COVID-19 Re-entry
Safe Schools

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Global Picture

COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University

- Total Confirmed: 14,604,077
- US: 3,804,907
- Brazil: 2,098,389
- India: 1,118,206
- Russia: 776,212
- Peru: 369,429
- South Africa: 364,328
- Mexico: 349,396
- Chile: 330,930
- United States: 296,944

- Global Deaths: 608,420
  - US: 140,787
  - Brazil: 79,488
  - United Kingdom: 45,397
  - Mexico: 39,485
  - Other countries: 35,058

- US State Level
  - Deaths: 32,506
    - New York: 72,161
    - New Jersey: 31,405
    - Other states: 8,431
  - Recovered: 95,390
Global Picture

Daily confirmed new cases (5-day moving average)

Outbreak evolution for the current 10 most affected countries

Data source: Johns Hopkins COVID Dashboard 7/20/20
United States COVID Rates and Deaths

New reported cases by day across the world

Note: The seven-day average is the average of a day and the previous six days of data.

New reported deaths by day across the world

Note: Scale for deaths chart is adjusted from cases chart to display trend.

Data source: NY Times 7/20/20
Domestic Hot Spots

Data source: NY Times 7/20/20
Failure to Implement Infection Prevention Measures

Florida

Texas

vs.

New York

Connecticut

Data source: NY Times 7/20/20
Connecticut Data

Number of Confirmed and Probable COVID-19 Cases by Date
As of 07/19/2020 at 8:30pm

Data source: CT DPH 7/20/20
Connecticut Hospitalizations

Source: Connecticut Hospital Association 7/16/20
## CT Data by County

<table>
<thead>
<tr>
<th>County</th>
<th>Total Cases</th>
<th>Per 100,000</th>
<th>Cases in Last 7 Days</th>
<th>Decrease Per 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connecticut</td>
<td>47,893</td>
<td>1,343</td>
<td>606</td>
<td>17</td>
</tr>
<tr>
<td>New Haven</td>
<td>12,733</td>
<td>1,490</td>
<td>201</td>
<td>24</td>
</tr>
<tr>
<td>Fairfield</td>
<td>17,069</td>
<td>1,809</td>
<td>163</td>
<td>17</td>
</tr>
<tr>
<td>Hartford</td>
<td>12,046</td>
<td>1,351</td>
<td>154</td>
<td>17</td>
</tr>
<tr>
<td>Windham</td>
<td>651</td>
<td>557</td>
<td>19</td>
<td>16</td>
</tr>
<tr>
<td>Middlesex</td>
<td>1,357</td>
<td>835</td>
<td>22</td>
<td>14</td>
</tr>
<tr>
<td>New London</td>
<td>1,347</td>
<td>508</td>
<td>25</td>
<td>9</td>
</tr>
<tr>
<td>Tolland</td>
<td>939</td>
<td>623</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>Litchfield</td>
<td>1,523</td>
<td>845</td>
<td>13</td>
<td>7</td>
</tr>
</tbody>
</table>

Data Source: New York Times 7/20/20
Connecticut Travel Advisory

• From Governor Lamont’s office: Effective Wednesday evening, June 24, 2020, anyone traveling into Connecticut, New York, or New Jersey from a state that has a new daily positive test rate higher than 10 per 100,000 residents, or a state with a 10% or higher positivity rate over a 7-day rolling average, is directed to **self-quarantine** for a 14-day period from the time of last contact within the identified state.

• As of July 21, the list of states now includes 31 States.
Based on available global data, the U.S. CDC has published new best estimates (many uncertainties remain) for several parameter values:

- $R_0$ (initial transmissibility in naive populations): 2.5
- Infection fatality rate (considers asymptomatic and symptomatic infection together): 0.65%
- Asymptomatic infections: 40%
- Infectiousness of asymptomatic individuals relative to symptomatic: 75%
- Percentage of transmission occurring prior to symptom onset: 50%
- Percent that die among those hospitalized:
  - 18-49 years: 2.0%
  - 50-64 years: 9.8%
  - $\geq$ 65 years: 28.1%
COVID-19 Risk Factors

• Among adults, the risk for severe illness from COVID-19 increases with age, with older adults at higher risk
  – May be more likely to require hospitalization, ICU admission, or mechanical ventilation

• **Regardless of age**, people with certain underlying medical conditions are at increased risk for severe illness from COVID-19
  – CKD
  – COPD, asthma, pulmonary fibrosis
  – Immunocompromised state
  – Obesity
  – Cardiovascular disease
  – Diabetes Mellitus
  – Pregnancy
  – Stroke
  – Neurologic conditions
  – Sickle Cell Disease
  – Smoking
  – Liver Disease
COVID-19 Symptoms

• Most common: fever, cough, shortness of breath
  – Sore throat, headache, muscle aches, runny nose, nausea, vomiting, diarrhea
  – Loss of taste and smell in 60-80%
  – Cardiac manifestations – pericarditis, myocarditis, cardiomyopathy
  – Coagulopathy – blood clots
  – Dermatologic findings – COVID toes
  – Multisystem inflammatory syndrome in children (MIS-C) – late onset

• 80% mild to moderate symptoms with recovery at home
COVID-19 Symptoms

Morbidity and Mortality Weekly Report

FIGURE 2. Odds ratios and 95% confidence intervals of previous or current SARS-CoV-2 infection, by individual symptoms among service members reporting at least one symptom (n = 284) — USS Theodore Roosevelt, April 2020

- Loss of taste, smell, or both
- Palpitations
- Fever (documented or subjective)
- Chills
- Myalgia
- Cough
- Nausea
- Fatigue
- Shortness of breath/Difficulty breathing
- Chest pain
- Abdominal pain
- Runny nose
- Diarrhea
- Headache
- Vomiting
- Sore throat

Odds ratio
COVID-19 and Children

• **Children at all ages are at risk for COVID-19**, however complications appear to be less common than in adults
  – Paucity of ACE-2 receptors in the respiratory tract compared to adults
  – Children get COVID less and tend to have milder disease
    • Lower viral loads seen, ?less contagious

• **Influenza is more common** - Flu shots much more important this year
Multisystem Inflammatory Syndrome in Children

- Late onset fever, lab evidence of inflammation, multisystem organ involvement, evidence of infection with SARS-CoV-2 (based on testing or exposure)
- Targeted surveillance for MIS-C from 3/15-5/20
- 186 patients in 26 states
  - Median age 8.3 years
  - 62% male, 38% female
  - 70% positive for SARS-CoV-2 by PCR or antibody test
  - 88% hospitalized (median duration 7 days)
- Peak incidence of MIS-C occurred when COVID-19 activity was decreasing

Important Points about COVID PCR Testing

• Nasopharyngeal or oropharyngeal swab detects RNA of the SARS-CoV-2, not live virus

• Most useful to diagnose acute COVID-19 infection in patients with symptoms (very rare false positives)

• Negative PCR test does not necessarily mean the patient does not have COVID-19. False negative rate estimate 10%
  • Low viral load (late in the illness, good host response, low risk for contagion)
  • Poor specimen quality (nasal versus NP, wrong transport medium, delayed transport)
  • Test characteristics (manufacturer)

• Positive PCR test does not necessarily mean the patient is infectious; can remain positive for weeks when infectious virus may no longer be present. Problem with test-based disposition
Important Points about COVID Antibody Testing

• Blood antibody test – does not detect the virus

• IgG antibody response – immune system response is present 14 days or later after symptom onset.

• Useful to corroborate a suspected a late diagnosis when PCR is negative or when late complications arise (MIS-C)

• Testing patient groups (especially nursing home patients) for the presence of IgG antibody will detect past coronavirus infection

• Testing the community as a measure of overall COVID-19 prevalence.

• Does not guarantee immunity; duration is unknown
Interpreting Diagnostic Tests for SARS-CoV-2

Before symptom onset

Detection unlikely\textsuperscript{a}

After symptom onset

PCR - Likely positive

PCR - Likely negative\textsuperscript{b}

Antibody detection

Symptom onset

Week -2  Week -1  Week 1  Week 2  Week 3  Week 4  Week 5  Week 6

Nasopharyngeal swab PCR

Bronchoalveolar lavage/sputum PCR

Stool PCR

Virus isolation from respiratory tract

IgM antibody

IgG antibody

SARS-CoV-2 exposure

Increasing probability of detection

JAMA. Published online May 06, 2020. doi:10.1001/jama.2020.8259
## Connecticut Reopening Criteria 6/20/20

<table>
<thead>
<tr>
<th>Goal</th>
<th>Benchmark</th>
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<tbody>
<tr>
<td>1. Sustained decline in hospitalizations</td>
<td>Decline of hospital census over 14-day period</td>
</tr>
<tr>
<td>2. Widespread and rapid PCR testing</td>
<td>42K tests per week with 24-48hr turnaround time</td>
</tr>
<tr>
<td>3. Sufficient capacity for contact tracing and quarantine</td>
<td>Contact tracing system (ContaCT) operational</td>
</tr>
<tr>
<td>4. Protections in place for vulnerable populations</td>
<td>State has begun testing key workers and high risk populations; SNF rapid response team functional</td>
</tr>
<tr>
<td>5. Healthcare capacity to provide optimal care</td>
<td>&lt;20% of peak bed capacity now occupied by COVID-19 patients over 14 days</td>
</tr>
<tr>
<td>6. Adequate PPE available for healthcare workers</td>
<td>30 days of PPE supplies available in major healthcare systems</td>
</tr>
<tr>
<td>7. Safeguards to protect the workplace</td>
<td>Standards and regulations disseminated to business owners</td>
</tr>
</tbody>
</table>
COVID-19 and Schools

• The more people a student or staff member interacts with, the longer that interaction, the higher risk of COVID-19 spread
  – **Lowest Risk**: virtual-only classes
  – **More Risk**: small, in-person classes, activities and events; cohorting; 6 feet distance; hybrid virtual and in-person class structures or staggered/rotated scheduling
  – **Highest Risk**: full sized, in-person classes; no social distancing, no cohorting
The Safest Model

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  – Highest Risk: full sized, in-person classes, no social distancing, no cohorting
Do Children Contribute to Spread?

- From South Korea’s public health system, Jan 20 – March 27
- Contact tracing done for over 5000 index cases of COVID-19
- COVID-19 detected in 11.8% of household contacts
  - Rates higher for contacts of children than adults

<table>
<thead>
<tr>
<th>Index patient age, y</th>
<th>Household Contacts</th>
<th>Non-Household Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. contacts positive/no. contacts traced</td>
<td>% Positive (95% CI)</td>
</tr>
<tr>
<td>0–9</td>
<td>3/57</td>
<td>5.3 (1.3–13.7)</td>
</tr>
<tr>
<td>10–19</td>
<td>43/231</td>
<td>18.6 (14.0–24.0)</td>
</tr>
<tr>
<td>20–29</td>
<td>240/3,417</td>
<td>7.0 (6.2–7.9)</td>
</tr>
<tr>
<td>30–39</td>
<td>143/1,229</td>
<td>11.6 (9.9–13.5)</td>
</tr>
<tr>
<td>40–49</td>
<td>206/1,749</td>
<td>11.8 (10.3–13.4)</td>
</tr>
<tr>
<td>50–59</td>
<td>300/2,045</td>
<td>14.7 (13.2–16.3)</td>
</tr>
<tr>
<td>60–69</td>
<td>177/1,039</td>
<td>17.0 (14.8–19.4)</td>
</tr>
<tr>
<td>70–79</td>
<td>86/477</td>
<td>18.0 (14.8–21.7)</td>
</tr>
<tr>
<td>≥80</td>
<td>50/348</td>
<td>14.4 (11.0–18.4)</td>
</tr>
</tbody>
</table>

Risk Reduction Strategies

• Hand hygiene and respiratory etiquette
  – Teach and reinforce
  – Soap and water or hand sanitizer (>60% alcohol)

• Cloth face coverings
  – Should be worn at all times, especially when social distancing is not possible
  – Educate on proper use (don’t touch the front, frequent hand washing)
  – Should not be used if <2 yrs old, trouble breathing, or those who would not be able to remove the covering themselves
  – Build in “mask breaks” to the daily schedule

• Social distancing
  – Seating/desks should be at least 6 feet apart when feasible
  – Turn desks to face in the same direction (not facing each other)
  – Create distance between children on school buses (i.e., skip rows)
  – Install physical barriers (sneeze guards and partitions) in areas where it is difficult to maintain 6 feet distance
The Importance of Universal Mask Use

Fig. 3. Contrast the trends of new infections between NYC and the United States. Daily new confirmed infections in (A) NYC and (B) the United States. The dotted lines represent linear fitting to the data between April 17 and May 9 in NYC and between April 4 and May 9 in the United States. In B, the number in NYC was subtracted from that in the United States. The vertical lines label the dates for social distancing, stay-at-home orders, and mandated face-covering.
DOs AND DON’Ts OF WEARING A MASK
Cloth Face Coverings

• Helps protect those around you from droplets produced when coughing, sneezing, or talking

• Most likely to reduce spread of COVID-19 when widely used by people in public places

• Good for use in the community (restaurants, stores, schools)
Surgical Masks

- Helps protect those around you from droplets produced when coughing, sneezing, or talking
- Added protection for the wearer against splashes and sprays
- Good for use in the health care settings
Maintaining a Healthy Environment

• Cleaning and disinfection
  – High touch surfaces are a priority at least daily
  – Use of shared objects should be limited, encourage bringing from home if possible
  – Ensure staff are trained on proper usage

• Ventilation
  – Ensure systems operate properly and increase circulation of outdoor air as much as possible

• Communal spaces
  – Close shared spaces (dining halls, playgrounds with shared equipment); if needed, stagger use and clean/disinfect in between

• Food services
  – Encourage bringing lunch from home
  – Serve individually plated meals and use disposable food service items
  – Lunch should be eaten in the classroom with 6 feet social distancing (masks off)
Healthy Operations

• Cohorting
  – Student and staff groupings should remain as static as possible
  – Same group of children should stay with the same staff all day if possible; limit mixing between groups

• Staggered scheduling
  – Stagger arrival and drop-off times by location or cohort

• Screening
  – Conduct daily health checks (temperature and symptom checking) of staff and students
  – Can be done on site or by parent attestation
  – If screening is positive, staff or student should not come to school
When Someone Gets Sick

- Staff members or students who are sick should not come to school
  - Identify an isolation room for those that get sick while at school
- Create a system for prompt COVID-19 testing for any staff member or student who becomes ill
- Establish a plan for contact tracing to identify direct contacts (<6 feet for >15 minutes) who need to quarantine
- Sick staff members or students should not return until they have met criteria for discontinuation of home isolation
- Establish triggers to determine when school should temporarily close and offer all distance learning, either short term or long term
What Questions Should I Ask?

• What supplies do you have to keep the school environment safe?
  – Hand sanitizer, soap
  – Disinfectants
  – Paper towels, tissues
  – Masks or cloth face coverings
  – No touch, foot-pedal trash cans

• How well are the classrooms ventilated?
  – HEPA filters, air exchanges
  – Opening of windows
What Questions Should I Ask?

• How will you ensure that students and staff will adhere to social distancing practices?
  – 6 feet or more is the safest
  – Physical partitions
  – Mask wearing policy

• What is your protocol for when a student or staff member gets sick or is diagnosed with COVID-19?
  – Screening protocol
  – Communication plans
  – Contact tracing and testing
  – Decisions for temporary closing,
  – Plans for distance learning while closed
Personal Safety

Outdoors is safe - take advantage of every outdoor opportunity
• Mask in crowds
• Maintain social distance
• Hand hygiene

Visiting stores, businesses and restaurants
• Mask, social distance, hand wash
• Clean surfaces

Travel
• Prevalence of disease at destination – avoid “hot spots”
• Air travel vs. road trip
• Hotel/lodging safety protocols

Stay home if you are sick
Q and A