Connecticut River Valley
LOCAL SECTION

COVID 19 –How it Spreads and Impact on us

Oct 7, 2020

Jim Kenny CIH, CSP, FAIHA

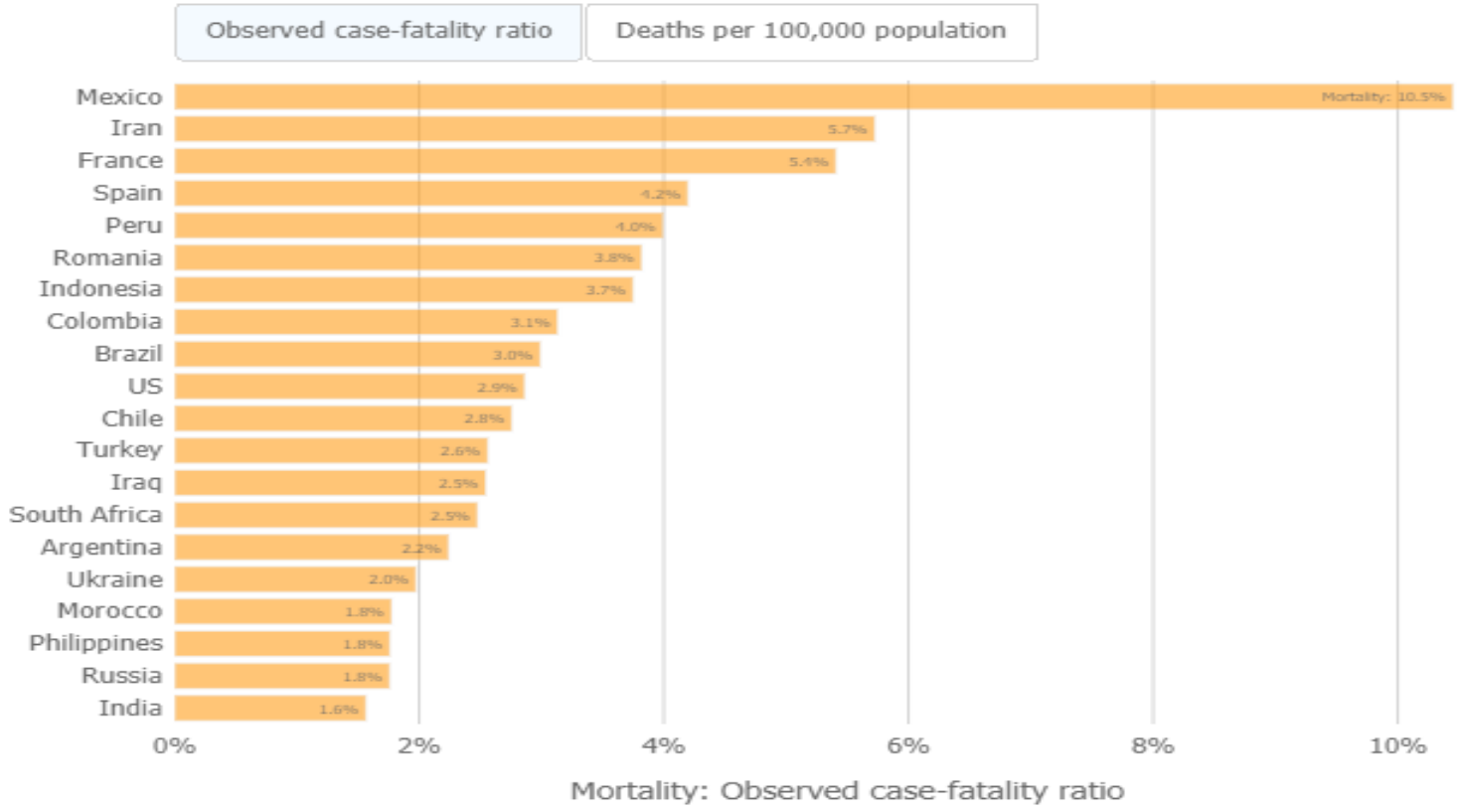
Where are we now ?

- 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/

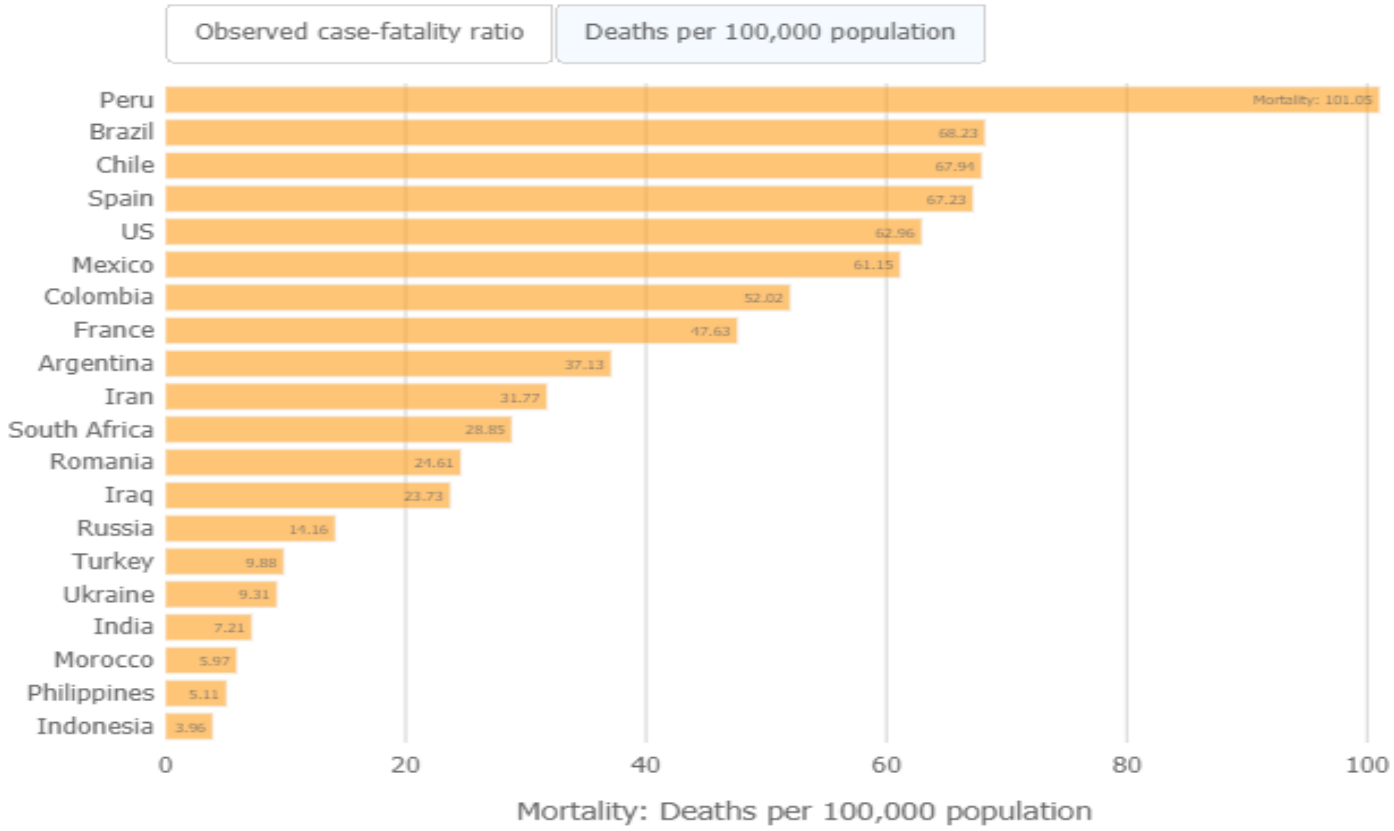


- Italy 11.5%
- UK 9.4 %

Worldwide cases per 100K population

20 most currently affected countries

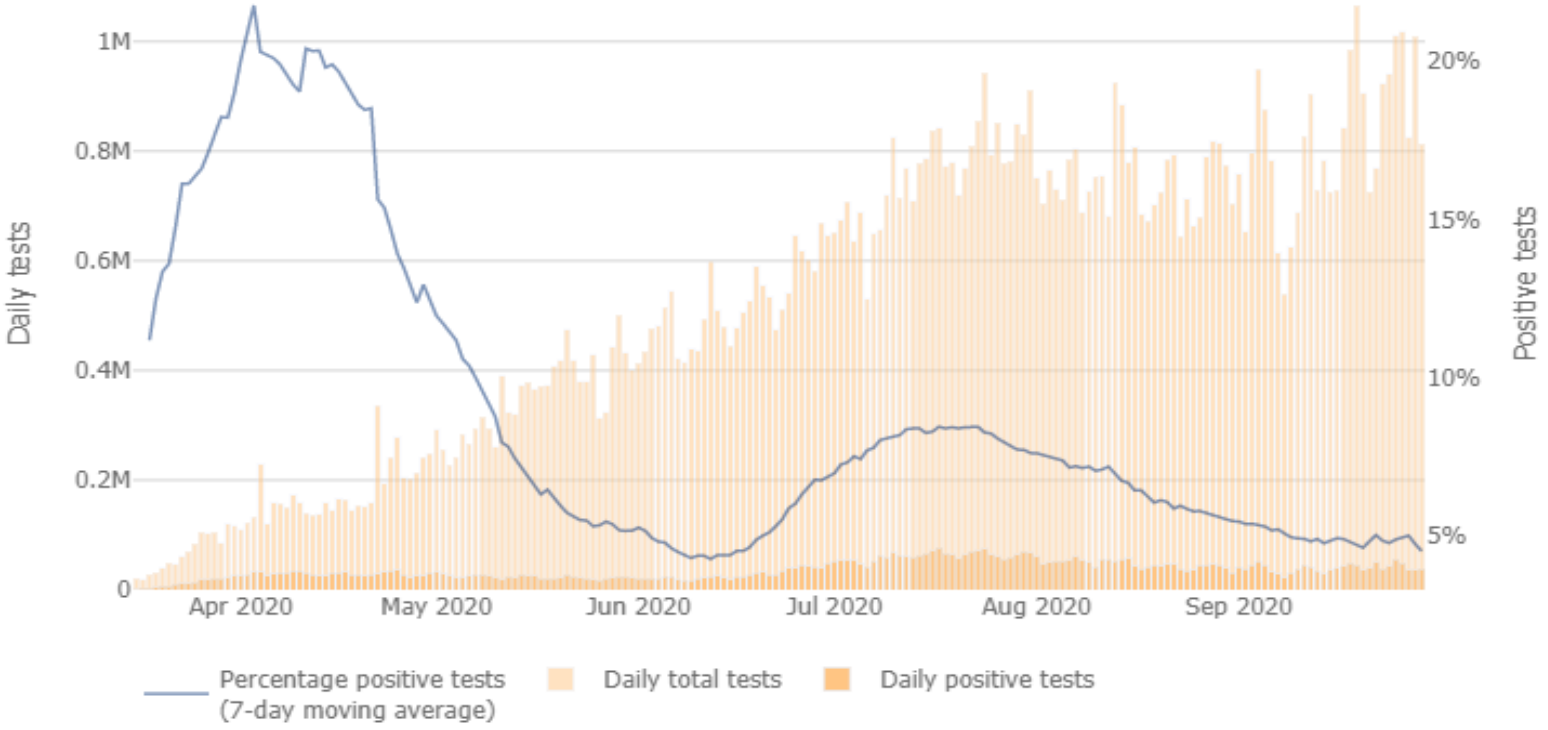
https://coronavirus.jhu.edu/testing/



- Italy 59
- UK 63

USA COVID numbers

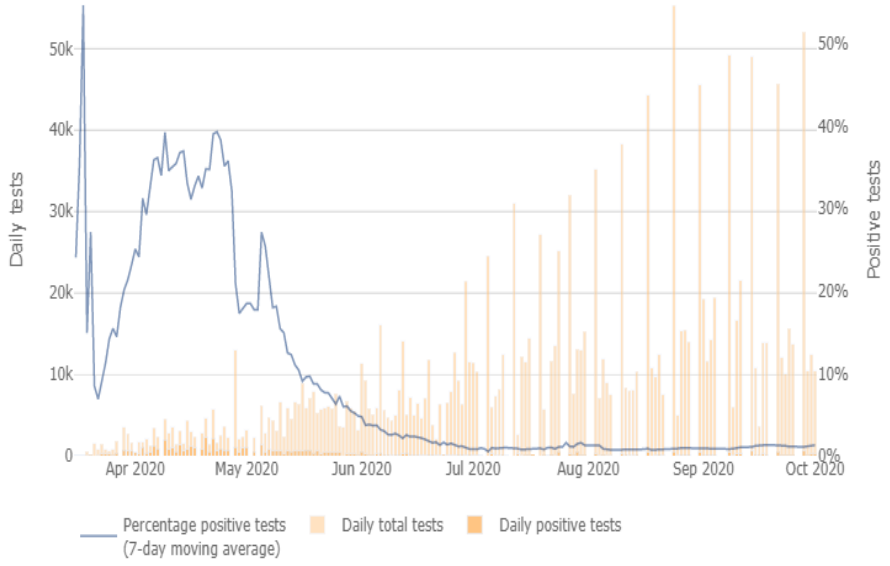
https://coronavirus.jhu.edu/testing/



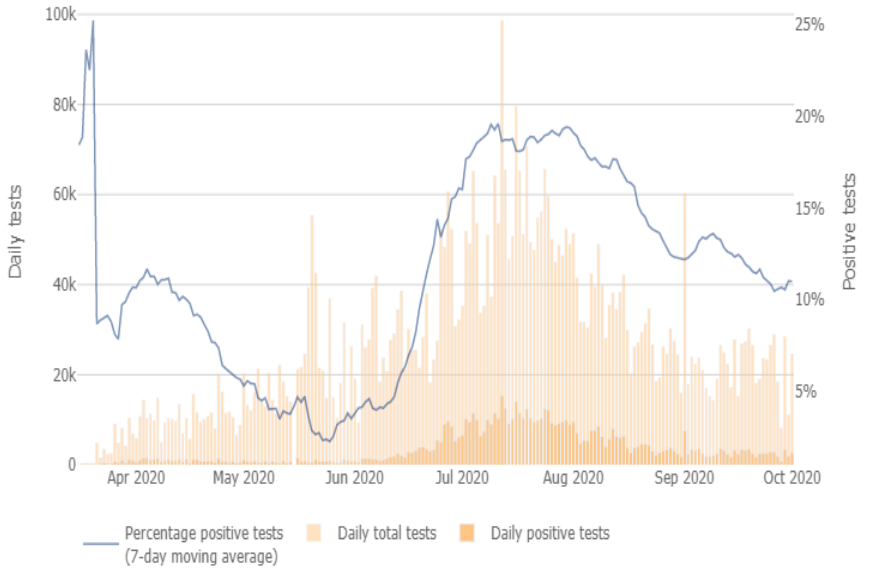
State by State Covid numbers

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

Conn Covid



Florida Covid

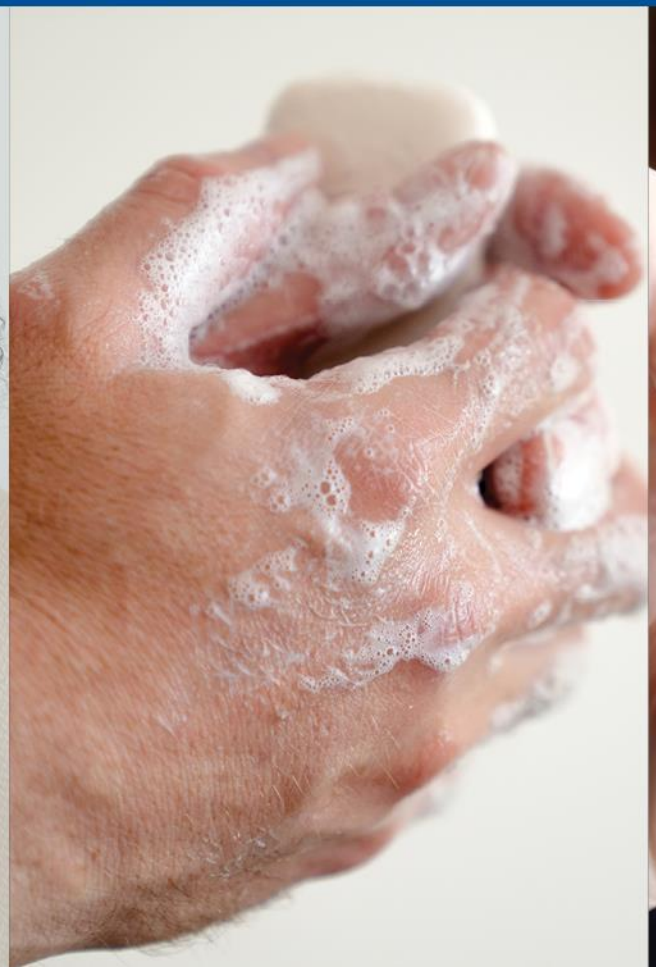


National Institute of Environmental Health Sciences
Worker Training Program

NIEHS COVID-19 Response Training Tool

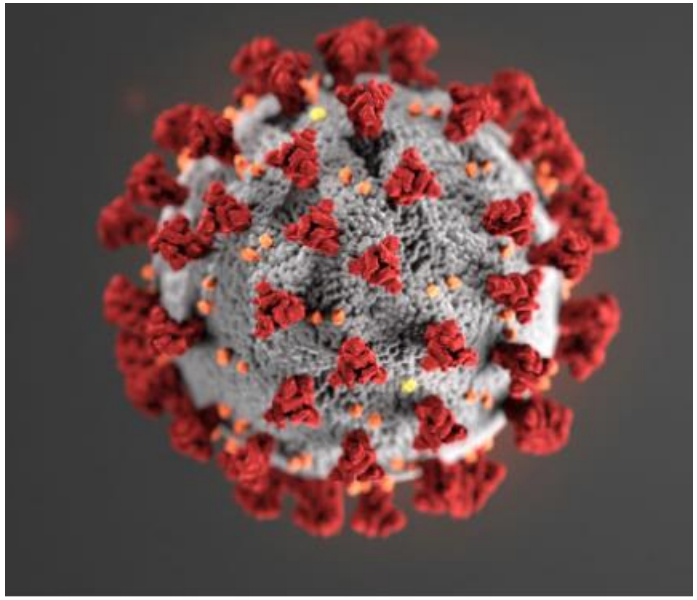
Protecting Yourself from COVID-19 in the Workplace

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

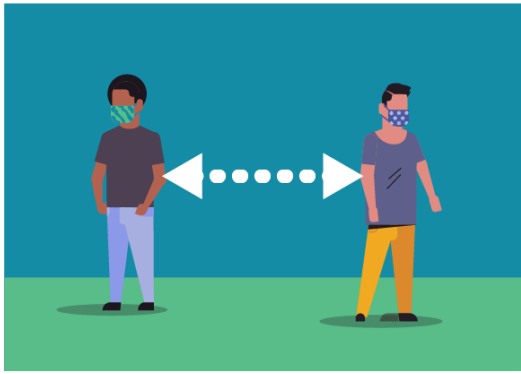
Product -Concentration and Time

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 Sporicidal Disinfectant Cleaner Wipes	Feline calicivirus	1
74986-4	Sodium chlorite	Selectrocide 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

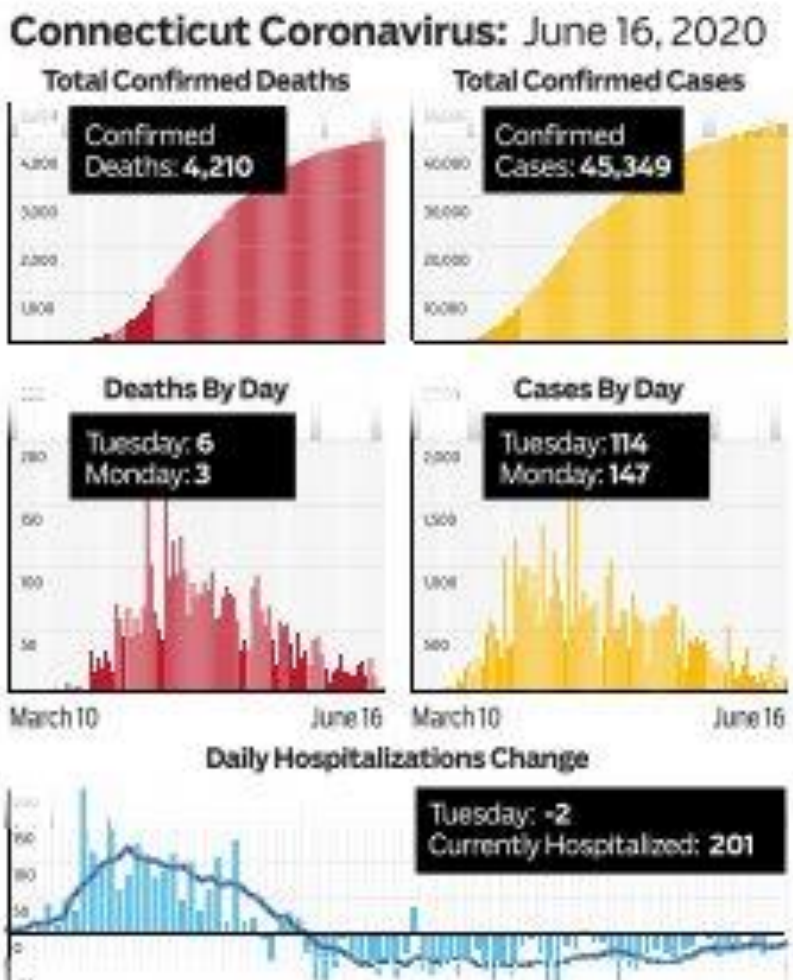
Hospitalizations decline, few new deaths as state prepares for second phase

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



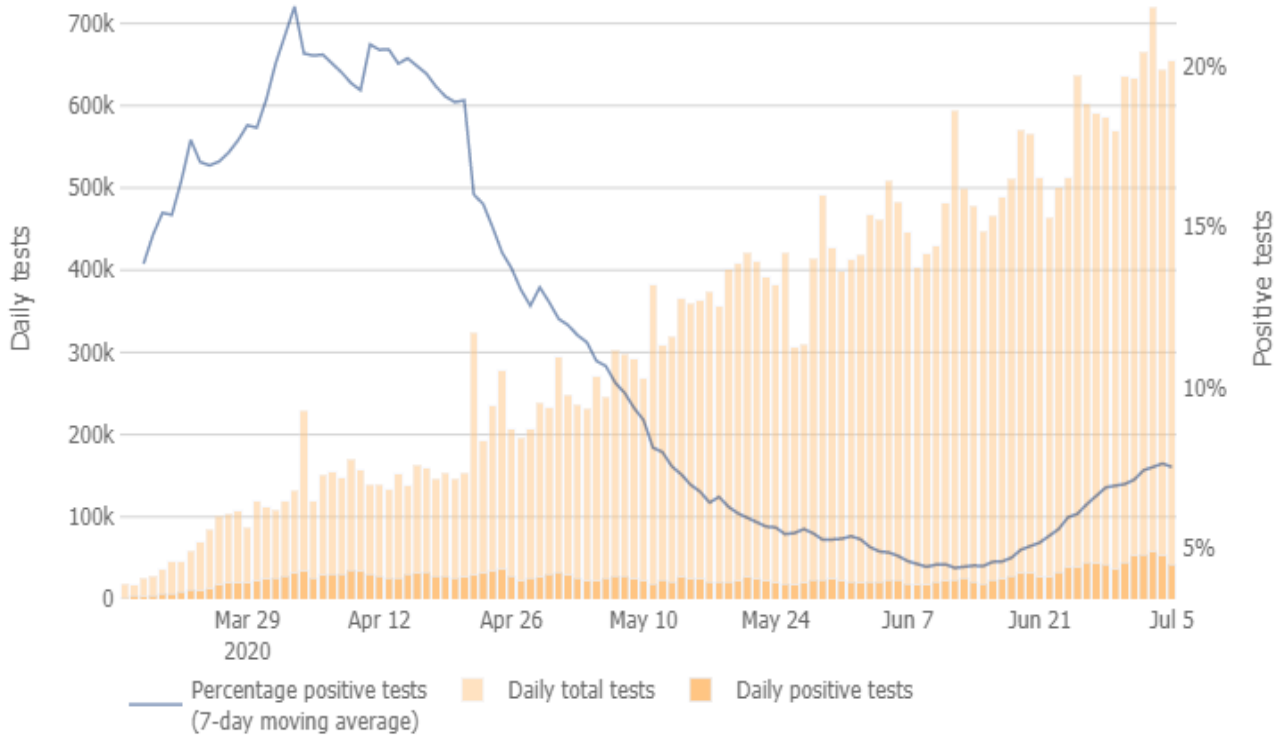
ups, we'll have to change course, that's just reality," he said.

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

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

- 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

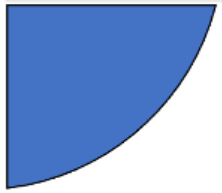
- Stanley cup not completed in 1919
- Babe Ruth helped Boston win WS in 1918 when earlier in the season he had flu

Barriers – Peoples and disease

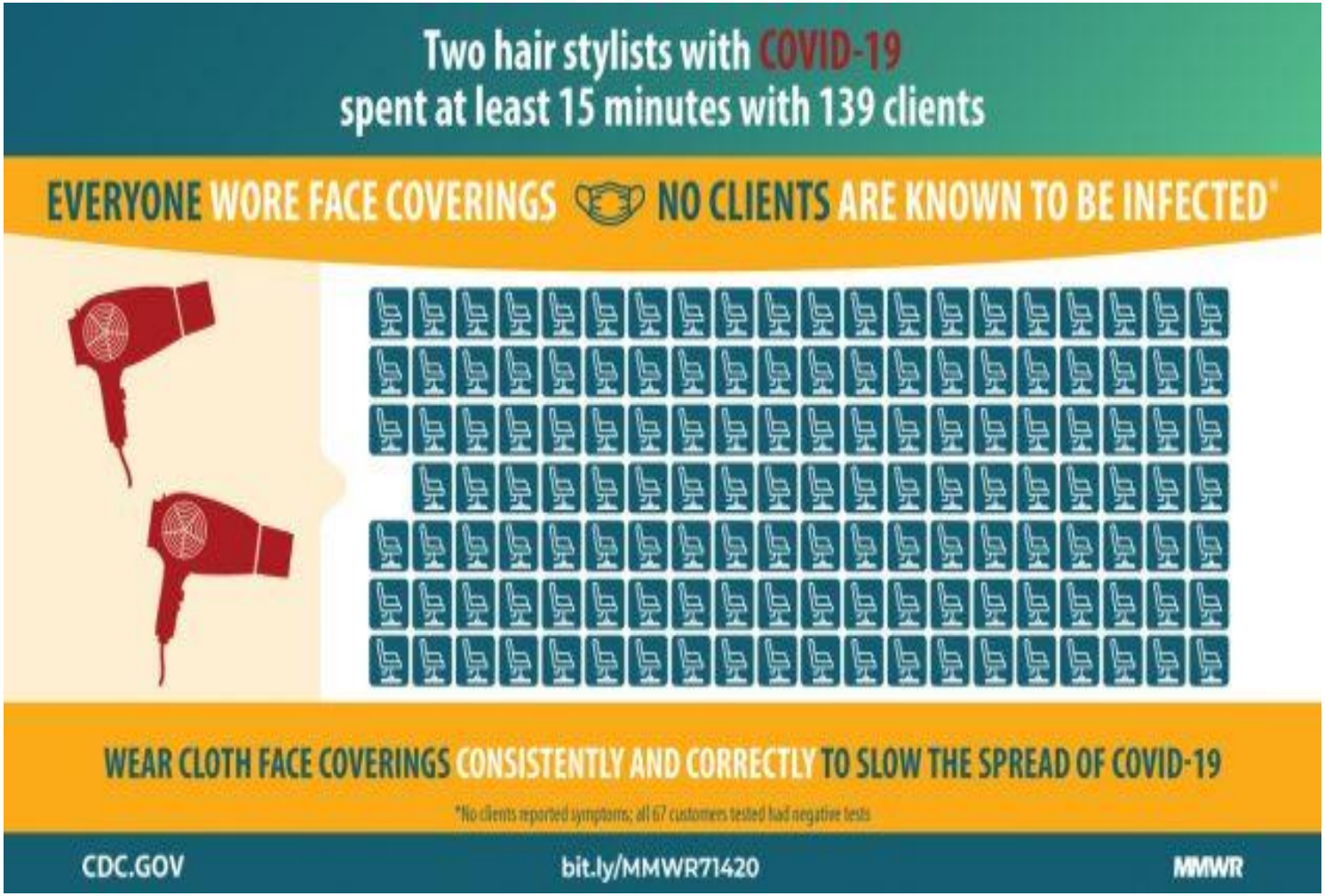
- Walls closed at dusk – Safety - disease
- Great wall of China – outside influence- defense
- US/Mexico – immigration
- USA ?

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



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

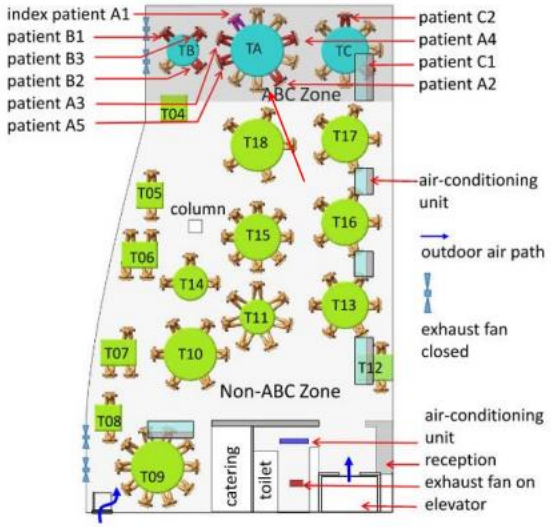
- Outbreak in a Netherlands nursing home
- 81% of Residents and 50% of staff tested positive
- No masks for residents Staff masks when with patient
- Only one of many wards involved
- Outside air only activated when CO2 >1000 ppm
- Inside air that was recirculated was unfiltered
- Also ward cooled by two air conditioning units, which recirculated air through a 1 mm mesh dust filter

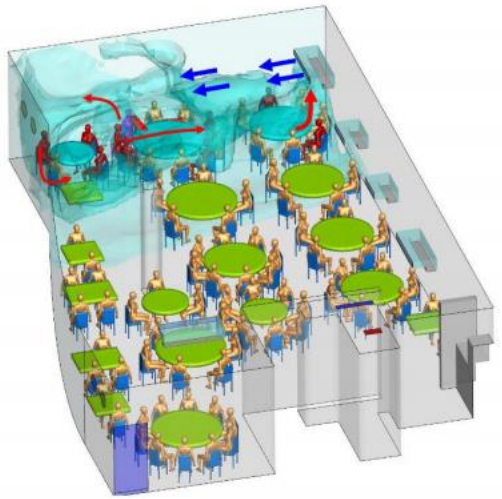
Taylor Engineering White Paper

- 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

uff/TECH/covid%2019/TE-COVID19-White-Paper%20%20hvac.pdf

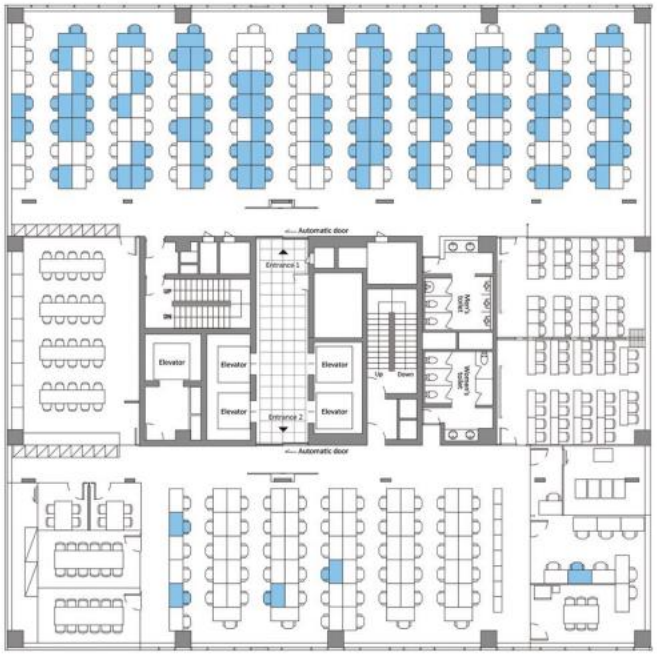
Google





Taylor Engineering White Paper

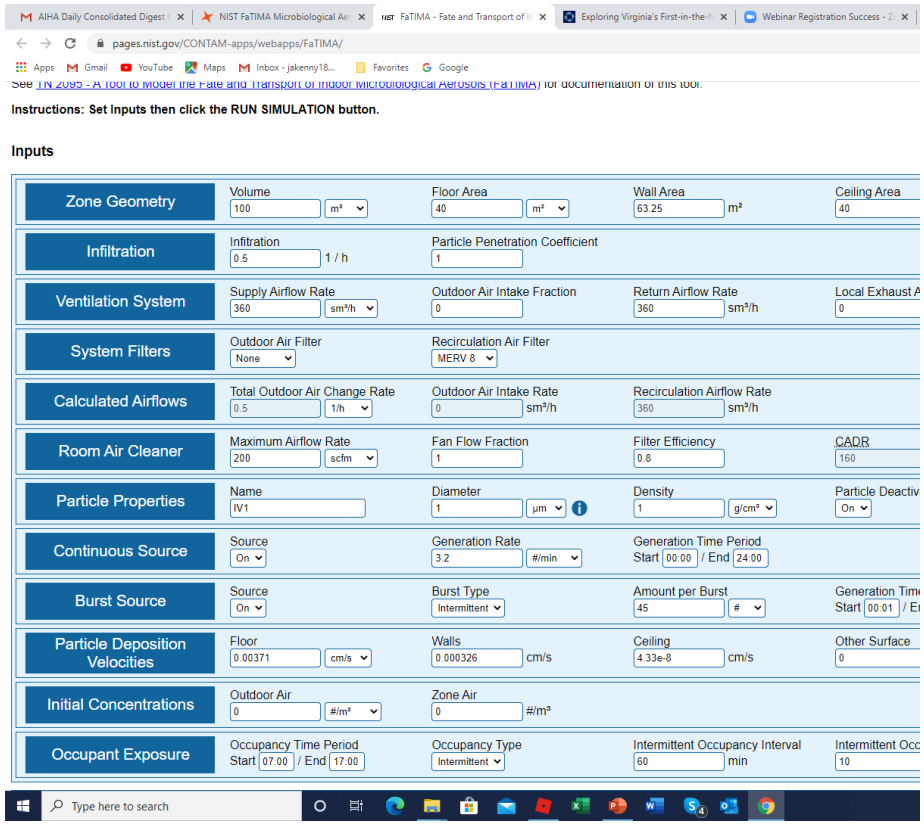
- Korean Call Center- 94 of 216 employees on same floor infected most in closest proximality (week)
- No one wearing masks
- These two studies suggest that “social distancing” may not be sufficient to prevent transmission due to transmission from smaller virus-carrying particles. However, they also conclude 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)

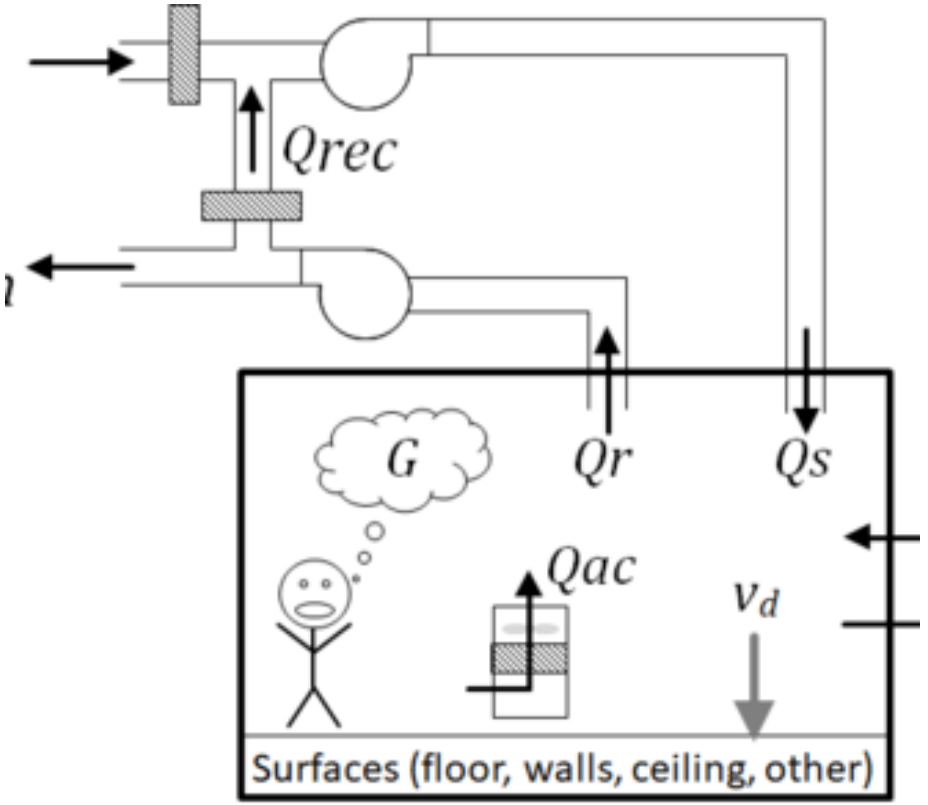


These two studies suggest that “social distancing” may not be sufficient to prevent transmission due to transmission from smaller virus-carrying particles. However, they also conclude that long-range aerosol transmission was not indicated.

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)





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

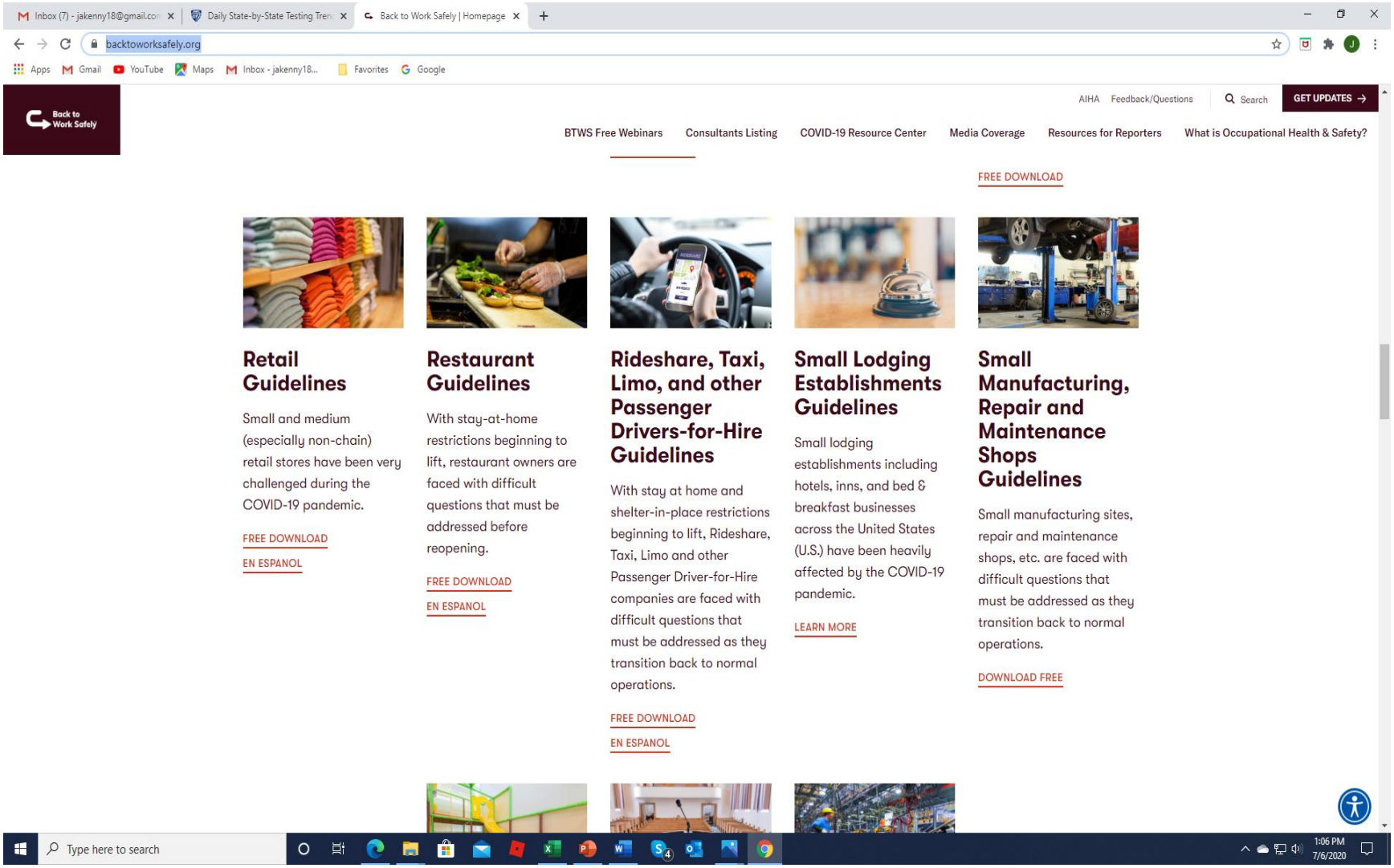
- We conclude that wearing of face masks in public corresponds to the most effective means to prevent interhuman transmission, and this inexpensive practice, in conjunction with extensive testing, quarantine, and contact tracking, poses the most probable fighting opportunity to stop the COVID-19 pandemic,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

Masks and Respirators

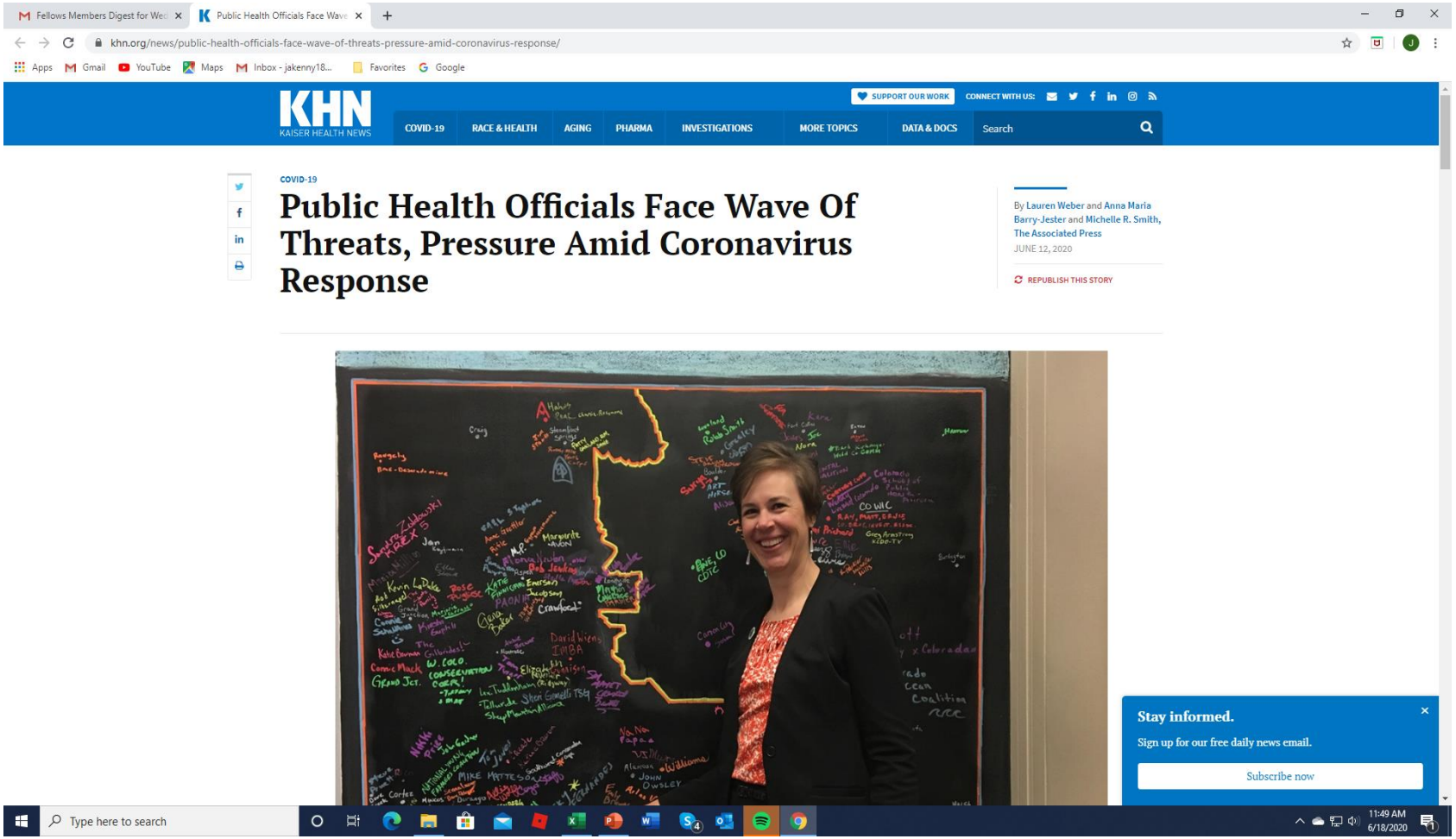
How to get employees back to work

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

https://www.backtoworksafely.org/



Is this the New Normal ?



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)

Listen to this page

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