



Connecticut  
River Valley  
**LOCAL SECTION**

# COVID 19 –How it Spreads and Impact on us

Oct 7, 2020

Jim Kenny CIH, CSP, FAIHA

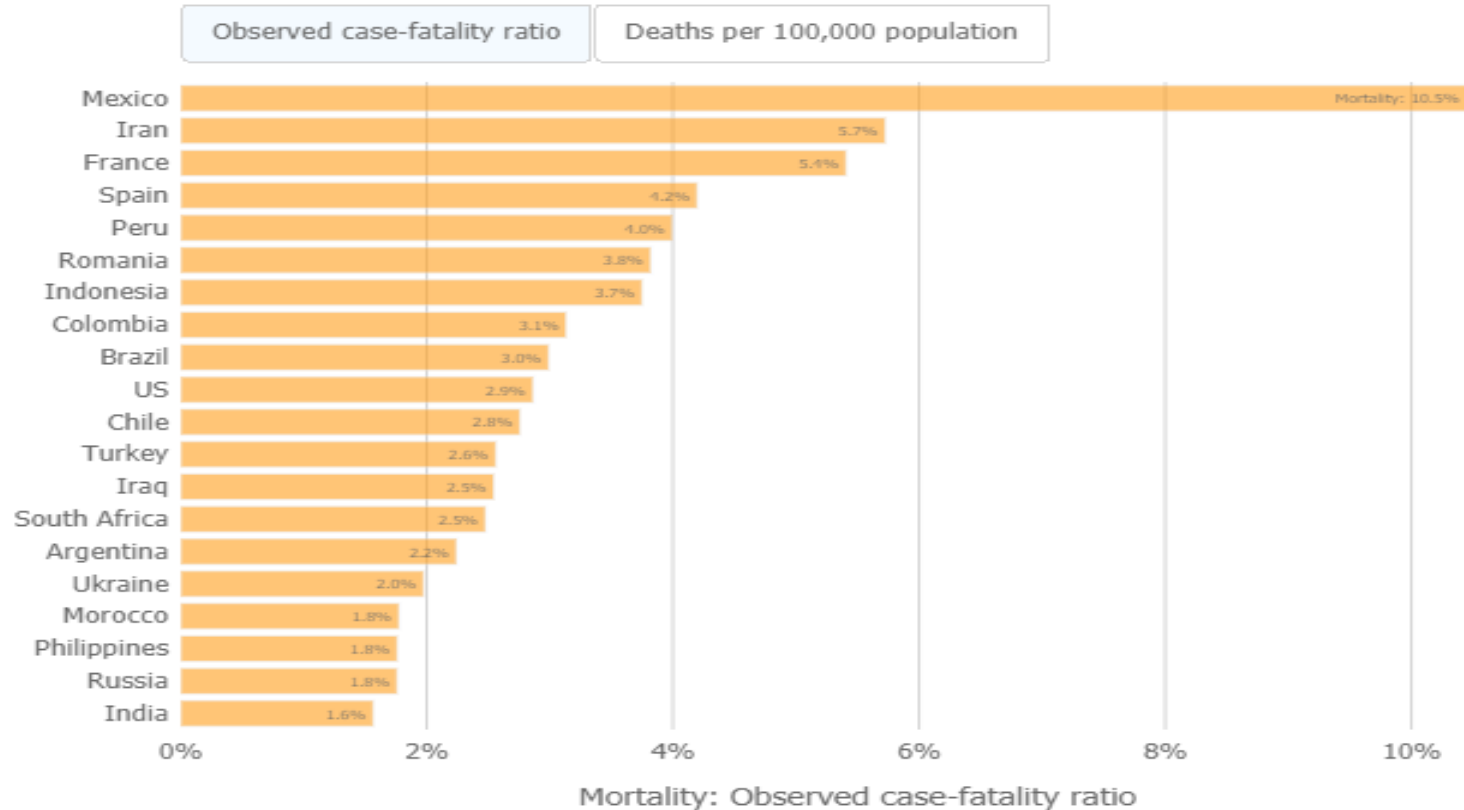
# Where are we now ?

- Worldwide - >33 mill + tests - > 1 mill deaths (3%)
- USA - >7 mill + tests - >205K deaths (2.9%)
- USA – 5% population 20% deaths

# Worldwide case fatality

20 most currently affected countries

<https://coronavirus.jhu.edu/testing/>

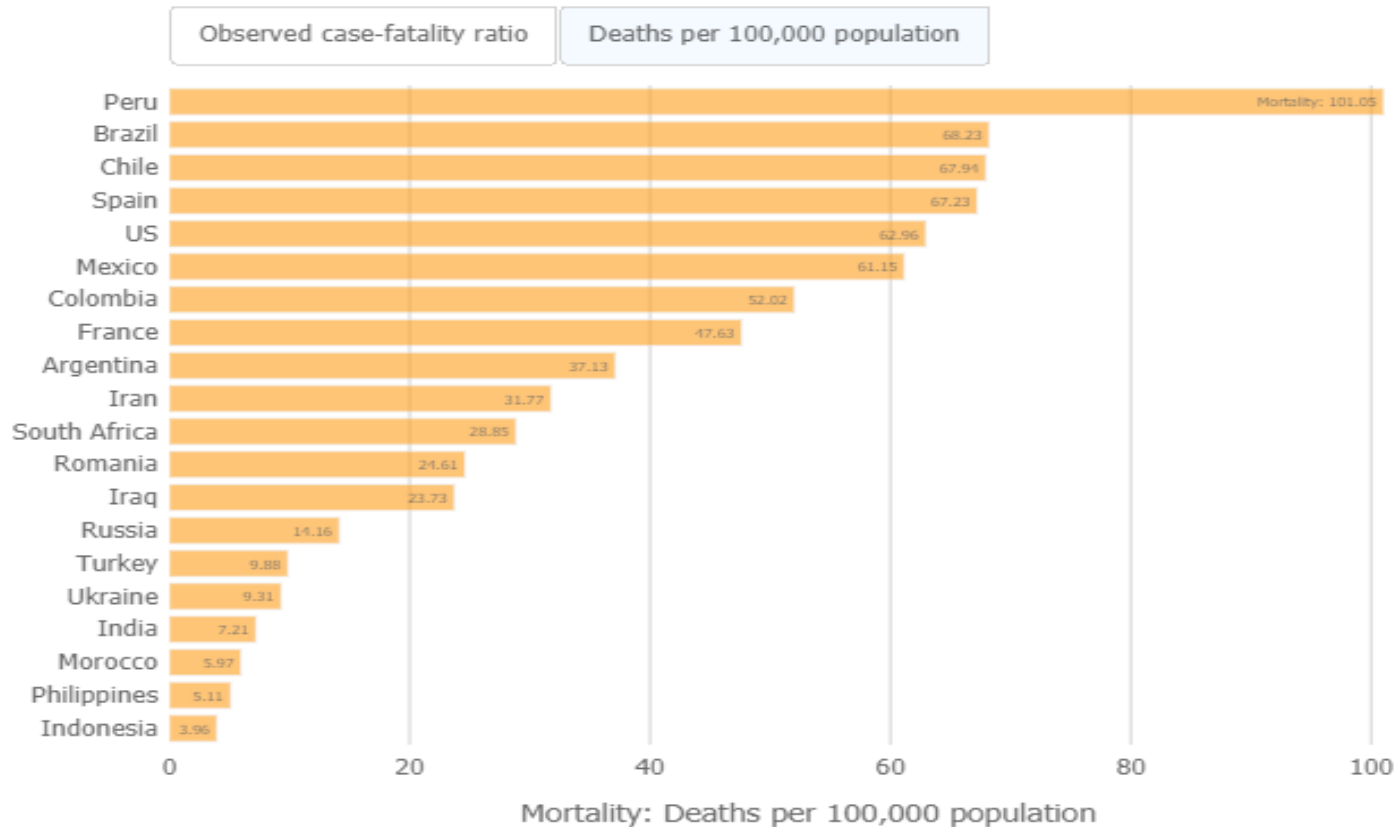


- Italy 11.5%
- UK 9.4 %

# Worldwide cases per 100K population

20 most currently affected countries

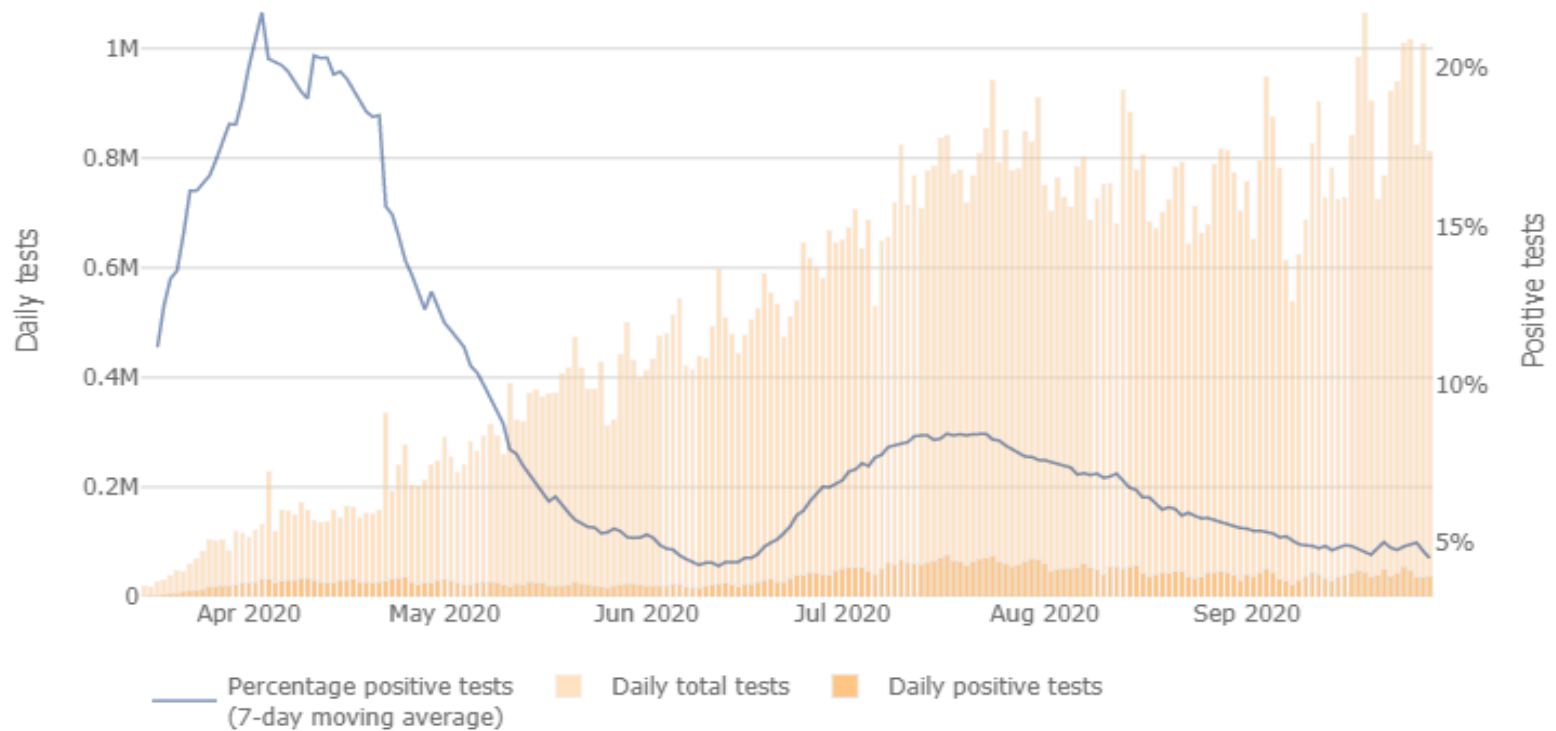
<https://coronavirus.jhu.edu/testing/>



- Italy 59
- UK 63

# USA COVID numbers

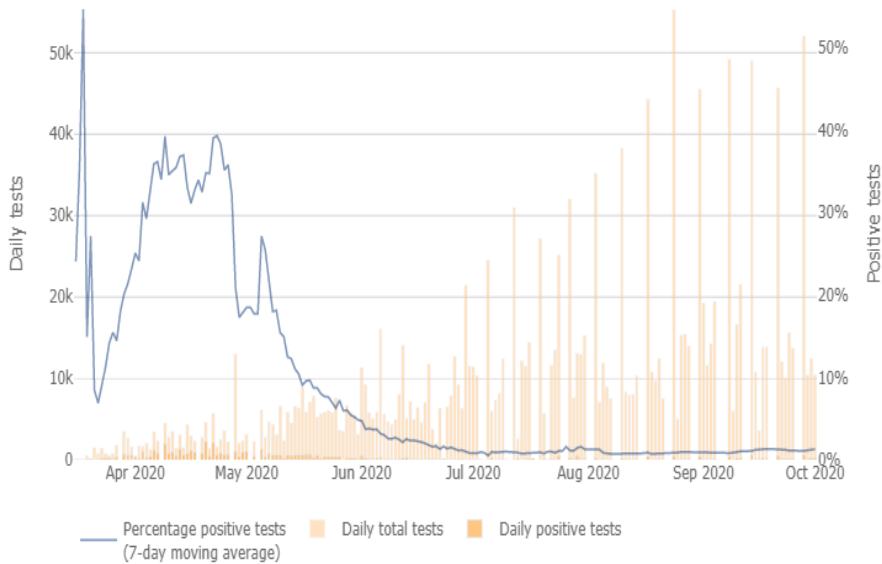
<https://coronavirus.jhu.edu/testing/>



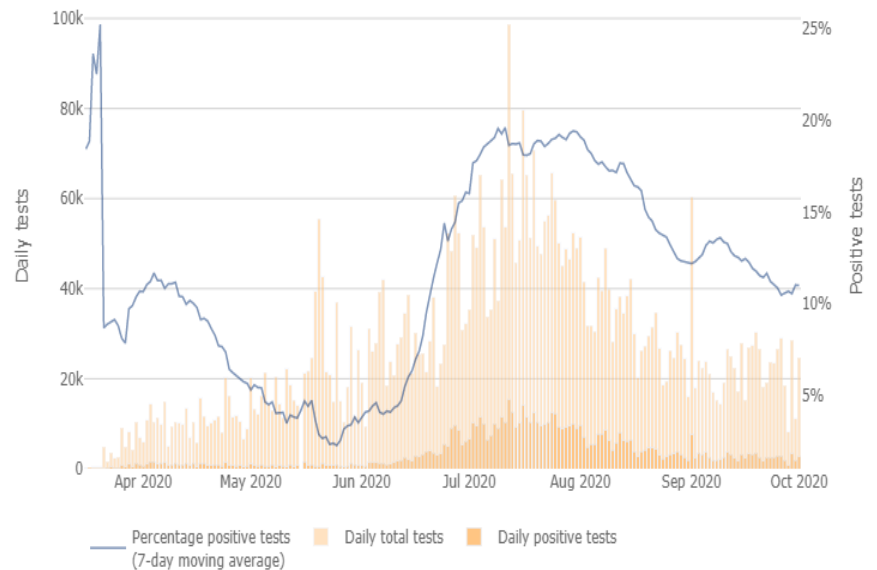
# State by State Covid numbers

<https://coronavirus.jhu.edu/testing/individual-states/usa>

## Conn Covid



## Florida Covid



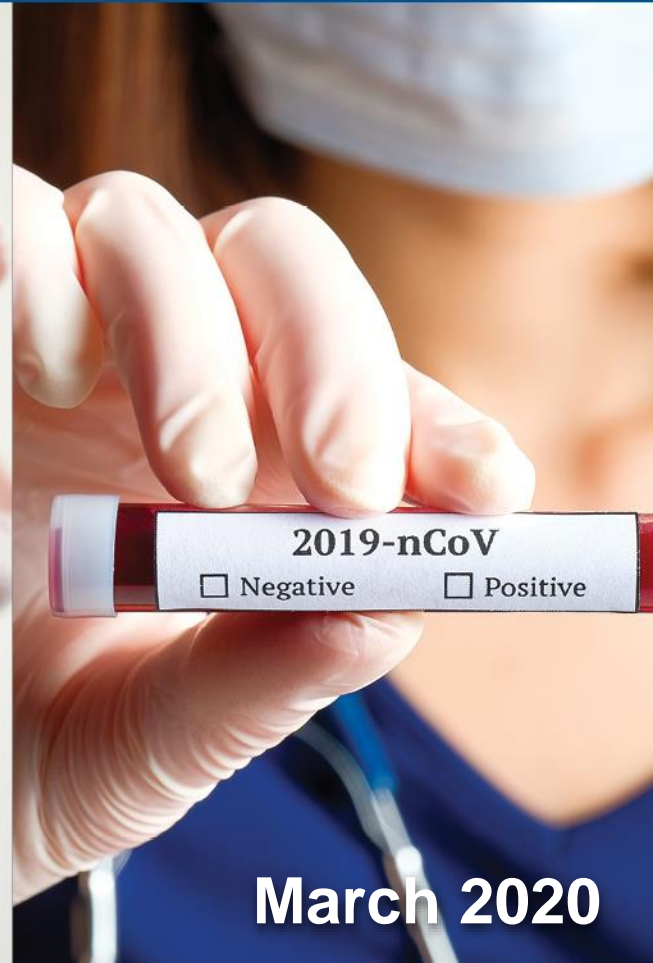


National Institute of  
Environmental Health Sciences  
*Worker Training Program*

# NIEHS COVID-19 Response Training Tool

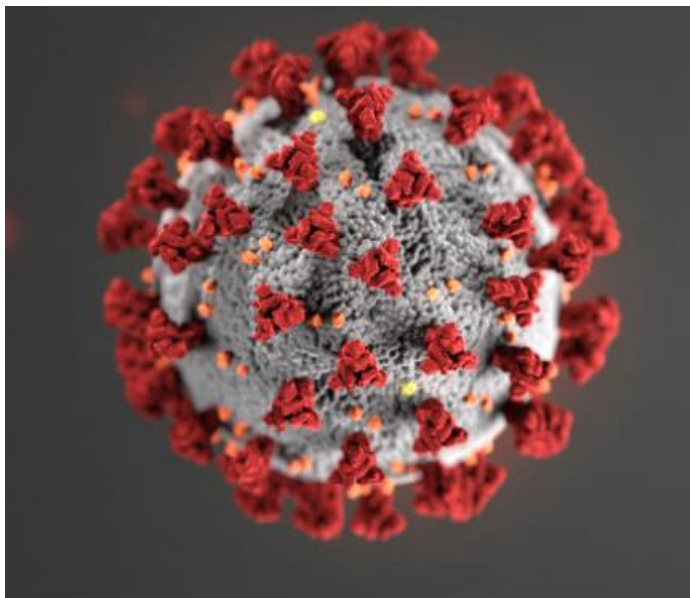
## Protecting Yourself from COVID-19 in the Workplace

*Safety and Health Awareness for Responders to the Coronavirus*



March 2020

## What is SARS-CoV-2?



SARS-CoV-2 is the virus that causes coronavirus disease 2019 (COVID-19)

- SARS = severe acute respiratory distress syndrome
- Spreads easily person-to-person particularly when someone sneezes
- Little if any immunity in humans

Detailed information:

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



## Seasonal Flu vs. COVID-19

- the case fatality rate (CFR) of COVID-19 is estimated to be at around 3%. The CFR of seasonal influenza is estimated to be around 0.1%, making SARS-CoV-2 about 30 times more deadly than the seasonal flu.
- An estimated 15 – 20% of infected individuals may suffer from severe symptoms that require medical attention including pneumonia with shortness of breath and lowered blood oxygen saturation.
- No significant Treatment, No Vaccine, No Immunity

## Increased risk of severe illness

COVID-19 poses a greater risk for severe illness for people with underlying health conditions:

- Heart disease
- Lung disease such as asthma
- Diabetes
- Suppressed immune systems

The elderly have higher rates of severe illness from COVID-19. Children and younger adults have had less severe illness and death. Because COVID-19 is new there are a lot of scientific unknowns such as the impact on pregnant women and their fetuses.

## COVID-19 can cause mild to severe symptoms

### Most common symptoms include:

- Fever
- Cough
- Shortness of breath

### Other symptoms may include:

- Sore throat
- Runny or stuffy nose
- Body aches
- Headache
- Chills
- Fatigue
- Loss of taste -smell

## Incubation period

- The incubation period is the time between exposure to a virus and the onset of symptoms.
- With COVID- 19 symptoms may show 2-14 days after exposure.
- People are most contagious when they are the most symptomatic.
- Scientific uncertainties:
  - People who are infected may be contagious before they develop symptoms or even if they never develop symptoms.

## Transmission

COVID-19 is spread from person to person mainly through coughing, sneezing, and possibly talking, and breathing.



- **Droplet** - respiratory secretions from coughing or sneezing landing on mucosal surfaces (nose, mouth, and eyes)
- **Aerosol** - a solid particle or liquid droplet suspended in air
- **Contact** - Touching something with SARS-2 virus on it and then touching mouth, nose or eyes
- **Other possible routes:** Through fecal matter

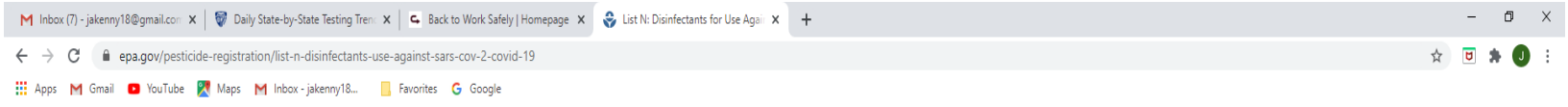
## How long does SARS-CoV-2 survive outside of the body?

- It is not clear yet how long the coronavirus can live on surfaces, but it seems to behave like other coronaviruses.
  - Virus may persist on surfaces for a few hours or up to several days, depending on conditions and the type of surface.
- It is likely that it can be killed with simple disinfectant on the EPA registered list below.

<https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2>

# Product -Concentration and Time

<https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2-covid-19>

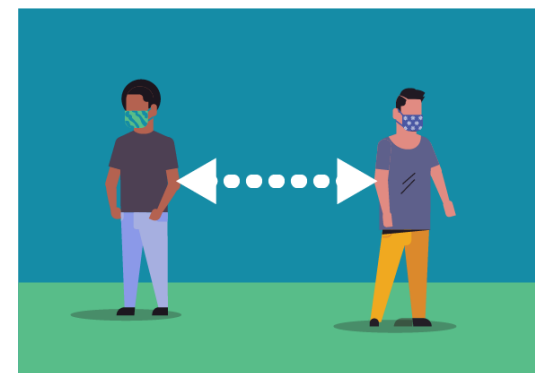


EPA Registration Number	Active Ingredient(s)	Product Name	To kill SARS-CoV-2 (COVID-19), follow disinfection directions for the following virus(es)	Contact Time (in minutes)
		Bleach		
6836-336	Quaternary ammonium	Lonza Disinfectant Wipes Plus	Rotavirus	10
70627-62	Hydrogen peroxide	Phato 1:64 Disinfectant Cleaner	Feline calicivirus	5
70627-75	Sodium hypochlorite	Avert Sporocidal Disinfectant Cleaner Wipes	Feline calicivirus	1
74986-4	Sodium chlorite	Selectocide 2L500	Poliovirus	10
1677-21	Quaternary ammonium	Mikro-Quat	Norovirus	10
5813-121	Sodium hypochlorite	CRB I	Canine parvovirus; Feline parvovirus; Feline panleukopenia virus	10
9150-3	Chlorine dioxide	Carnebon 200	Canine parvovirus	15
34810-37	Citric acid	Wexford Disinfectant Wipes	Rhinovirus	5
5813-76	Sodium hypochlorite	Clorox MTOC	Rotavirus	10



## What can individuals do?

- Be informed- Wear a mask
- Maintain social distancing (6 feet).
- Wash your hands frequently.
- Use alcohol-based hand sanitizer.
- Avoid touching your eyes, nose, and mouth.
- Stay home when you are sick.
- Cough or sneeze into a tissue or your elbow.
- Clean and disinfect frequently touched objects and surfaces such as cell phones.
- Be prepared if your child's school, daycare facility, or your worksite is temporarily closed.





## Treatment and vaccines

- There is no vaccine to prevent COVID-19.
- There is no specific FDA approved medication or treatment for COVID-19.
- Treatment is supportive.
- People who are mildly ill with COVID-19 should isolate at home during their illness.



# How has Covid affected me ?

- Changed patterns – gym, social interactions
- School and daycare
- Work at home
- Low supply, Hoarding , wipes, TP, beef, flour
- Family illness
- No sports



# Hospitalizations decline, few new deaths as state prepares for second phase

Outdoor events of up to 250 likely to get OK in July

BY RUSSELL BLAIR AND NICHOLAS RONDINONE

As Connecticut prepares for a second phase of business reopenings Wednesday — including indoor dining, hotels, movie theaters, nail salons and gyms — key coronavirus metrics are continuing to head in the right direction, Gov. Ned Lamont said Tuesday.

The state reported 114 new COVID-19 cases Tuesday out of 5,041 test results received, for a positive test rate of 2.3%. Hospitalizations declined by two to 201, down about 90% from the state's peak of 1,972 on April 22, and six additional deaths were reported, the

## Connecticut Coronavirus: June 16, 2020



ups, we'll have to change course, that's just reality," he said.

Lamont was joined at his briefing by David Lehman, the state's economic development commissioner and an important figure in drafting the state's reopening plans.

"As we enter into phase two make no mistake about it we need to keep doing all the mitigation measures that are out there," Lehman said. "Mask wearing is critically important. We need to keep doing that as we reopen the economy otherwise we're going to jeopardize our reopen. Hand hygiene, whether its sanitizer or hand-washing, is critically important. And lastly, physically distancing. My concern is people see the data and think that we're back to normal, but we're



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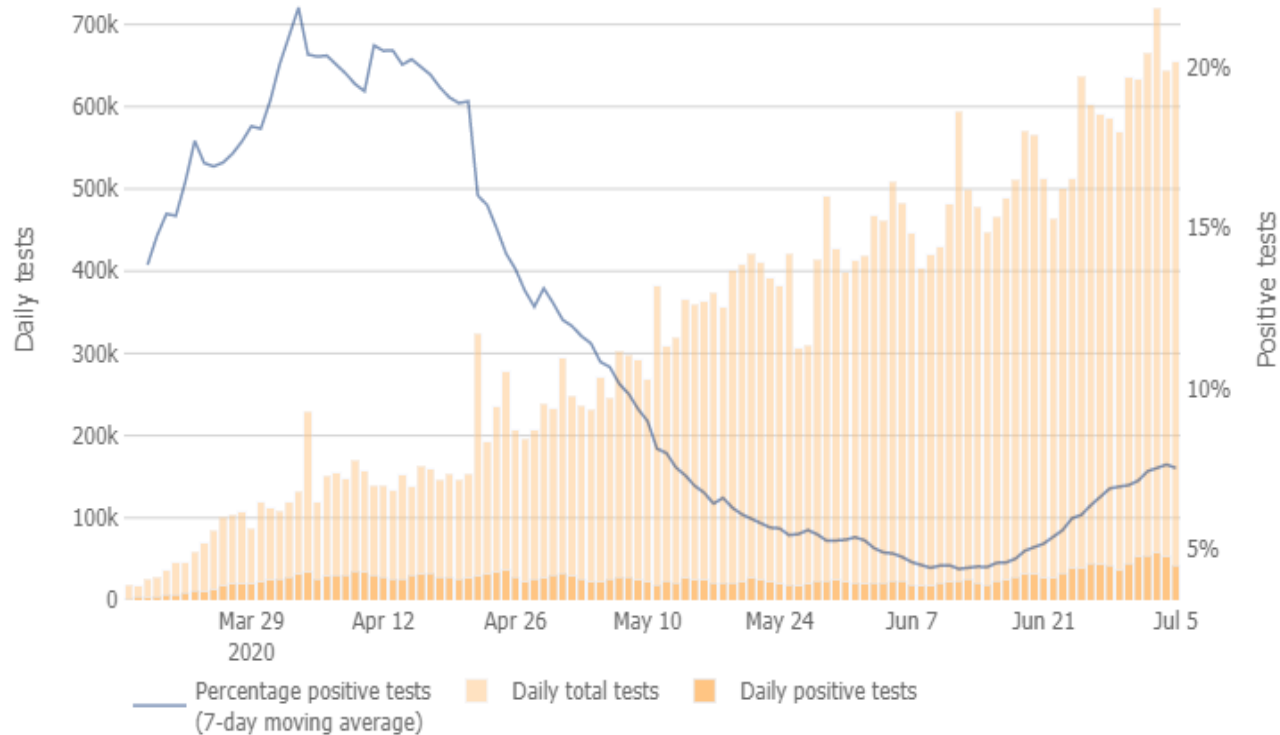
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# USA Covid numbers

<https://coronavirus.jhu.edu/testing/individual-states/usa>



# How has Covid affected Economy ?

- Restaurants- Hotels
- Transportation
- Work at home
- Real Estate
- Low supply, wipes, respirators



# New Vocabulary

- Social distancing = 6 feet (distant socializing, physical distancing)
- Self Quarantine
- Fomites
- Telemedicine
- Convalescent plasma
- Deep Cleaning ??? \$\$\$ Theatrical cleaning

# Positive effects

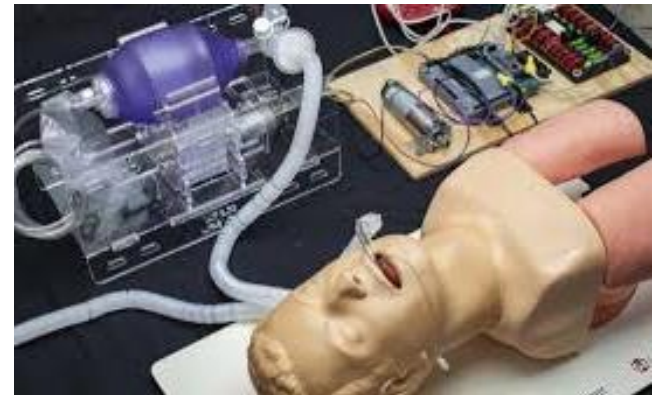
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- Less pollution
- Lower gas prices
- Zoos in our yards
- Reach out to some old friends



# Innovation

- Masks (Columbia College of Fashion)
- Sanitizers (Distillery, make own)
- Ventilators (MIT)
- Medical (Remdesivir , vital organs, vaccine?)
- Office design – Plastic barriers





## Pandemic influenza

Experts have been recommending preparedness, warning about the likelihood of future pandemic influenza outbreaks for decades.

Flu pandemic fatalities, worldwide(US), in the last century:

- 1918 –50 million(675K)
- 1957 – 1.1 million(116K)
- 1968 – 1 million (100K)



# Sports in Pandemics



- Stanley cup not completed in 1919
- Babe Ruth helped Boston win WS in 1918 when earlier in the season he had flu

These drastic measures to deal with the coronavirus pandemic are necessary to shut down sports around the world, needs





# Barriers – Peoples and disease

- Walls closed at dusk – Safety - disease
- Great wall of China – outside influence- defense
- US/Mexico – immigration
- USA ?



# Particle size and settling – Droplets -Aeorsols

<https://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-education-and-research-center-for-occupational-safety-and-health/can-a-mask-protect-me-putting-homemade-masks-in-the-hierarchy-of-controls>

Relative Particle Size (10,000x)	Typical Size	Most important way particles move in air	Take home message
 (Edge of particle)	100 micrometers (0.004")	Coughing and Sneezing. These particles can typically travel about 2 m before they settle to the ground by gravity within several seconds.	Keep your distance from people who are coughing or sneezing. Cough and sneeze into your elbow. Homemade masks are most efficient at these sizes, but these particles fall to the ground quickly anyway.
	10 micrometers (0.0004")	Gravity. These particles can only travel short distances, even from a sneeze, and settle to the ground in as little as 10 minutes.	Maintain social distancing from people to limit exposure to these particles. Homemade masks may help reduce transmission of these particles.
	0.3 micrometer (0.00001")	These particles are very difficult to move without flowing air. These particles can remain in the air for hours, depending on ventilation.	Homemade masks are unlikely to reduce transmission of or exposure to these particles.
 (Barely visible)	0.05 micrometers (0.000002") and smaller	The smallest particles diffuse to surfaces rapidly and are easily removed through many materials.	These particles are too small to carry COVID-19.

# Contact Tracing Benefits

Two hair stylists with **COVID-19**  
spent at least 15 minutes with 139 clients

**EVERYONE WORE FACE COVERINGS**  **NO CLIENTS ARE KNOWN TO BE INFECTED\***



**WEAR CLOTH FACE COVERINGS CONSISTENTLY AND CORRECTLY TO SLOW THE SPREAD OF COVID-19**

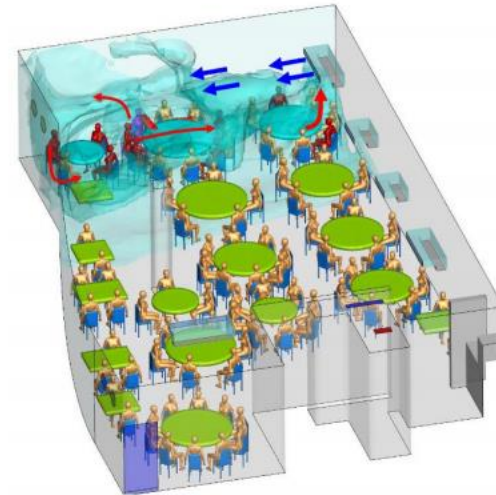
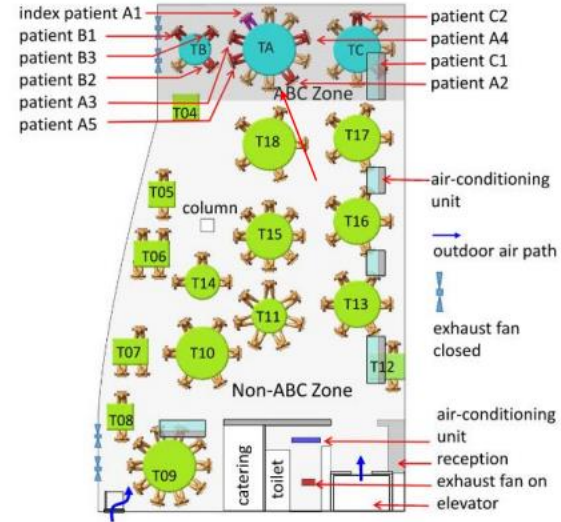
\*No clients reported symptoms; all 67 customers tested had negative tests

# Outbreak of COVID-19 in a nursing home associated with aerosol transmission as a result of inadequate ventilation

- Outbreak in a Netherlands nursing home
- 81% of Residents and 50% of staff tested positive
- No masks for residents Staff masks when with patient
- Only one of many wards involved
- Outside air only activated when CO<sub>2</sub> >1000 ppm
- Inside air that was recirculated was unfiltered
- Also ward cooled by two air conditioning units, which recirculated air through a 1 mm mesh dust filter

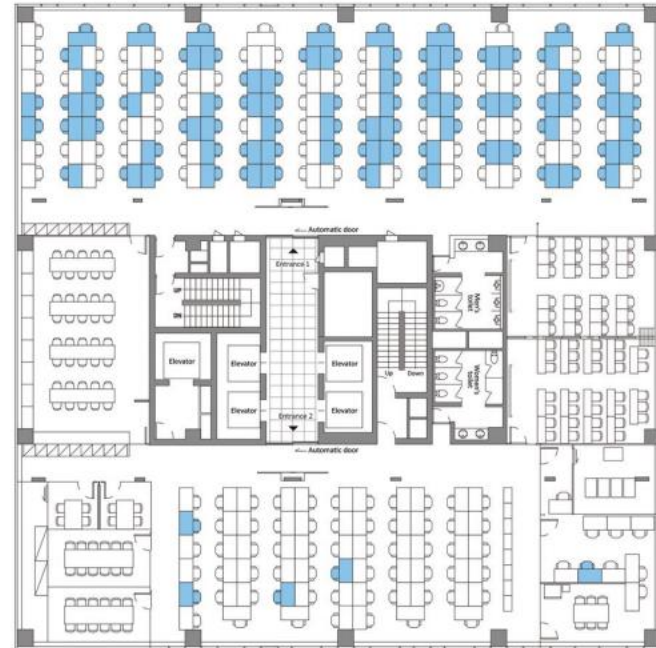
# Taylor Engineering White Paper

- Guangzhou Restaurant – 4 of 9 at table and 3 downwind and 2 upwind infected
- Dinner was 1-1.5 hours
- Ductless fan - 1.6 cfm (1/10 th of US Std) infected in closest proximity
- No masks being worn
- Distance and outside air exchange per location



# Taylor Engineering White Paper

- Korean Call Center- 94 of 216 employees on same floor infected most in closest proximity (week)
- No one wearing masks
- These two studies suggest that “social distancing” may not be sufficient to prevent transmission due to transmission from smaller virus-carrying particles. However, they also conclude that long-range aerosol transmission was not indicated
- MERV 13 or higher use 800 ppm CO2 or lower
- Distance and air exchange locally (infectious agents > AE)



These two studies suggest that “social distancing” may not be sufficient to prevent transmission due to transmission from smaller virus-carrying particles. However, they also conclude that long-range aerosol transmission was not indicated.

Why is this important? Because ventilation can only be effective in diluting virus-containing particles if they are airborne and small enough to be entrained into the ventilation system exhaust/return grille. The ability of ventilation to dilute the concentration virus-containing particles is a simple mass-balance exercise as shown in this figure and equation below for a single-zone air handling system assuming a fully mixed space:



# NIST Fate and Transport of Indoor Microbiological Aerosols (FaTIMA)

ALHA Daily Consolidated Digest | NIST FaTIMA Microbiological Ae... | FaTIMA - Fate and Transport of... | Exploring Virginia's First-in-the-... | Webinar Registration Success - 2...

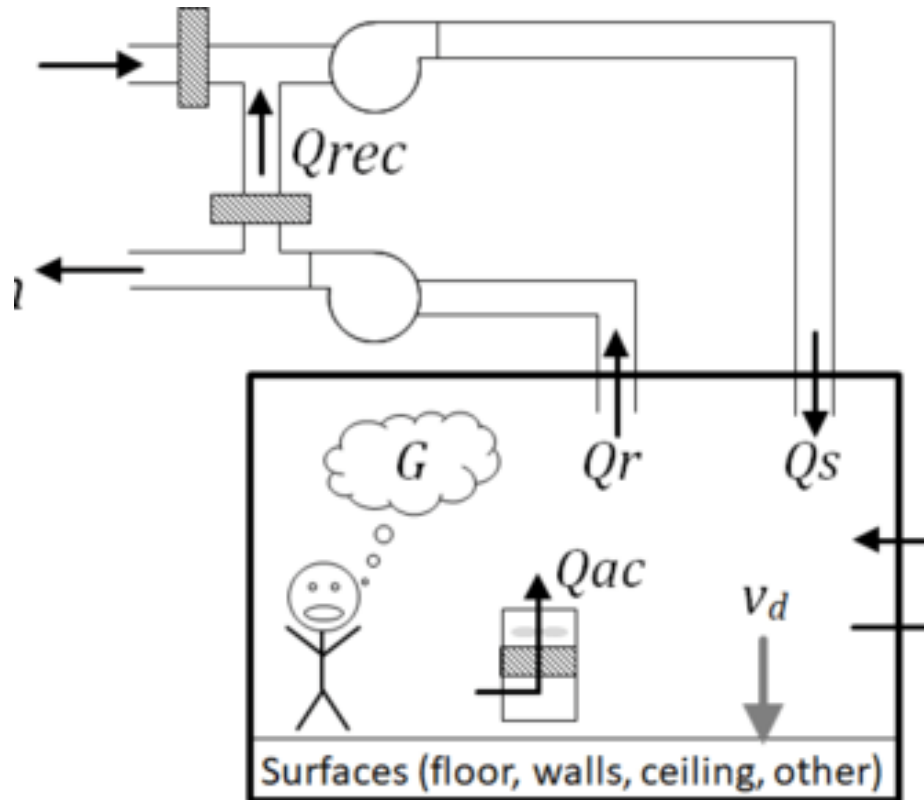
pages.nist.gov/CONTAM-apps/webapps/FaTIMA/

See [TN 2095 - A Tool to Model the Fate and Transport of Indoor Microbiological Aerosols \(FaTIMA\)](#) for documentation of this tool.



Instructions: Set Inputs then click the RUN SIMULATION button.

Inputs

<b>Zone Geometry</b>	Volume 100 m <sup>3</sup>	Floor Area 40 m <sup>2</sup>	Wall Area 63.25 m <sup>2</sup>	Ceiling Area 40
<b>Infiltration</b>	Infiltration 0.5 1/h	Particle Penetration Coefficient 1		
<b>Ventilation System</b>	Supply Airflow Rate 360 sm <sup>3</sup> /h	Outdoor Air Intake Fraction 0	Return Airflow Rate 360 sm <sup>3</sup> /h	Local Exhaust A 0
<b>System Filters</b>	Outdoor Air Filter None	Recirculation Air Filter MERV 8		
<b>Calculated Airflows</b>	Total Outdoor Air Change Rate 0.5 1/h	Outdoor Air Intake Rate 0 sm <sup>3</sup> /h	Recirculation Airflow Rate 360 sm <sup>3</sup> /h	
<b>Room Air Cleaner</b>	Maximum Airflow Rate 200 scfm	Fan Flow Fraction 1	Filter Efficiency 0.8	CADR 160
<b>Particle Properties</b>	Name lv1	Diameter 1 μm	Density 1 g/cm <sup>3</sup>	Particle Deactiv On
<b>Continuous Source</b>	Source On	Generation Rate 3.2 #/min	Generation Time Period Start 00:00 / End 24:00	
<b>Burst Source</b>	Source On	Burst Type Intermittent	Amount per Burst 45 #	Generation Time Start 00:01 / End
<b>Particle Deposition Velocities</b>	Floor 0.00371 cm/s	Walls 0.000326 cm/s	Ceiling 4.33e-8 cm/s	Other Surface 0
<b>Initial Concentrations</b>	Outdoor Air 0 #/m <sup>3</sup>	Zone Air 0 #/m <sup>3</sup>		
<b>Occupant Exposure</b>	Occupancy Time Period Start 07:00 / End 17:00	Occupancy Type Intermittent	Intermittent Occupancy Interval 60 min	Intermittent Occ 10



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

Renyi Zhanga,b,1, Yixin Lib , Annie L. Zhangc , Yuan Wangd , and Mario J. Molinae,1

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

# Masks and Respirators



# How to get employees back to work

- Get employees involved
- Address concerns ( cleaning, masks, distance, aerosol)
- Be technically correct
- Be Honest
- Reasonable accommodation
- <https://www.backtoworksafely.org/>

# <https://www.backtoworksafely.org/>



## Retail Guidelines

Small and medium (especially non-chain) retail stores have been very challenged during the COVID-19 pandemic.

[FREE DOWNLOAD](#)

[EN ESPANOL](#)



## Restaurant Guidelines

With stay-at-home restrictions beginning to lift, restaurant owners are faced with difficult questions that must be addressed before reopening.

[FREE DOWNLOAD](#)

[EN ESPANOL](#)



## Rideshare, Taxi, Limo, and other Passenger Drivers-for-Hire Guidelines

With stay at home and shelter-in-place restrictions beginning to lift, Rideshare, Taxi, Limo and other Passenger Driver-for-Hire companies are faced with difficult questions that must be addressed as they transition back to normal operations.

[FREE DOWNLOAD](#)

[EN ESPANOL](#)



## Small Lodging Establishments Guidelines

Small lodging establishments including hotels, inns, and bed & breakfast businesses across the United States (U.S.) have been heavily affected by the COVID-19 pandemic.

[LEARN MORE](#)



## Small Manufacturing, Repair and Maintenance Shops Guidelines

Small manufacturing sites, repair and maintenance shops, etc. are faced with difficult questions that must be addressed as they transition back to normal operations.

[DOWNLOAD FREE](#)



# Is this the New Normal ?

Fellows Members Digest for We... | Public Health Officials Face Wave... | khn.org/news/public-health-officials-face-wave-of-threats-pressure-amid-coronavirus-response/

KHN KAISER HEALTH NEWS

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COVID-19

## Public Health Officials Face Wave Of Threats, Pressure Amid Coronavirus Response

By Lauren Weber and Anna Maria Barry-Jester and Michelle R. Smith, The Associated Press  
JUNE 12, 2020

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Legislation

hr6559



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## H.R.6559 - COVID-19 Every Worker Protection Act of 2020

116th Congress (2019-2020) | [Get alerts](#)

BILL Hide Overview

**Sponsor:** [Rep. Scott, Robert C. "Bobby" \[D-VA-3\]](#) (Introduced 04/21/2020)

**Committees:** House - Education and Labor; Energy and Commerce

**Latest Action:** House - 04/21/2020 Referred to the Committee on Education and Labor, and in addition to the Committee on Energy and Commerce, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned. [\(All Actions\)](#)

**Tracker:**

Introduced > Passed House > Passed Senate > To President > Became Law

More on This Bill

[Constitutional Authority Statement](#)

[CBO Cost Estimates \(0\)](#)

Subject — Policy Area:

Labor and Employment

[View subjects >](#)

Summary (1) | **Text (1)** | Actions (3) | Titles (2) | Amendments (0) | Cosponsors (117) | Committees (2) | Related Bills (2)

### Text: H.R.6559 — 116th Congress (2019-2020)

[All Information](#) (Except Text)

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There is one version of the bill.

**Text available as:** XML/HTML | [XML/HTML \(new window\)](#) | [TXT](#) | [PDF](#) (PDF provides a complete and accurate display of this text.) ?

Shown Here:

Introduced in House (04/21/2020)

116TH CONGRESS  
2D Session

H R 6559

Show all