

Handwashing: Clean Hands Save Lives
http://www.cdc.gov/handwashing

5

CDC Interim Guidance for Specific Audiences

Get Your Household Ready for Coronavirus Disease 2019 (COVID-19)
https://www.cdc.gov/coronavirus/2019-ncov/community/get-your-household-ready-for-COVID-19.html

Interim Guidance for Administrators of US Childcare Programs and K-12 Schools to Plan, Prepare, and Respond to Coronavirus Disease 2019 (COVID-2019)
https://www.cdc.gov/coronavirus/2019-ncov/specific-groups/guidance-for-schools.html

Interim Guidance for Administrators of US Institutions of Higher Education (IHE) to Plan, Prepare, and Respond to Coronavirus Disease 2019 (COVID-19)
https://www.cdc.gov/coronavirus/2019-ncov/community/guidance-ihe-response.html

Interim Guidance for Businesses and Employers to Plan and Respond to Coronavirus Disease 2019 (COVID-19)
https://www.cdc.gov/coronavirus/2019-ncov/specific-groups/guidance-business-response.html

Interim Guidance for Travelers
https://www.cdc.gov/coronavirus/2019-ncov/travelers/index.html

CDC Communication Resources

Interim Guidance: Public Health Communicators Get Your Community Ready for Coronavirus Disease 2019 (COVID-19)
https://www.cdc.gov/coronavirus/2019-ncov/php/public-health-communicators-get-your-community-ready.html

Print Resources
https://www.cdc.gov/coronavirus/2019-ncov/communication/factsheets.html

Buttons and Badges
https://www.cdc.gov/coronavirus/2019-ncov/communication/buttons-badges.html

6

EXHIBIT GGGG

northjersey.com

CORONAVIRUS

The second coronavirus wave is here in NJ. Here's why it's different from last time.

Lindy Washburn NorthJersey.com
Published 1:23 p.m. ET Oct. 19, 2020 | **Updated 8:58 a.m. ET Oct. 21, 2020**

The second wave of the coronavirus pandemic is mounting across New Jersey, as new daily diagnoses in recent days have reached heights not seen since May. How high this wave will climb — and how deadly it will be — remains unknown.

Experts anticipate there will be more cases with fewer deaths, as younger people account for more of the infections and treatment improves. But none of the current medications is a knockout punch, and people are still hospitalized and die of COVID-19 — including 758 in the hospital Sunday, with 62 on ventilators. No vaccine has yet been approved.

The potential that the current trend could accelerate as it did in the spring, with exponential community spread, is real. Contact tracing, masking and social distancing practices will help fight the surge. But state officials are redoubling their push for precautions.

"As cooler weather pulls more of us back inside, we must remain extra vigilant," Gov. Phil Murphy said Monday. Most of the new cases are attributable not to schools or businesses, but gatherings inside private homes, he said.

Acknowledging public fatigue with restrictions on their activities, Health Commissioner Judith Persichilli urged the public to double down for the sake of the upcoming Thanksgiving holidays.

"Now is not the time to let your guard down," she said. "Our behavior now will be critical in shaping how our holidays will be celebrated."

Cases rising

R.A. 758

On Monday, New Jersey reported 1,192 new cases, adding to 2,240 cases from the weekend and 823 on Friday. With the exception of a spike of 1,301 new cases on Oct. 8, that level of new daily cases hasn't been seen in the state since the COVID-19 crisis of March and April was unwinding in May.

Story continues below chart

The rise is part of a national trend, with 38 states seeing increases of 5% or more and nine states setting single-day records on Friday and Saturday. Nearby, Westchester County, New York, currently has more than 1,000 active cases, a benchmark it hasn't seen since June. And new cases in Connecticut increased by 50% last week.

COVID in schools: List of North Jersey schools that have reported COVID cases or paused in-person learning

NJ unemployment: How to collect the extra $300 a week in federal jobless benefits

At University Hospital in Newark, for the first time in several weeks the rate of positive test results hit 4% and a patient died of COVID-19 complications, said Dr. Shereef Elnahal, the CEO. "Please be vigilant and distance, mask up and avoid gatherings," he said in a tweet. "Our second wave has begun."

Hackensack Meridian Health's 16 hospitals have seen the number of inpatients with COVID-19 nearly triple, from about 50 in early September to 150 last week, said Dr. Daniel Varga, the system's chief physician executive. That still is a fraction of the 2,000 seen on peak days in April.

Lower death rates

The combination of younger patients and better treatments is improving the odds of survival.

Nearly three-quarters of those who have tested positive in New Jersey since September have been younger than 50 — up from less than half in the first wave of the pandemic. Younger people tend to have milder cases and are less likely to require hospitalization. When they are hospitalized, they have shorter hospital stays and are less likely to require ventilation.

The death rate since Sept. 1 has been a fraction of what it was in the pandemic's first six months, though it is too soon to tell exactly how deadly this second wave will be. It can be several weeks before it's clear how many of the new cases will be fatal.

The spread of the pandemic looks different this time from the way it did before, experts say. Rather than emanating outward from New York City, and seeping southward across New Jersey from Bergen County, outbreaks and hot spots have popped up in several locations.

"This is now all over, up and down our state," Murphy said Monday.

NJ news: Gov. Murphy extends temporary hold on utility shutoffs until March 2021

For subscribers: NJ will grant early release for 20% of prison inmates — but even supporters have concerns

Five counties on Monday reported more than 100 new cases: Ocean with 154, Essex with 132, Union with 109, Middlesex with 108, and Bergen with 103. In addition, Monmouth had 84 new cases, Hudson had 78 and Camden had 75.

"Daily reports of cases have doubled since last month," Persichilli said. "While we have seen hot spots in Ocean County and at our universities, overall we are seeing more widespread cases throughout the state due to community spread and not any single event or reopening step."

Story continues below chart

Indeed, Murphy said he did not anticipate a reversal of the limited reopening he has allowed so far for indoor dining, gyms, entertainment and other gatherings. None of the recent clusters of cases were attributable to such steps, he said.

And while scattered clusters have been reported in K-12 schools, no broad changes in the district-by-district reopening plans have been recommended.

Rather, Murphy said, it is private gatherings "that are beyond our ability to regulate or properly enforce" that are to blame.

Universities — and especially off-campus housing — have been among the biggest hot spots during the second wave:

> Rowan University, in Glassboro, Gloucester County, has had 543 positive cases since late August, 60% of them in off-campus housing.
> Monmouth University in West Long Branch traced most of its 343 cases since late August to an off-campus party — a so-called super-spreader event.
> The College of New Jersey reported 115 cases since Aug. 25 — all but three of them among off-campus students and employees.

And Fairleigh Dickinson University traced a small outbreak at its Metropolitan Campus, in Teaneck and Hackensack, to an off-campus party.

There also are active outbreaks of COVID-19 at 156 long-term care facilities statewide, including 21 in Monmouth County and 13 in Bergen County. But with weekly virus tests for staff members, and rapid access to testing for residents, health officials hope to contain those outbreaks quickly, without the spreading death and disease of the spring.

Other reasons for modest hope that the pandemic will not be as deadly this time:

Treatment has improved

"Small but significant breakthroughs in treatment" have improved the odds of survival, said Dr. Adam Jarrett, chief medical officer at Holy Name Medical Center.

Most importantly, doctors wait longer to put patients on ventilators, relying on high-flow oxygen and other strategies to improve oxygen levels. The anti-viral drug remdesivir is in wide use, and has been shown to shorten hospital stays. Steroids, in particular dexamethasone, have lowered death rates. An experimental cocktail of monoclonal antibodies, used on President Donald Trump, shows promise in fighting the disease.

People seek care sooner

Contact tracing and more widespread testing mean people find out earlier in the disease process that they are infected. They may learn they've been exposed and be monitoring their symptoms while quarantined at home. Generally, there is less delay in seeking hospital care if it is needed, because the hospitals are not in a state of crisis.

The combination of "earlier presentation, a younger population and better interventions" means patients spend less time in the hospital, said Varga, of Hackensack Meridian Health. That has allowed hospitals to remain open for all their normal services, in contrast to the elective-procedure shutdowns earlier this year.

The average length of stay for a COVID patient at Hackensack Meridian's 16 hospitals is three days, and most are treated with supportive care, Varga said.

Lindy Washburn is a senior healthcare reporter for NorthJersey.com. To keep up-to-date about how changes in the medical world affect the health of you and your family, please subscribe or activate your digital account today.

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R.A. 762

EXHIBIT HHHH

N.J. reports 2,472 new COVID-19 cases, 9 more deaths — 2nd time in a week with more than 2,000 cases

Updated Nov 05, 12:33 PM; Posted Nov 04, 1:16 PM

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By **Brent Johnson | NJ Advance Media for NJ.com**

New Jersey on Wednesday reported 2,472 more coronavirus cases and nine additional confirmed deaths, marking the second time in a week with more than 2,000 positive tests as the state continues to face a second wave of the pandemic.

The caseload is the state's highest daily total since May 6, when 2,494 cases were reported. It also marks the 18th straight day of more than 1,000 new positive tests in the state.

Nearly half of the Garden State's 21 counties reported more than 100 new cases, led by Essex County with 356 positive tests.

New Jersey's hospitals had 1,000 patients with confirmed or suspected COVID-19 cases for the eighth straight day and the most coronavirus patients (1,231) in more than four months.

The percent positivity for tests conducted on Saturday, the most recent day with data available, was 8.22% — the highest positivity rate since May 19.

And the statewide rate of transmission dropped slightly to 1.27, but it still sits above the critical benchmark indicating the outbreak here is expanding.

New Jersey's latest seven-day rolling average is 1,767 new daily cases — a 23% increase from a week earlier.

"Again, we urge all New Jerseyans to remain vigilant," Gov. Phil Murphy said as he announced the latest update on social media. "This virus has not gone away because we are tired of it."

Governor Phil Murphy ✓ @GovMurphy · Nov 4, 2020
#COVID19 UPDATE: New Jersey has 2,472 new positive cases, pushing our cumulative total to 245,257.

We are still in the midst of the pandemic and need everyone to take this seriously. Wear a mask. Social distance. Wash your hands.

Governor Phil Murphy ✓
@GovMurphy

Sadly, we are also reporting nine new confirmed COVID-19

deaths for a total of 14,591 lives lost.

Again, we urge all New Jerseyans to remain vigilant. This virus has not gone away because we are tired of it.

Learn more: covid19.nj.gov

1:08 PM · Nov 4, 2020   ⓘ

♡ 208   ⚡ See the latest COVID-19 information on Twitter

Murphy did not say when the nine newly reported deaths occurred. Some might have occurred days, if not weeks ago.

The new numbers come as cases and hospitalizations rise across the country. Wednesday marked the first time the United States saw more than 100,000 coronavirus cases reported in a single day.

New Jersey's daily figures are still far below New Jersey's April peak, when officials regularly announced thousands of new cases and hundreds of new deaths a day, while more than 8,000 patients were being treated in hospitals. It's also difficult to compare the recent increases to the spring because the state has doubled its testing capacity. And officials say hospitals have learned more about how to better treat patients for the virus.

Murphy said Tuesday the outbreak here is "not remotely where it was" during the the first wave in the spring.

"I think it's too early to declare victory, though," he added.

State Health Commissioner Judith Persichilli said Monday that "very, very preliminary" prediction models show that New Jersey's second wave may not peak until the first quarter of next year.

Murphy has said "all options are on the table" to fight the growing spread in New Jersey, including a statewide curfew and another round of statewide stay-at-home orders and business closings.

But he has also said he believes the virus is not "uncontrollable" in the state. And he has expressed optimism about being able to battle local outbreaks with increased testing, contact tracing and public education, as well as residents wearing masks, practicing social distancing and washing hands.

R.A. 766

Officials have said the recent increases are largely because of gatherings inside private homes and because of fatigue over restrictions. Those, Murphy said, are difficult to regulate.

CORONAVIRUS RESOURCES: <u>Live map tracker</u> | <u>Newsletter</u> | <u>Homepage</u>

New Jersey has now reported 245,257 total COVID-19 cases out of more than 4.8 million tests in the nearly eight months since the state's first case was announced March 4. The state of 9 million people has reported 16,391 deaths attributed to the virus in that time — 14,591 lab-confirmed and 1,800 considered probable. The probable death toll, which is updated weekly, was revised higher Wednesday by seven fatalities.

New Jersey's death toll is the fifth highest in the United States, after New York, Texas, California, and Florida. The Garden State has <u>the nation's highest COVID-19 death rate</u> per 100,000 residents.

The state's seven-day rolling average of new cases is high enough for the state to qualify for its own quarantine travel advisory. But officials announced last week that New Jerseyans and travelers from other neighboring states that have reached the threshold <u>will not have to quarantine</u>.

New York, which has been generating the quarantine list weekly, <u>switched to a testing requirement this week</u>, after the list grew to include most of the county.

Murphy, though, said Monday that New Jersey will not adopt New York's plan and will stick with the travel advisory. Instead, he's asking people to avoid any unnecessary travel.

The advisory was updated Wednesday to include <u>43 U.S. states and territories</u>.

"As a second wave of COVID-19 has begun across the nation and our state, we must do everything possible to stop the further spread of COVID-19." Murphy said in a statement. "It remains our top priority to ensure the safety of New Jersey residents, and we ask individuals arriving from these 43 states to get tested for COVID-19 and self-quarantine for 14 days."
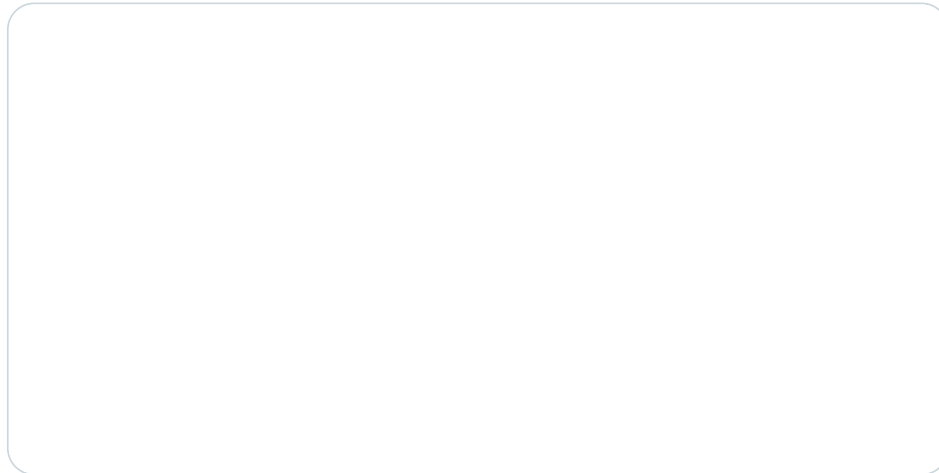
> **Governor Phil Murphy** ✔
> @GovMurphy
>
> If you're traveling to NJ from the following states and territories, you should self-quarantine for 14 days:

AL, AK, AZ, AR, CA, CO, FL, GA, GU, ID, IL, IN, IA, KS, KY, LA, MD, MA, MI, MN, MS, MO, MT, NE, NV, NM, NC, ND, OH, OK, OR, PR, RI, SC, SD, TN, TX, UT, VA, WA, WV, WI, WY

1:35 PM · Nov 4, 2020

♡ 632   ⚡ See the latest COVID-19 information on Twitter

COUNTY-BY-COUNTY NUMBERS (sorted by most new cases)

- Essex County: 26,053 positive tests (356 new), 1,919 confirmed deaths (230 probable)
- Union County: 21,265 positive tests (238 new), 1,206 confirmed deaths (168 probable)
- Middlesex County: 23,225 positive tests (235 new), 1,248 confirmed deaths (203 probable)
- Bergen County: 26,065 positive tests (212 new), 1,822 confirmed deaths (245 probable)
- Passaic County: 21,734 positive tests (188 new), 1,124 confirmed deaths (141 probable)
- Hudson County: 24,103 positive tests (185 new), 1,378 confirmed deaths (158 probable)
- Camden County: 12,328 positive tests (157 new), 585 confirmed deaths (53 probable)
- Morris County: 9,691 positive tests (145 new), 695 confirmed deaths (145 probable)
- Monmouth County: 14,692 positive tests (111 new), 782 confirmed deaths (92 probable)
- Burlington County: 8,961 positive tests (109 new), 478 confirmed deaths (41 probable)

R.A. 768

- Mercer County: 9,624 positive tests (90 new), 606 confirmed deaths (36 probable)
- Ocean County: 17,180 positive tests (84 new), 1,007 confirmed deaths (66 probable)
- Gloucester County: 5,852 positive tests (75 new), 242 confirmed deaths (7 probable)
- Atlantic County: 5,524 positive tests (70 new), 255 confirmed deaths (14 probable)
- Somerset County: 6,726 positive tests (67 new), 522 confirmed deaths (75 probable)
- Cumberland County: 4,123 positive tests (32 new), 154 confirmed deaths (8 probable)
- Hunterdon County: 1,692 positive tests (30 new), 73 confirmed deaths (54 probable)
- Warren County: 1,676 positive tests (16 new), 158 confirmed deaths (13 probable)

- Sussex County: 1,801 positive tests (10 new), 162 confirmed deaths (36 probable)
- Salem County: 1,206 positive tests (8 new), 84 confirmed deaths (5 probable)
- Cape May County: 1,167 positive tests (5 new), 91 confirmed deaths (10 probable)

HOSPITALIZATIONS

There were 1,213 patients with confirmed or suspected COVID-19 cases across the Garden State's 71 hospitals as of Tuesday night. That's 80 more than the night before and the highest number since June 24.

There were 238 patients in critical or intensive care (22 more than the night before), including 80 on ventilators (two more).

There were 163 coronavirus patients discharged Tuesday, according to the state's online dashboard.

TRANSMISSION RATE

New Jersey's latest transmission rate of 1.27 was lower than the 1.28 reported Monday and Tuesday. The rate had trended upward since a recent low of 1.13 on Oct. 20.

That's much lower than when the rate was above 5 toward the end of March. But any number above 1 means each newly infected person, on average, is spreading the virus

number above 1 means each newly infected person on average is spreading the virus to at least one other person. Any number below 1 means the virus' spread is decreasing.

A transmission rate of 1.27 means every 100 infected people will spread the virus to 127 others.

SCHOOL CASES

Since the start of the school year, at least 122 New Jersey students and educators have either contracted COVID-19 or passed it on to someone else while in the classroom, walking around their schools or participating in extracurricular activities, state officials said.

The 122 cases were part of 28 confirmed school outbreaks that local health investigations concluded were the result of students and teachers catching the coronavirus at school.

AGE BREAKDOWN

Broken down by age, those 30 to 49 years old make up the largest percentage of New Jersey residents who have caught the virus (31.3%), followed by those 50-64 (25.4%), 18-29 (17.6%), 65-79 (12.4%), 80 and older (8.1%), 5-17 (4.2%), and 0-4 (0.8%).

On average, the virus has been more deadly for older residents, especially those with pre-existing conditions. Nearly half the state's COVID-19 deaths have been among residents 80 and older (47.2%), followed by those 65-79 (32.2%), 50-64 (15.9%), 30-49 (4.3%), 18-29 (0.4%), 5-17 (0%) and 0-4 (0.02%).

At least 7,230 of the state's COVID-19 deaths have been among residents and staff members at nursing homes and other long-term care facilities.

Officials warned Monday that while a larger percentage of younger people had been contracting the virus in recent months, older people are now getting it at a faster clip.

Meanwhile, at least 17,500 more people in New Jersey have died this year than would be expected, state mortality data shows, which suggests the pandemic has claimed even more lives than state totals, according to an ongoing analysis by NJ Advance Media.

GLOBAL NUMBERS

As of early Wednesday afternoon, there have been more than 47.6 million positive COVID-19 tests across the globe, according to a running tally by Johns Hopkins

R.A. 770

COVID-19 tests and deaths nationwide, according to a running tally by Johns Hopkins University. More than 1.2 million people have died.

The United States has the most positive tests in the world, with more than 9.4 million, and the most deaths, at more than 232,700.

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Brent Johnson may be reached at bjohnson@njadvancemedia.com.

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Around the web

EXHIBIT IIII

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N.J. reports 2,104 new COVID-19 cases, 12 new deaths as second wave spike escalates

Updated 2:27 PM; Today 1:03 PM

Coronavirus in New Jersey: Update on November...

[Coronavirus in New Jersey: Update on November 5, 2020](#)

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By **Matt Arco | NJ Advance Media for NJ.com**

New Jersey health officials reported 2,104 new coronavirus cases and 12 additional deaths on Thursday, marking the first time the state had back-to-back days with more than 2,000 positive tests in six months, as the second wave of the outbreak continues to escalate.

The state's 71 hospitals also reported an increase in patients with the ninth straight day of more than 1,000 people being treated for confirmed or suspected cases. The 1,224 patient is also the highest since June 23.

Gov. Phil Murphy held his first in-person coronavirus briefing in Trenton in two weeks on Thursday. He did not say when the 12 new deaths occurred.

Murphy said the surge in cases has him considering new new restrictions in addition to the hot spot teams being deployed to increase contact tracing, testing and education in specific communities.

"How close are we to doing something?" Murphy said. "Close. So bear with us. We will clearly be taking action."

New Jersey has had nearly 13,000 new cases reported in the last seven days, making the rolling seven day average for new positive tests 1,857, a 26% increase from a week earlier and up 230% from the average a month ago.

The positivity rate for tests conducted on Sunday, the most recent day available, was 7.74%
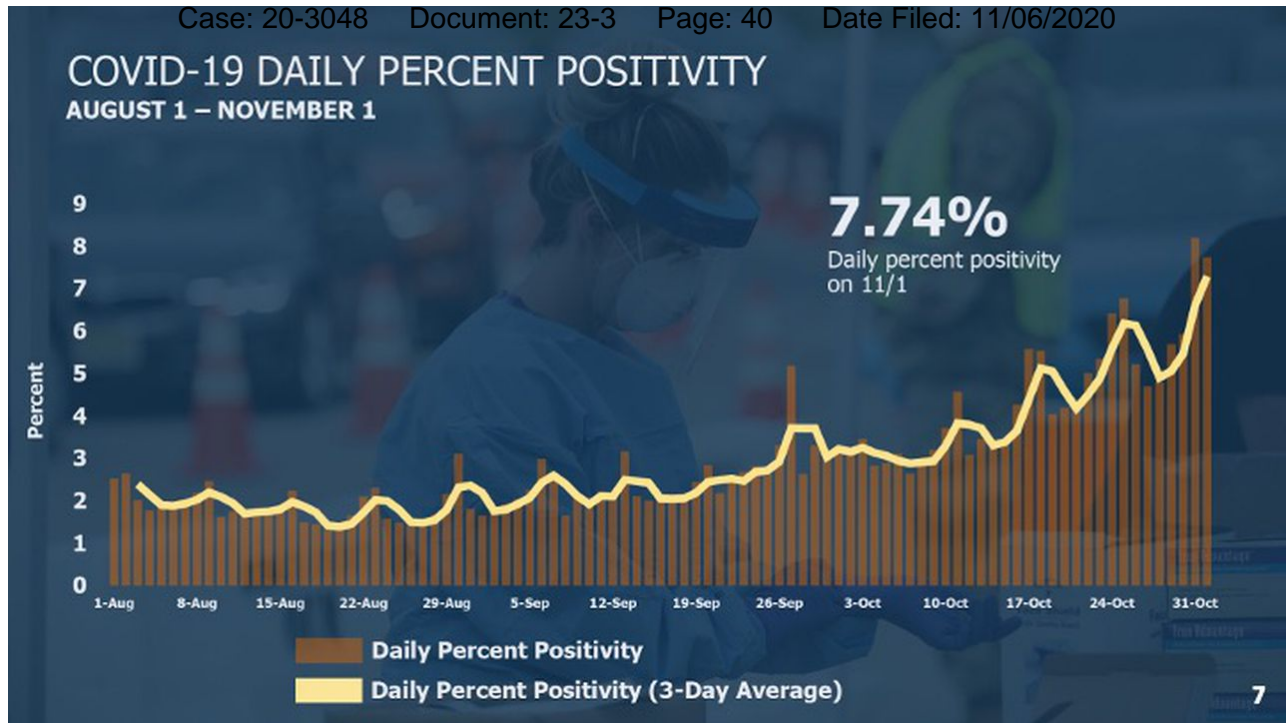
N.J. governor's office.

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New Jersey has now reported 247,219 total COVID-19 cases out of 4.8 million tests in the nearly eight months since the state's first case was announced March 4. The state of 9 million people has reported 16,403 deaths attributed to the virus in that time — 14,603 lab-confirmed and 1,800 considered probable. The probable death toll, which is updated weekly, was revised higher Wednesday by seven fatalities.

Health Commissioner Judith Persichilli said the state continues to focus on hot spots, in particular Newark where the positivity rate has increased to 12.4%. While some of the surge in new cases state wide have been linked to colleges and sports teams, that's not primarily driving the rise.

"The majority of our cases are not easily traced back to a single exposure and are likely related to routine gatherings in routine places such as your homes," Persichilli said. "We must continue to practice our preventive measures."

New Jersey's death toll is the fifth highest in the United States, after New York, Texas, California, and Florida. The Garden State has <u>the nation's highest COVID-19 death rate</u> per 100,000 residents.

Eight of the state's 21 counties reported more than 100 new cases on Thursday and three had more than 200 new positive tests led by Essex County with 266.

R.A. 775

The state's seven-day rolling average of new cases is high enough for the state to qualify for its own quarantine travel advisory. But officials announced last week that New Jerseyans and travelers from other neighboring states that have reached the threshold will not have to quarantine.

New York, which has been generating the quarantine list weekly, switched to a testing requirement this week, after the list grew to include most of the county.

New Jersey's advisory was updated Wednesday to include 43 U.S. states and territories.

"Common sense includes not traveling outside of New Jersey for the time-being, unless you have to cross state lines for work or school, for worship, or for some other essential travel," Murphy said.

COUNTY-BY-COUNTY NUMBERS (sorted by most new cases)

- Essex County: 26,315 positive tests (266 new), 1,922 confirmed deaths (230 probable)
- Bergen County: 26,170 positive tests (211 new), 1,823 confirmed deaths (245 probable)
- Passaic County: 21,928 positive tests (202 new), 1,124 confirmed deaths (141 probable)
- Hudson County: 24,306 positive tests (195 new), 1,378 confirmed deaths (158 probable)
- Camden County: 12,497 positive tests (174 new), 586 confirmed deaths (53 probable)
- Union County: 21,415 positive tests (151 new), 1,207 confirmed deaths (168 probable)
- Middlesex County: 23,358 positive tests (148 new), 1,249 confirmed deaths (203 probable)
- Monmouth County: 14,827 positive tests (127 new), 782 confirmed deaths (92 probable)
- Morris County: 9,780 positive tests (93 new), 696 confirmed deaths (145 probable)
- Ocean County: 17,270 positive tests (88 new), 1,008 confirmed deaths (66 probable)
- Gloucester County: 5,937 positive tests (82 new), 243 confirmed deaths (7 probable)
- Mercer County: 9,696 positive tests (74 new), 606 confirmed deaths (36 probable)

R.A. 776

- Atlantic County: 5,587 positive tests (63 new), 255 confirmed deaths (14 probable)
- Burlington County: 9,020 positive tests (60 new), 478 confirmed deaths (41 probable)
- Somerset County: 6,771 positive tests (48 new), 523 confirmed deaths (75 probable)
- Warren County: 1,707 positive tests (26 new), 158 confirmed deaths (13 probable)
- Cumberland County: 4,143 positive tests (20 new), 154 confirmed deaths (8 probable)
- Hunterdon County: 1,710 positive tests (18 new), 73 confirmed deaths (54 probable)
- Sussex County: 1,814 positive tests (16 new), 162 confirmed deaths (36 probable)
- Salem County: 1,218 positive tests (12 new), 85 confirmed deaths (5 probable)
- Cape May County: 1,177 positive tests (9 new), 91 confirmed deaths (10 probable)

HOSPITALIZATIONS

There were 1,224 patients with confirmed (1,046) or suspected (178) COVID-19 cases across the Garden State's 71 hospitals as of Wednesday night. That's 11 more than the night before.

There were 238 patients in critical or intensive care (the same as the night before), including 85 on ventilators (five more).
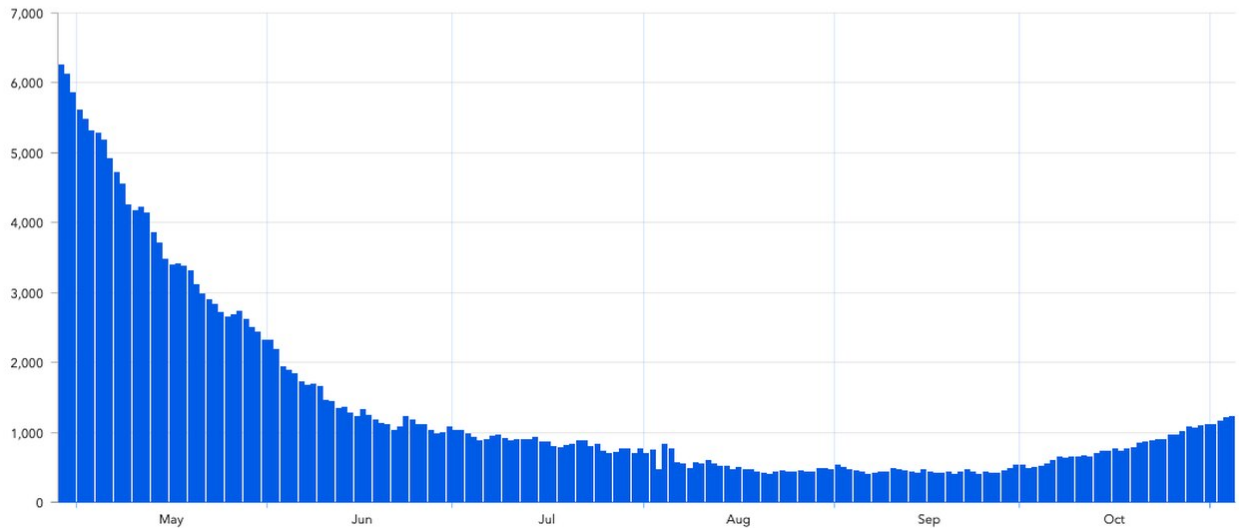
There were 137 coronavirus patients discharged Wednesday, according to the state's online dashboard.

New Jersey had more than 8,000 patients hospitalized at the peak of the outbreak in April.

R.A. 777

Hospitalizations

1,224   71/71 Hospitals Reporting

Hospitalizations as of 11/4/20

TRANSMISSION RATE

New Jersey's latest transmission rate of 1.26 was slightly lower than the 1.27 reported on Wednesday and 1.28 reported Monday and Tuesday. The rate has hovered around those numbers since a recent low of 1.13 on Oct. 20.

That's much lower than when the rate was above 5 toward the end of March. But any number above 1 means each newly infected person, on average, is spreading the virus to at least one other person. Any number below 1 means the virus' spread is decreasing.

A transmission rate of 1.26 means every 100 infected people will spread the virus to 126 others.

SCHOOL CASES

Since the start of the school year, at least 146 New Jersey students and educators have either contracted COVID-19 or passed it on to someone else while in the classroom, walking around their schools or participating in extracurricular activities, state officials said.

R.A. 778

The 146 cases were part of 36 confirmed school outbreaks that local health investigations concluded were the result of students and teachers catching the coronavirus at school.

AGE BREAKDOWN

Broken down by age, those 30 to 49 years old make up the largest percentage of New Jersey residents who have caught the virus (31.4%), followed by those 50-64 (25.3%), 18-29 (17.7%), 65-79 (12.3%), 80 and older (7.9%), 5-17 (4.3%), and 0-4 (0.9%).

On average, the virus has been more deadly for older residents, especially those with pre-existing conditions. Nearly half the state's COVID-19 deaths have been among residents 80 and older (47.86%), followed by those 65-79 (31.54%), 50-64 (15.83%), 30-49 (4.36%), 18-29 (0.38%), 5-17 (0%) and 0-4 (0.02%).

At least 7,230 of the state's COVID-19 deaths have been among residents and staff members at nursing homes and other long-term care facilities.

Officials warned Monday that while a larger percentage of younger people had been contracting the virus in recent months, older people are now getting it at a faster clip.

Meanwhile, at least 17,500 more people in New Jersey have died this year than would be expected, state mortality data shows, which suggests the pandemic has claimed even more lives than state totals, according to an ongoing analysis by NJ Advance Media.

GLOBAL NUMBERS

As of Thursday morning, there have been more than 48.2 million positive COVID-19 tests across the globe, according to a running tally by Johns Hopkins University. More than 1.22 million people have died.

The United States has the most positive tests in the world, with more than 9.48 million, and the most deaths, at more than 233,700.

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EXHIBIT JJJJ

N.J.'s second wave of COVID-19 outbreak may not peak until early next year, health official says

Updated Nov 03, 2020; Posted Nov 03, 2020
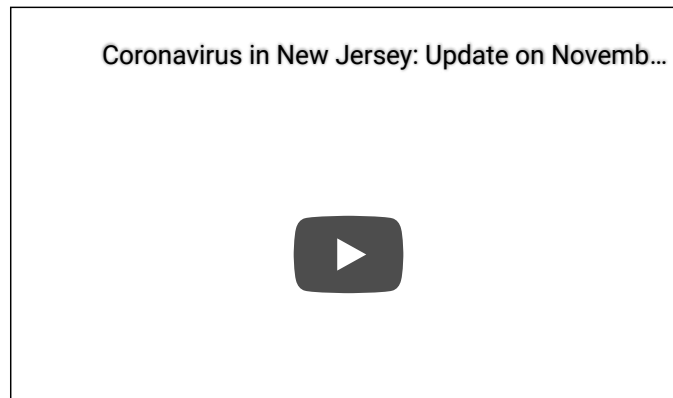
Coronavirus in New Jersey: Update on November 2, 2020

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By **Brent Johnson | NJ Advance Media for NJ.com**

The second wave of the coronavirus pandemic that's currently hitting New Jersey may not peak until early next year, state officials and health experts warn — which means the outbreak would intensify over at least the next two months before decreasing.

With cases and hospitalizations growing the past two weeks, state Health Commissioner Judith Persichilli said Monday that prediction models show the peak coming in the first quarter of 2021.

R.A. 782

But she emphasized it's "very, very preliminary."

"It changes every day as we look at new cases and hospitalizations," Persichilli said during the state's latest coronavirus briefing. "We so far have tracked a slight uptick with reopenings, but it's so slight, it has not moved the dial very much in terms of hospitals being overwhelmed. We look at it every week."

Persichilli did not provide specific numbers or other details about what the preliminary models are showing.

"We try to do some predictions, but it's really very preliminary," Persichilli said. "I wouldn't go to the bank with it. We're going to be vigilant from now through March."

New Jersey, an early coronavirus hot spot, saw the first wave of the pandemic peak in April, when officials announced as many as 4,000 new cases and 400 new deaths a day, while more than 8,000 COVID-19 patients were hospitalized at one point.

Those numbers steadily declined and remained stable over the summer, prompting Gov. Phil Murphy to gradually ease restrictions on residents and businesses.

New Jersey's recent numbers are still far below where they were at the spring peak. But the Garden State has reported 17 straight days of more than 1,000 new cases, and the positivity rate is rising, as well.

There have also been more than 1,000 patients with confirmed or suspected COVID-19 cases across New Jersey's 71 hospitals for a week. That's more than double the mark from a month ago.

There have been fewer deaths, with numbers hovering in the single digits in recent months. But officials warn those fatalities could increase, as well.

Officials on Tuesday announced 1,832 more positive tests and 18 additional deaths in New Jersey.

NJ COVID-19 Dashboard

New Cases Over Time
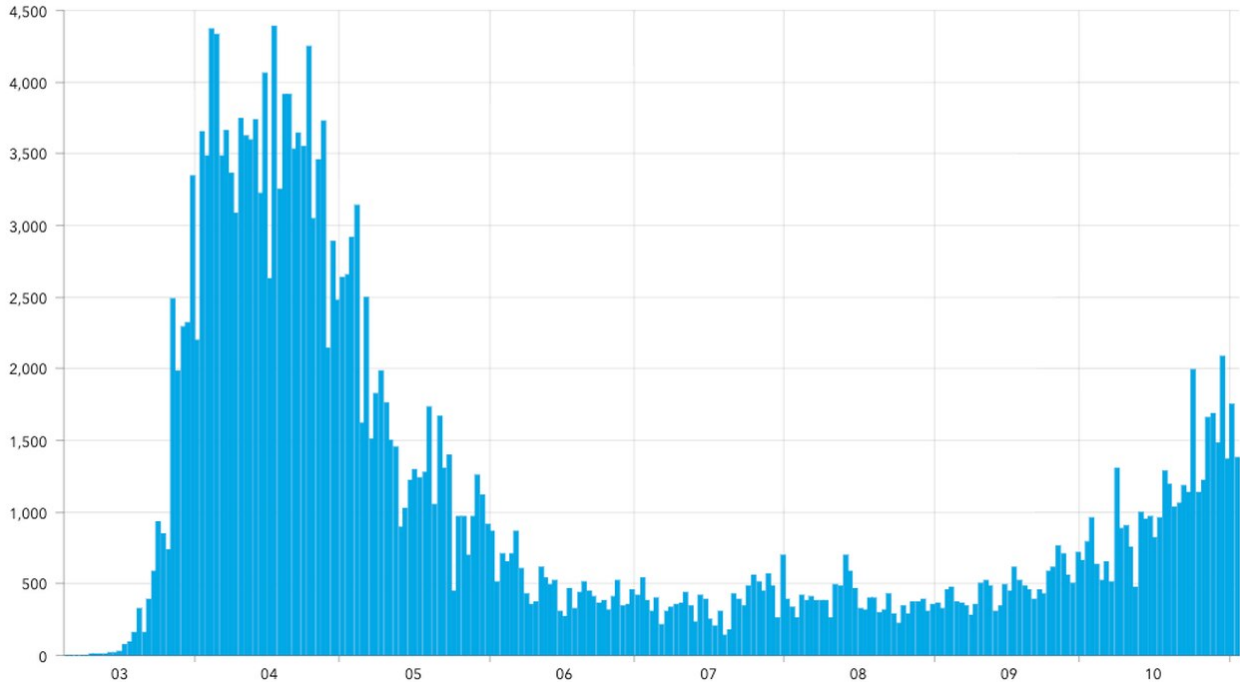
New Jersey has reported 16 consecutive days with more than 1,000 new coronavirus cases as of Monday.

Numbers are rising across America, with Dr. Anthony Fauci, the White House's top infectious disease expert, telling the Washington Post on Saturday the nation is "in for a whole lot of hurt." And Dr. Deborah Birx, head of he White House's coronavirus task force, warned top officials Monday the country is entering the "most deadly phase of this pandemic … leading to increasing mortality," according to a report obtained by the Post.

Stephanie Silvera, an epidemiologist and public health professor at Montclair State University, told NJ Advance Media on Tuesday she agrees with Persichilli's preliminary prediction of New Jersey's second wave not peaking until early next year.

Silvera noted that the state is already seeing numbers increase while the weather is still relatively nice and people are still gathering outdoors. But the weather, she said, will get colder and the winter holidays are approaching.

"If people are still gathering, I think it's entirely possible, we won't peak until sometime in February, March," Silvera said.

Murphy said Monday that indoor family gatherings are the state's largest worry.

"On top of each other at a Halloween party, on top of each other at an after-football watch party or at a Thanksgiving event of some sort — that is where our concern is," Murphy said. "That is where we think the indoor exposure is coming from."

But will the second wave be as bad as the first one was in the spring? Fauci told Murphy in September that New Jersey was in "good shape" heading into a second wave because it got its metrics so low over the summer.

R.A. 784

Meanwhile, Silvera said the number of new cases could get as high as they were in the spring, but more people are likely to survive because the state can identify cases earlier with increased testing and hospitals are now more successful with treatment strategies.

The biggest concern, the Montclair state professor said, is hospitalization rates.

"If the number starts to increase, it can put a strain on the state's healthcare system," Silvera said.

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Murphy has said ["all options are on the table"](#) to fight the growing spread in New Jersey, including a statewide curfew and another round of statewide stay-at-home orders and business closings. But he has also said he believes the virus [is not "uncontrollable"](#) in the state and he has expressed optimism about being able to battle local outbreaks with increased testing, contact tracing and public education.

Persichilli also stressed residents "need to continue vital prevention efforts" — including wearing a mask, social distancing, washing hands, and staying home when you're sick or exposed to someone who has COVID-19.

"You have all done this before, and I know you can do it again," the health commissioner said.

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EXHIBIT KKKK

The Washington Post

Democracy Dies in Darkness

U.S. hits highest daily number of coronavirus cases since pandemic began

Nation is poised to enter its worst stretch yet of the pandemic, with hospitalizations rising in 38 states

By **William Wan** and **Jacqueline Dupree**

Oct. 23, 2020 at 7:15 p.m. EDT

PLEASE NOTE

The Washington Post is providing this important information about the coronavirus for free. For more, sign up for our daily Coronavirus Updates newsletter where all stories are free to read. To support this work, please subscribe to the Post.

The United States on Friday hit its highest daily number of coronavirus cases since the pandemic began, recording at least 82,900 new infections and surpassing the previous record set during the summertime surge of cases across the Sun Belt.

The rising numbers put the nation on the precipice of what could be its worst stretch to date in the pandemic with some hospitals in the West and Midwest already overwhelmed and death counts beginning to rise.

The current surge is considerably more widespread than the waves from last summer and spring. The unprecedented geographic spread of the current surge makes it more dangerous, with experts warning it could lead to dire shortages of medical staff and supplies. Already, hospitals are reporting shortfalls of basic drugs needed to treat covid-19, the disease caused by the novel coronavirus.

And it's not simply a matter of increased testing identifying more cases. Covid-19 hospitalizations increased in 38 states over the past week. The number of deaths nationally has crested above 1,000 in recent days.

The last time the country hit a new daily record for coronavirus cases — 76,533 on July 17 — just four states accounted for more than 40,000 of those cases: Arizona, California, Florida and Texas, according to a Washington Post analysis.

On Friday, 11 states accounted for that same lion's share of cases. And in the past two weeks, 24 states have broken their records for single-day highs of cases.

More than 170 counties across 36 states were designated rapidly rising hotspots, according to an internal federal report produced Thursday for officials at the Department of Health and Human Services and obtained by The Post.

"One key way we got through previous waves was by moving health-care workers around. That's just not possible when the virus is surging everywhere," said Eleanor J. Murray, an epidemiologist at Boston University.

R.A. 787

Equally alarming, Murray said, is that no one knows how high this wave will grow before peaking.

"We are starting this wave much higher than either of the previous waves," she said. "And it will simply keep going up until people and officials decide to do something about it."

More than 8.3 million Americans so far have been infected with the coronavirus, and at least 222,000 have died, according to a database maintained by The Post.

The high case numbers of recent days have stoked concerns because the country has not even hit the stretch of holidays and cold weather, which experts have long warned will send cases soaring even higher. More interactions could mean more transmission during celebrations of Halloween, Christmas and the New Year. The winter's cold, dry air will also help the virus stay stable longer, even as it drives people to hunker down together indoors.

On Thursday, Chicago Mayor Lori E. Lightfoot (D) announced new restrictions on businesses. Hours later, White House coronavirus response coordinator Deborah Birx warned that closing public spaces may not be enough.

"It won't be as simple as closing public spaces," Birx said, pointing to increased gatherings in people's homes. "What has happened in the last three to four weeks is that people have moved their social gatherings indoors."

In some areas of Wisconsin, 90 percent of hospital intensive care unit beds are full, the office of Gov. Tony Evers (D) said. The first patient was admitted Wednesday to a makeshift field hospital erected at a state fairgrounds.

Hospitals from Missouri to Idaho are starting to reach capacity. On Thursday and Friday, the United States had more than 40,000 current covid-19 hospitalizations — the first time that level has been reached since August. In the past three weeks, 37 states saw sizable increases in hospitalizations, and the number has more than doubled in Connecticut, Montana, New Mexico and Wyoming.

In Utah, leaders are trying to open a field hospital at an exposition center. State epidemiologist Angela Dunn warned that the health-care system is at capacity, hospital staff are exhausted, and Utahans are getting scared.

"You know, I just, I don't know what to do anymore," Dunn said at a Thursday news conference, pleading for residents to be more cautious. "I'm really not trying to scare anyone. I'm just trying to inform you of what's going on."

Experts said the problem facing many hospitals this winter won't be finding enough beds. It will be ensuring that hospitals have sufficient specialized staffing.

"Creating beds is relatively easy, but what do you do when you outstrip ICU nurses, doctors and teams?" said Michael T. Osterholm, director of the University of Minnesota's Center for Infectious Disease Research and Policy.

In recent months, health-care workers have been able to lower mortality rates — the ratio of patients who die once infected. Much of that progress has come through hard-earned expertise by ICU staff — new approaches and knowledge about how to combat the virus, such as when to use ventilators, the adoption of treatments such as steroids and proning patients, which helps with breathing by shifting them onto their abdomens.

But the hard-won battle to lower mortality rates could be imperiled as hospitals are overwhelmed and staffing gets stretched, Osterholm said. And as the pandemic has seeped into rural swatches of the Midwest, skeleton staffs at smaller hospitals are shrinking further as doctors and nurses fall ill.

A report this week by Osterholm's center showed shortages in 29 of the 40 basic but critical drugs often used for covid-

...report this week, 80% of hospitals reported shortages of the antibiotics and other medications used for covid-19 patients. That includes antibiotics, sedatives like propofol that are used to calm patients during intubation and heart medication such as norepinephrine. And because of the widespread nature of the infections, hospitals are finding it harder to draw from excess supplies of such drugs elsewhere.

The nation's growing fatigue with the pandemic will likely make it even harder to contain a wintertime wave, specialists fear.

Even as hundreds of people are dying each day, "there's this false sense of calm right now," said Tom Inglesby, director of the Johns Hopkins Center for Health Security. "We have the president saying, 'We're rounding the corner.' We have state leaders openly defying public health guidances."

Inglesby pointed to plans and metrics many states laid out last spring for reopening. "That's been completely disregarded in many places," he said.

In North Dakota — among the hardest-hit states — Gov. Doug Burgum (R) put the onus on individuals to wear masks and avoid gatherings.

"It's not a job for government," Burgum recently declared.

At Thursday night's final presidential debate, President Trump claimed the virus was "going away" and "we're learning to live with it." His Democratic rival, former vice president Joe Biden, responded, "We're learning to die with it."

Experts say rapid action is needed by leaders and residents to tamp down virus transmission.

"It's been framed as this false choice between full shutdowns and doing nothing, but that's not the case," said Inglesby, who urged people to wear masks and avoid large gatherings.

Politicians also need to stop minimizing the risk posed by the virus and start discussing openly with the public the hard decisions and trade-offs that lie ahead, Murray said. Is it, for example, worth keeping bars open if it means having to close schools?

"I worry sometimes about being too pessimistic," she said. "We are not making predictions and saying this dark winter is somehow inevitable. We're trying to warn people this is how it will be if we don't do something about it.

"But it doesn't have to be that way."

Lena H. Sun contributed to this report.

Updated October 23, 2020

Coronavirus: What you need to read

The Washington Post is providing some coronavirus coverage free, including:

Coronavirus maps: Cases and deaths in the U.S. | Cases and deaths worldwide

What you need to know: Vaccine tracker | Coronavirus etiquette | Summertime activities & coronavirus | Hand sanitizer recall | Your life at home | Personal finance guide | Make your own fabric mask | Follow all of

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How to help: Your community | Seniors | Restaurants | Keep at-risk people in mind

Have you been **hospitalized for covid-19**? Tell us whether you've gotten a bill