

Advisory Panel 4:  
Public Health, Safety, & Logistics

**Metrics Review**

**PSB Testing Update**

**April 16, 2021**

# Community Benchmarks - Status

<b>Benchmark</b> (each measured over prior 14 days)	Status 3/24/21	Status 3/31/21	Status 4/7/21	Status 4/14/21
<b>Avg. daily new case count in Brookline = &lt;10 per 100k people</b>	9.7	8.5	9.9	10.8
<b>Avg. daily new case count in Mass. = &lt;10 per 100k people</b>	21.5	25.6	28.1	27.4
<b>Avg. test positivity rate in Brookline = &lt;5.0%</b>	0.79%	0.73%	0.80%	0.87%
<b>Avg. test positivity rate in Massachusetts = &lt;5.0%</b>	2.01%	2.36%	2.54%	2.48%

*Panel 4 selected these four community transmission benchmarks in August 2020 as triggers for focused evaluation and discussion of whether changes in operations are warranted, not as definitive indicators of in-school risk or thresholds for automatic action. Research and PSB-specific data since that time have convincingly shown that in-school transmission risk can be kept very low even at high levels of community case incidence.*

# MA DPH Color Scale



Incidence Rate Color Table

## Massachusetts Department of Public Health COVID-19 Dashboard - Thursday, November 12, 2020 Average Daily Incidence Rate per 100,000 Color Calculations

Group	Population		
	Under 10K	10K-50K	Over 50K
Grey	Less than or equal to 10 total cases	Less than or equal to 10 total cases	Less than or equal to 15 total cases
Green	Less than or equal to 15 total cases	<10 avg cases/100k AND >10 total cases	<10 avg cases/100k AND >15 total cases
Yellow	Less than or equal to 25 total cases	≥10 avg cases/100k OR ≥5% pos rate	≥10 avg cases/100k OR ≥ 4% pos rate
Red	More than 25 total cases	≥10 avg cases/100k AND ≥5% pos rate	≥10 avg cases/100k AND ≥4% pos rate

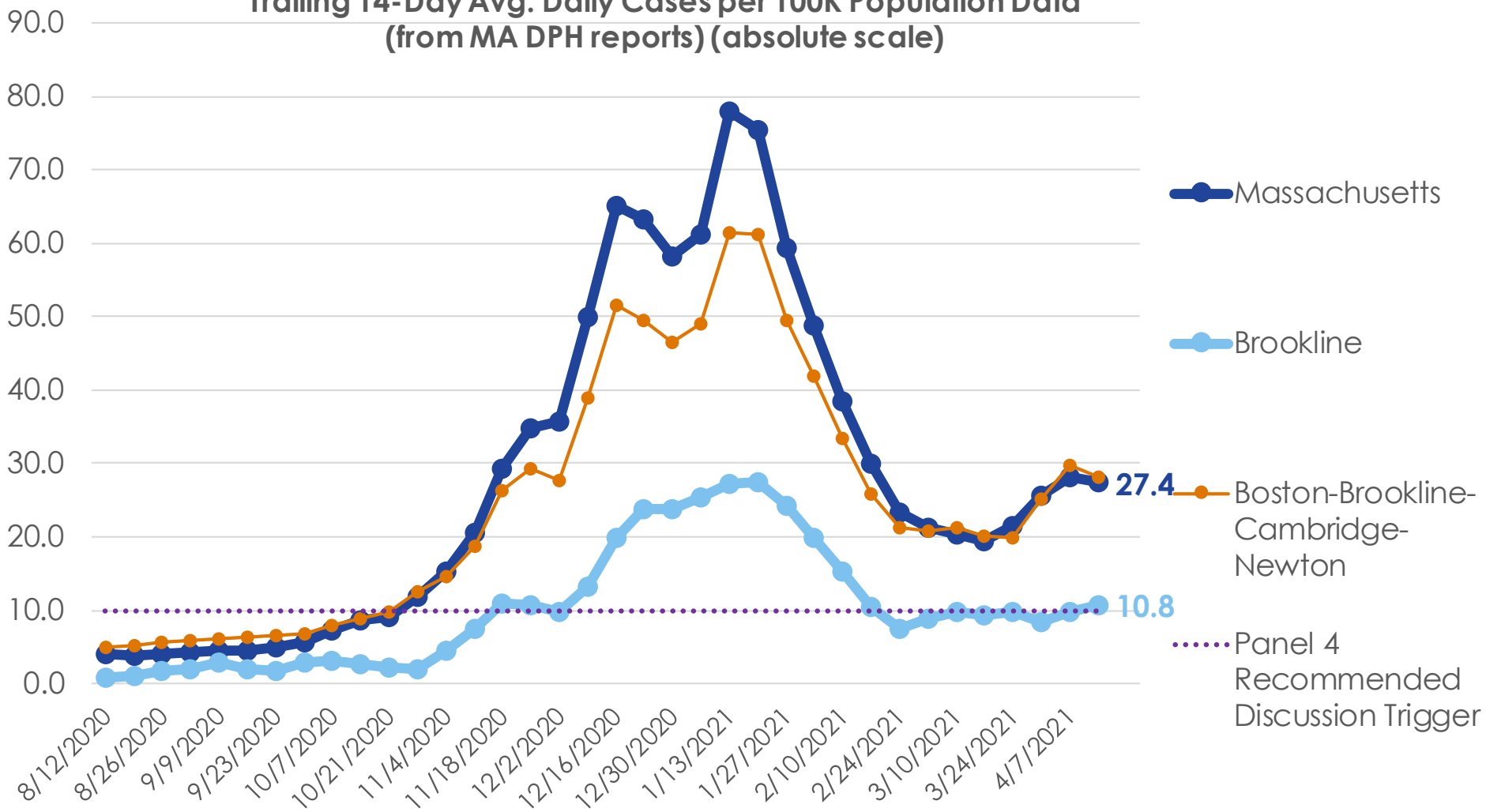
Brookline is here as of 4/14/2021 (barely yellow bordering on green)

Brookline's population is ~60,000

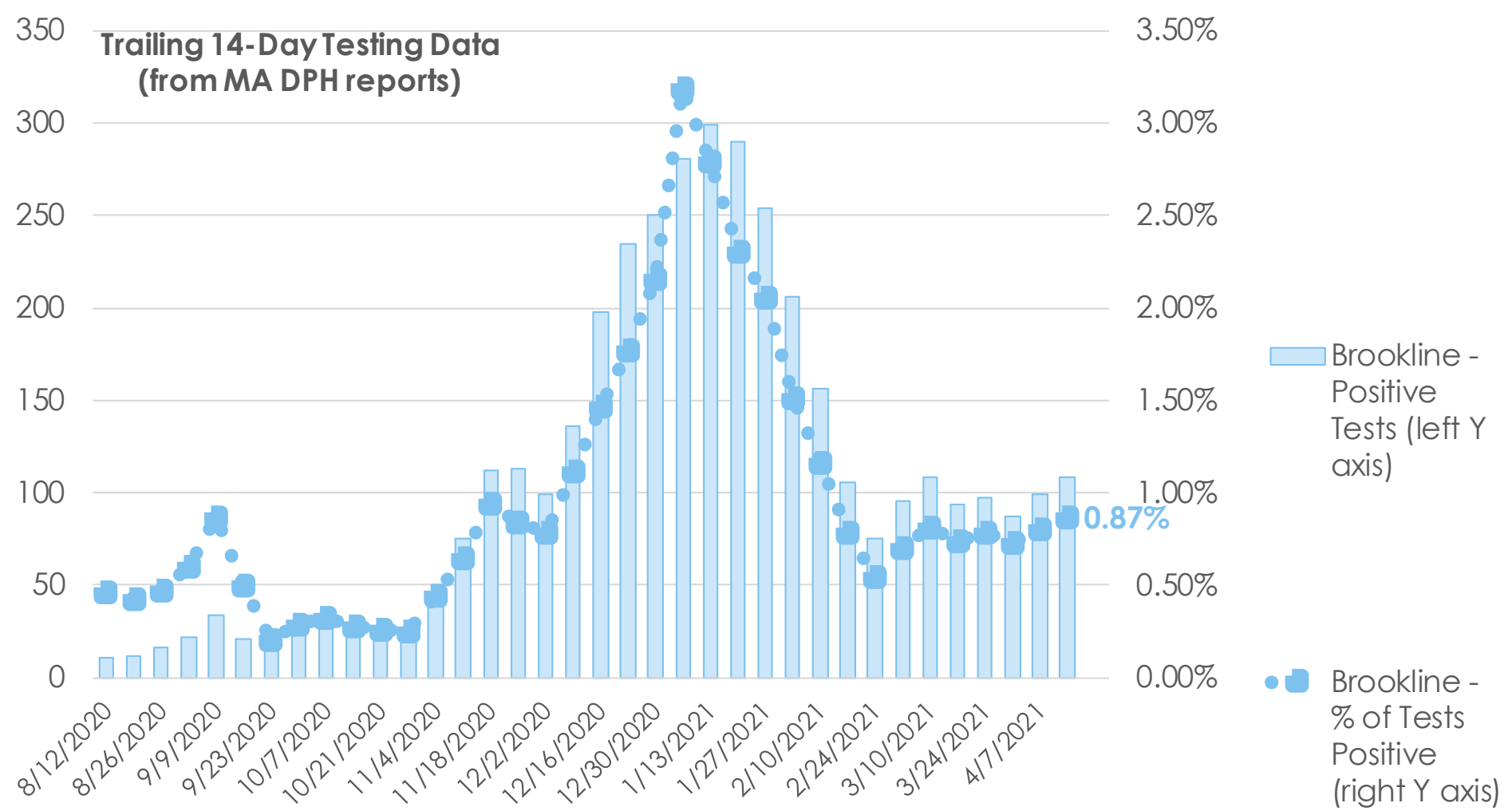
As of 11/5, DPH is using 2019 population estimates derived from a method developed by the University of Massachusetts Donahue Institute. The 2019 estimates are the most currently available data.

# Trends: Avg. Daily New Cases per 100k

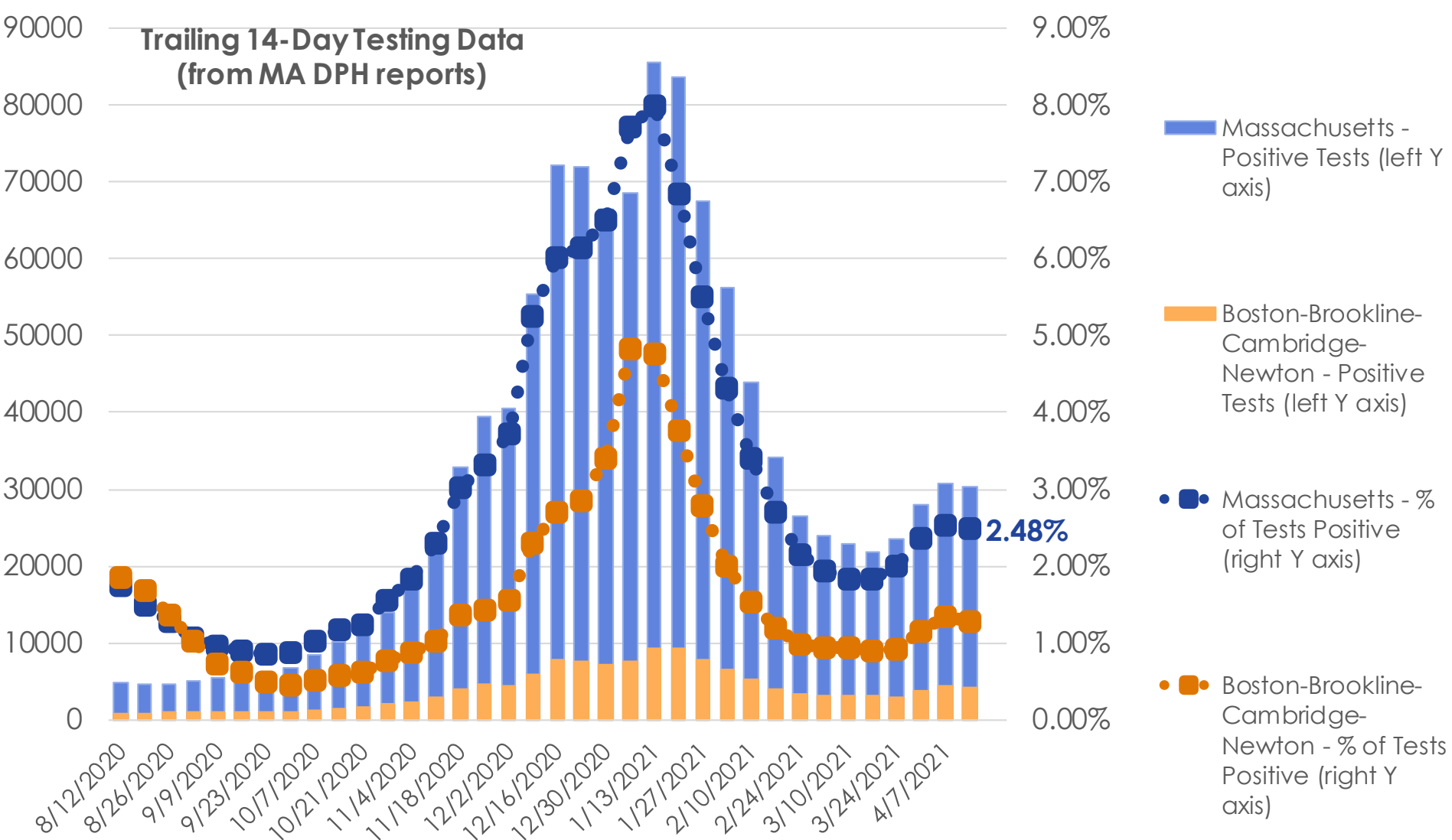
Trailing 14-Day Avg. Daily Cases per 100K Population Data  
(from MA DPH reports) (absolute scale)



# Trends: Test Positivity (Brookline)

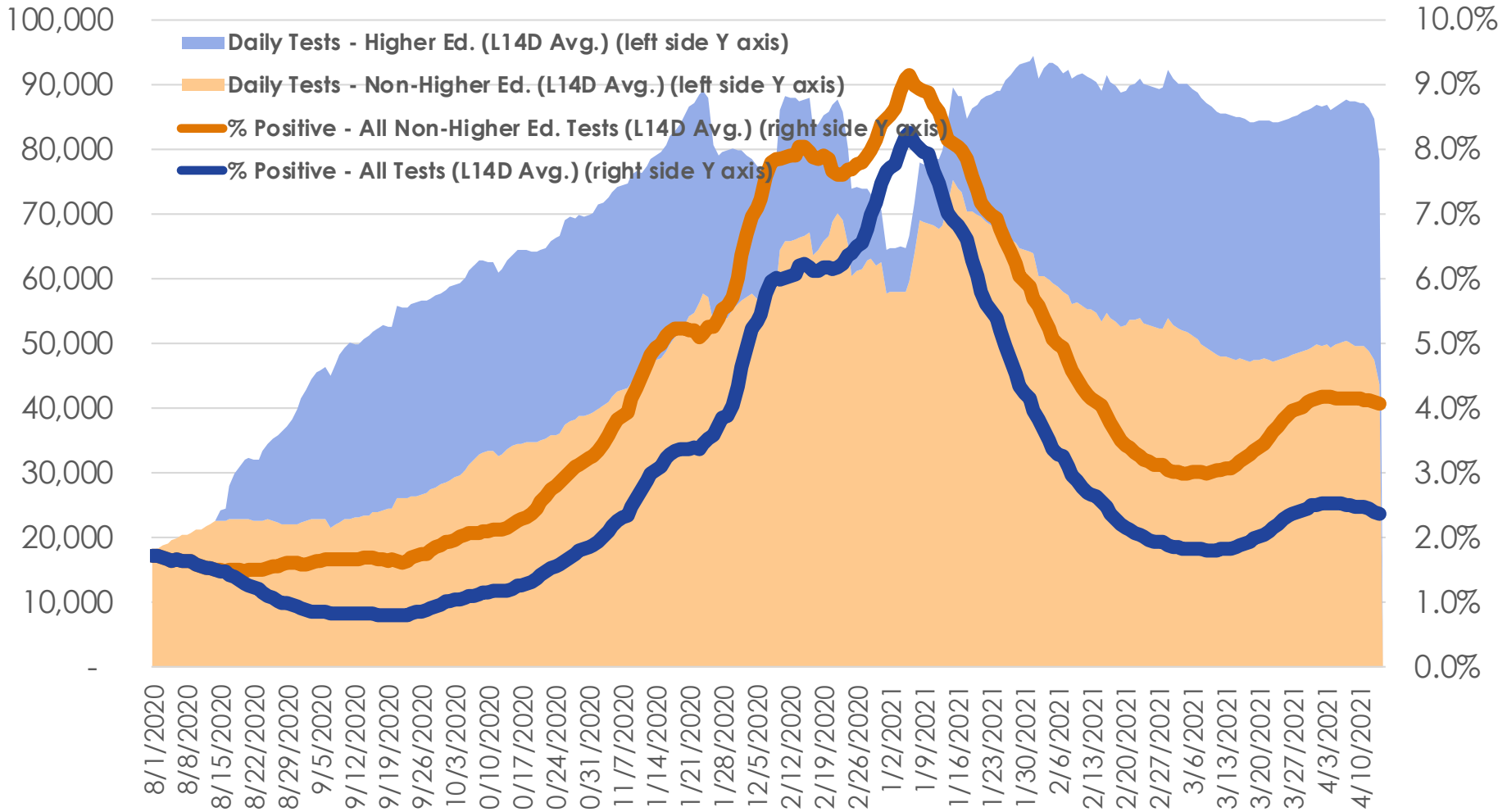


# Trends: Test Positivity (Statewide)

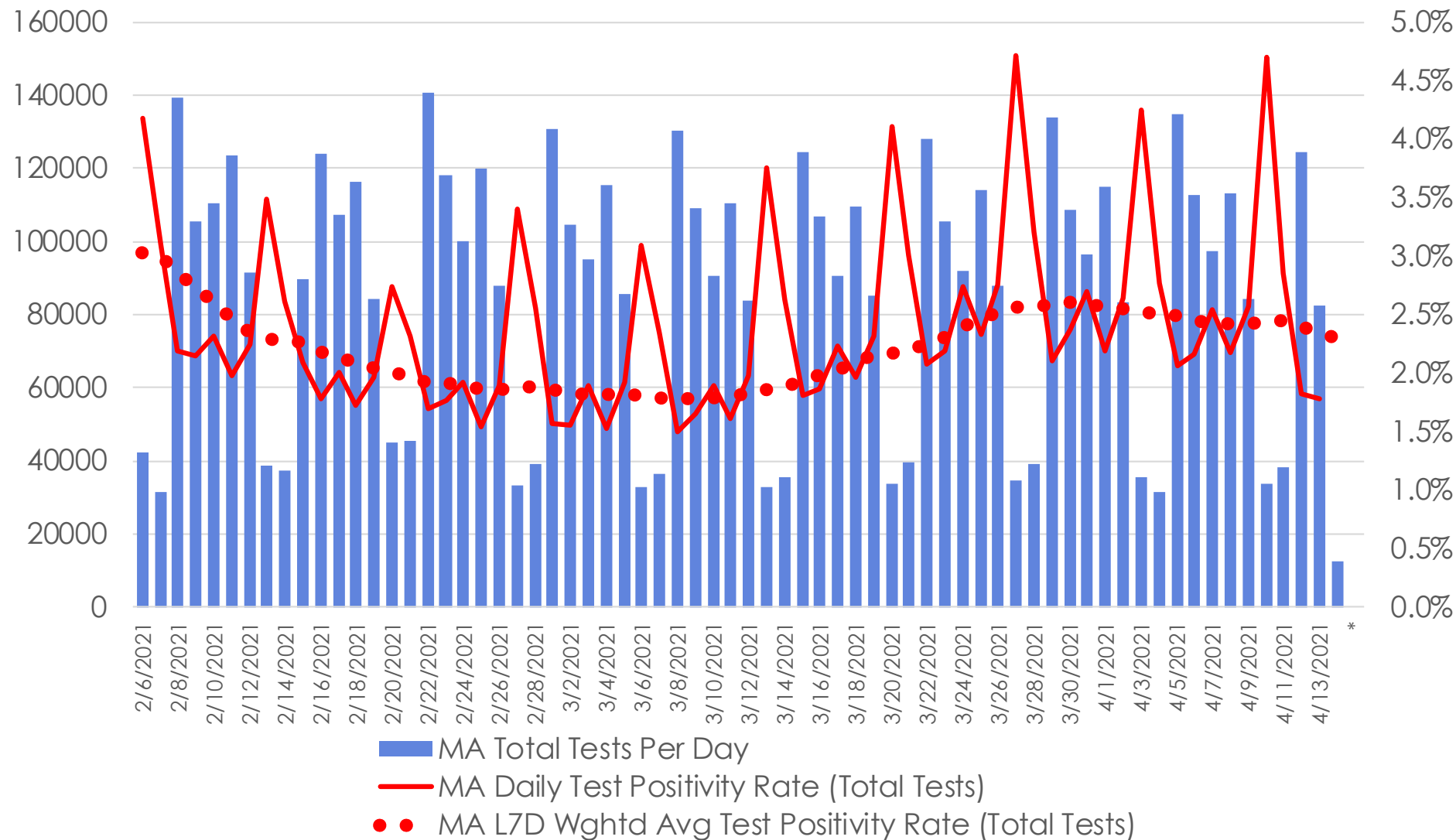


# Trends: Test Positivity and Testing Volume (Statewide)

MA Statewide Test Positivity and Volume

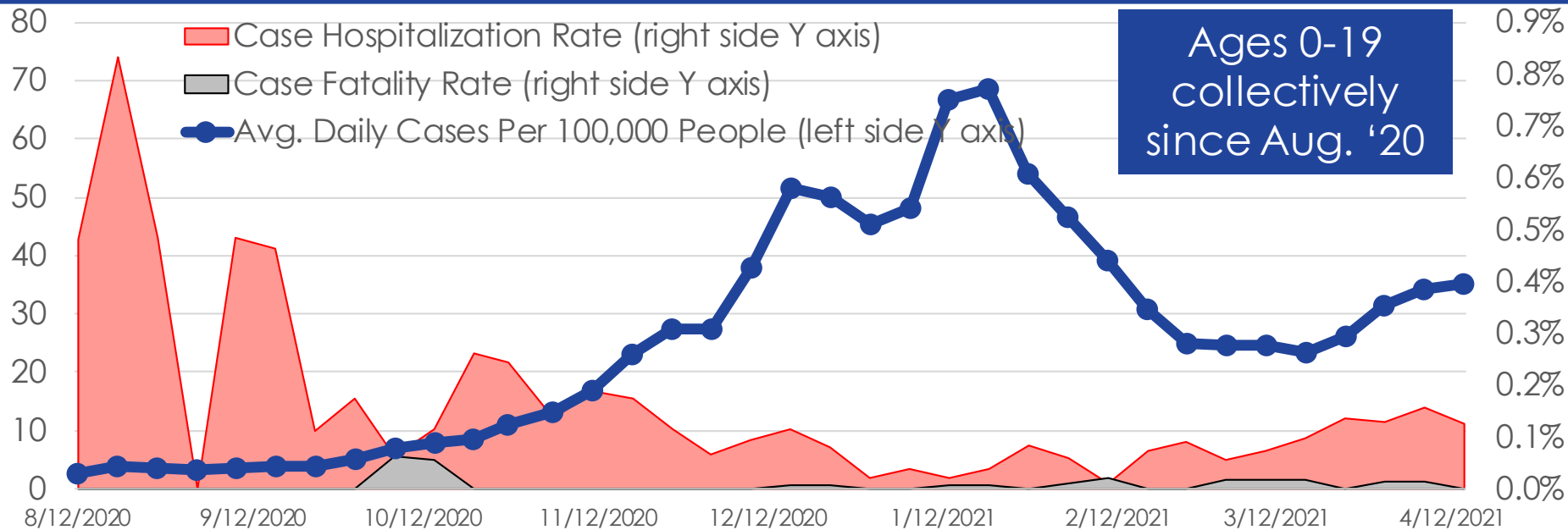


# Trends: Daily Test Volumes and Positivity (Statewide)





# Trends: 0-19 Year-Old Age Cohort (MA Statewide)



**More specific, for period of 3/28 – 4/10/2021:**

**Avg. Daily Cases/100k**

**Case Hospitalization Rate**

**Case Fatality Rate**

**<5 yo**

25.6

0.3%

0.0%

**5-9 yo**

30.5

0.1%

0.0%

**10-14 yo**

35.8

0.0%

0.0%

**15-19 yo**

46.1

0.2%

0.0%

**All ages (incl. vaccinated people)**

30.7

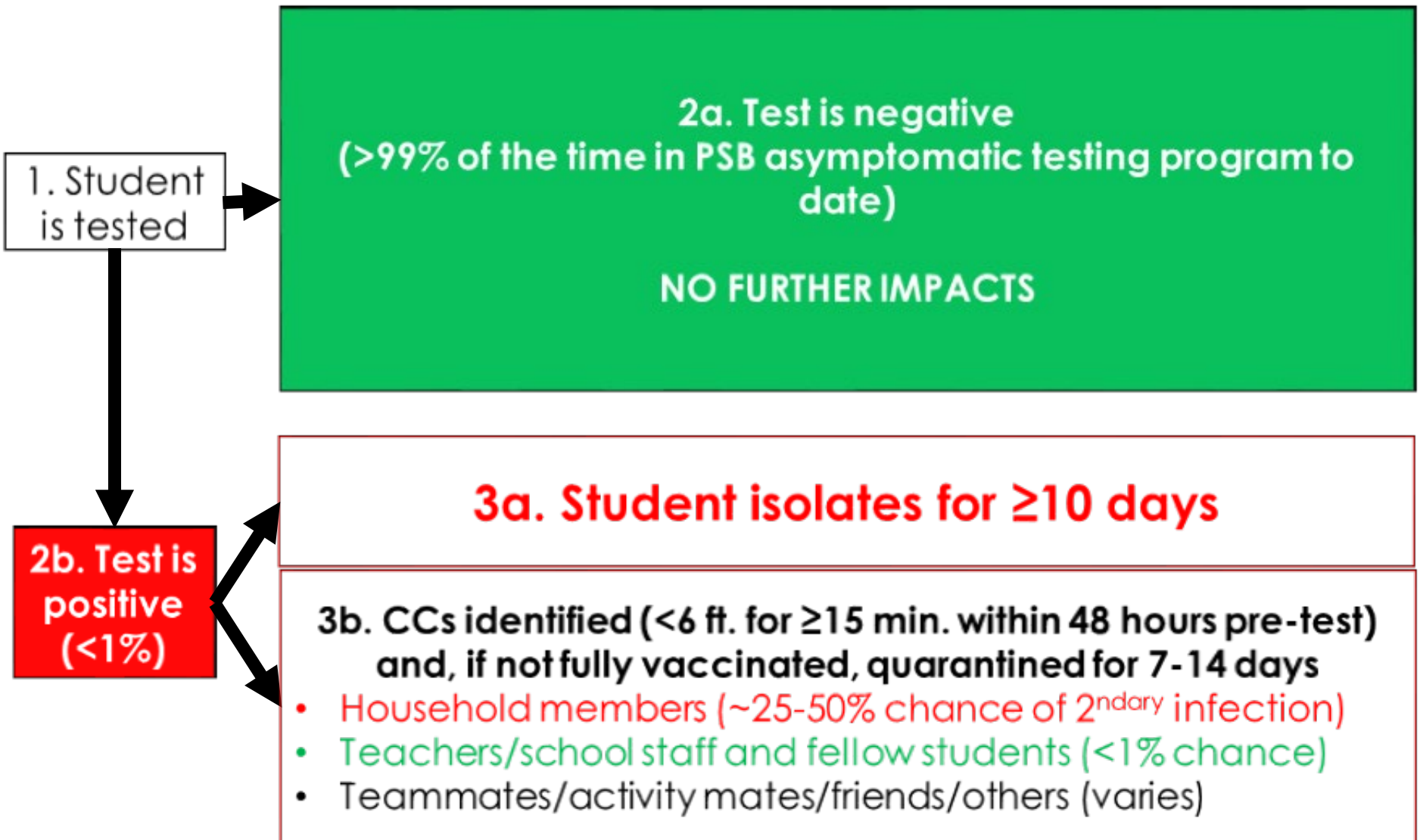
0.4%

0.9%

# Summary of PSB's COVID-19 Experience to Date (through 4/9/2021)

- Since the fall:
  - **130,000+ staff member-days** in buildings
  - **300,000+ student-days** in buildings
- **275 known COVID-19 cases among PSB students and staff**
  - Contact tracing completed by local health dept. + school nursing team
  - Nearly all believed to be community-acquired (e.g., some individuals were in 100% remote cohorts)
  - **58 were present in buildings during likely contagious periods** (48 hours prior to symptom onset/COVID+ test)
- **Very few instances of suspected in-school transmission:**
  - ~4 likely or “can’t rule out” cases
  - Just 1 of 275 (0.4%) of in-school close contacts has tested positive or developed COVID-19-consistent symptoms

# Testing/Isolation/Quarantine Impacts



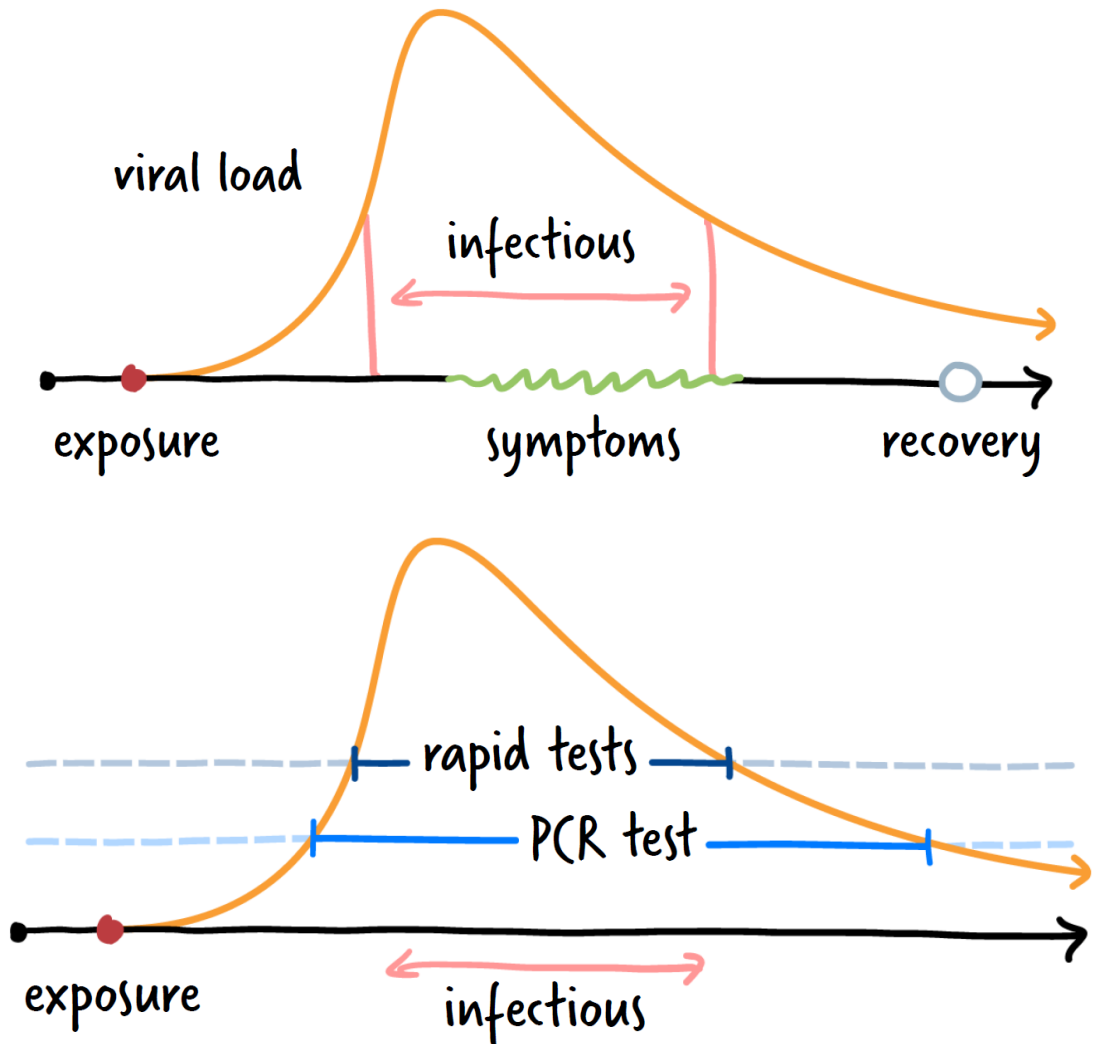
# Potential Future Recommendation to PSB/DESE/DPH

- Update in-school close contact definition:
  - **For unvaccinated student/staff member:**
    - **If both individuals were masked and contact occurred in a [classroom/school building]**, close contact is anyone who spent  $\geq 15$  min in any 24 hour period at  $< 3$  feet during presumed contagious period (48 hours prior to symptom onset or time of positive test)
    - **Otherwise (including if either individual was unmasked during contact)**, close contact is anyone who spent  $\geq 15$  min in any 24 hour period at  $< 6$  feet during presumed contagious period (48 hours prior to symptom onset or time of positive test)

Appendix – For Reference As Needed

# SARS-CoV-2 Infection Timeline

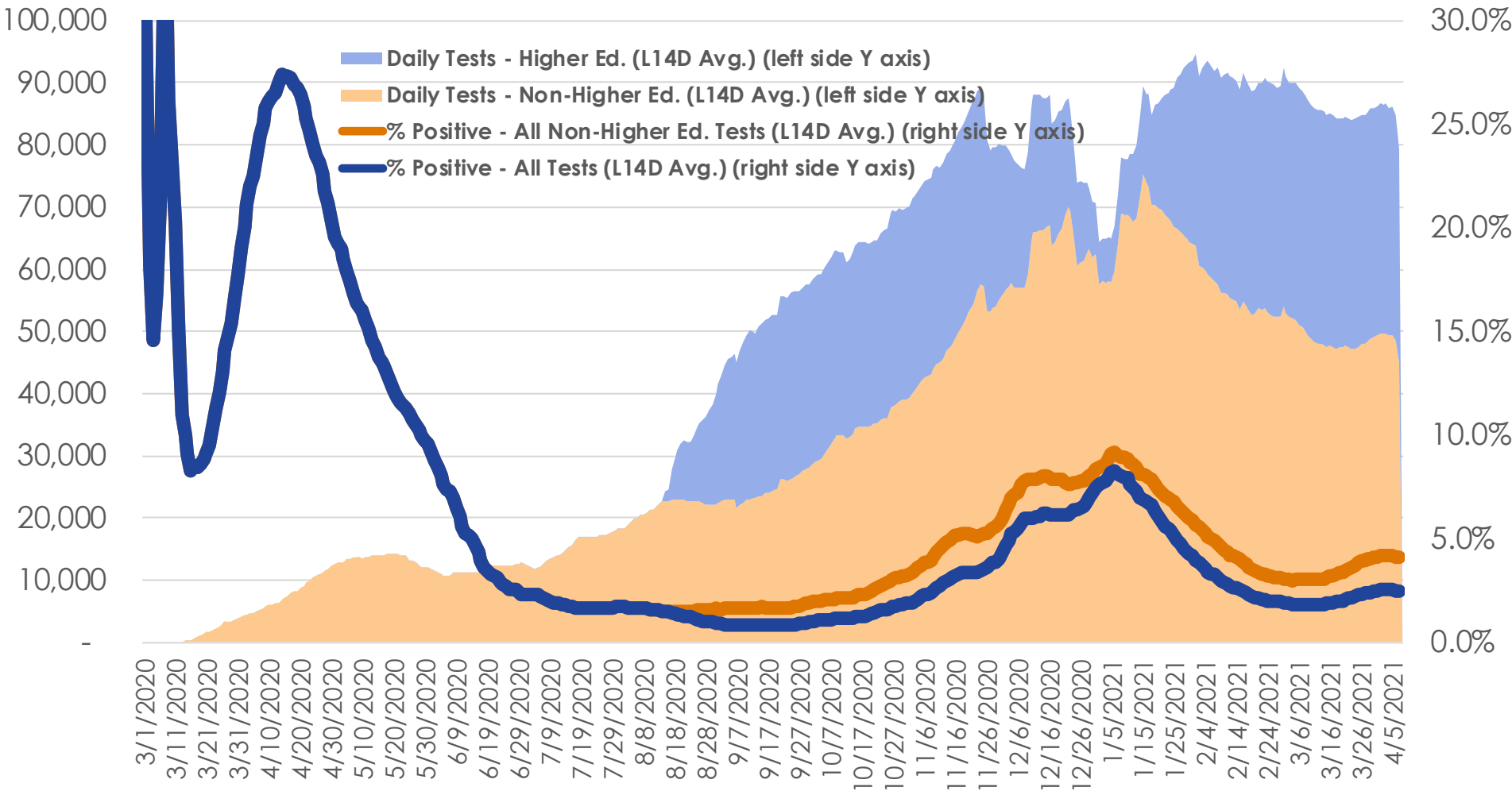
- Two main types of cases:
  - (Pre-)Symptomatic
  - Asymptomatic
- Timeline of a case:



# Case Data

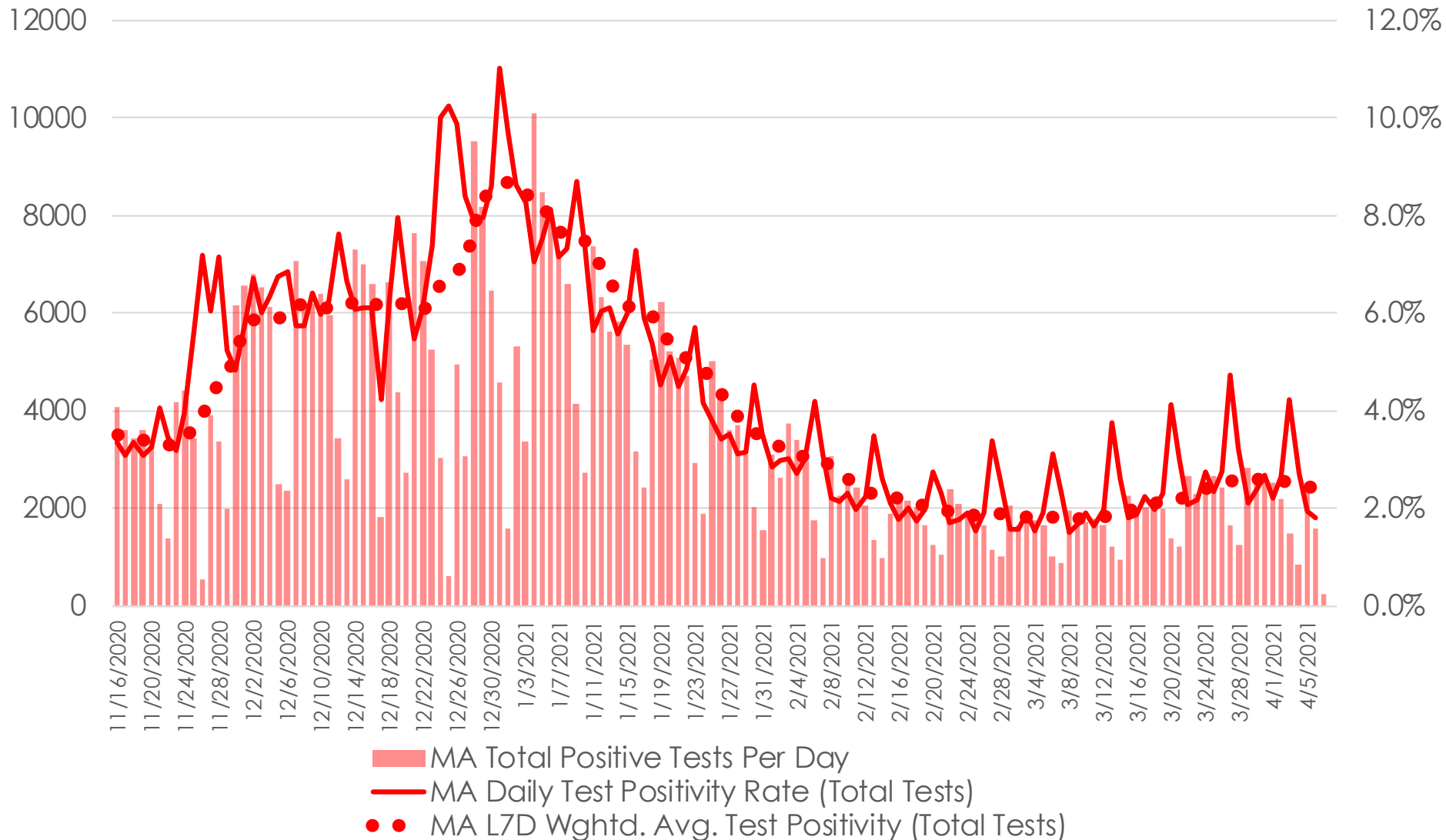
# Trends: Test Positivity and Testing Volume (Statewide)

MA Statewide Test Positivity and Volume



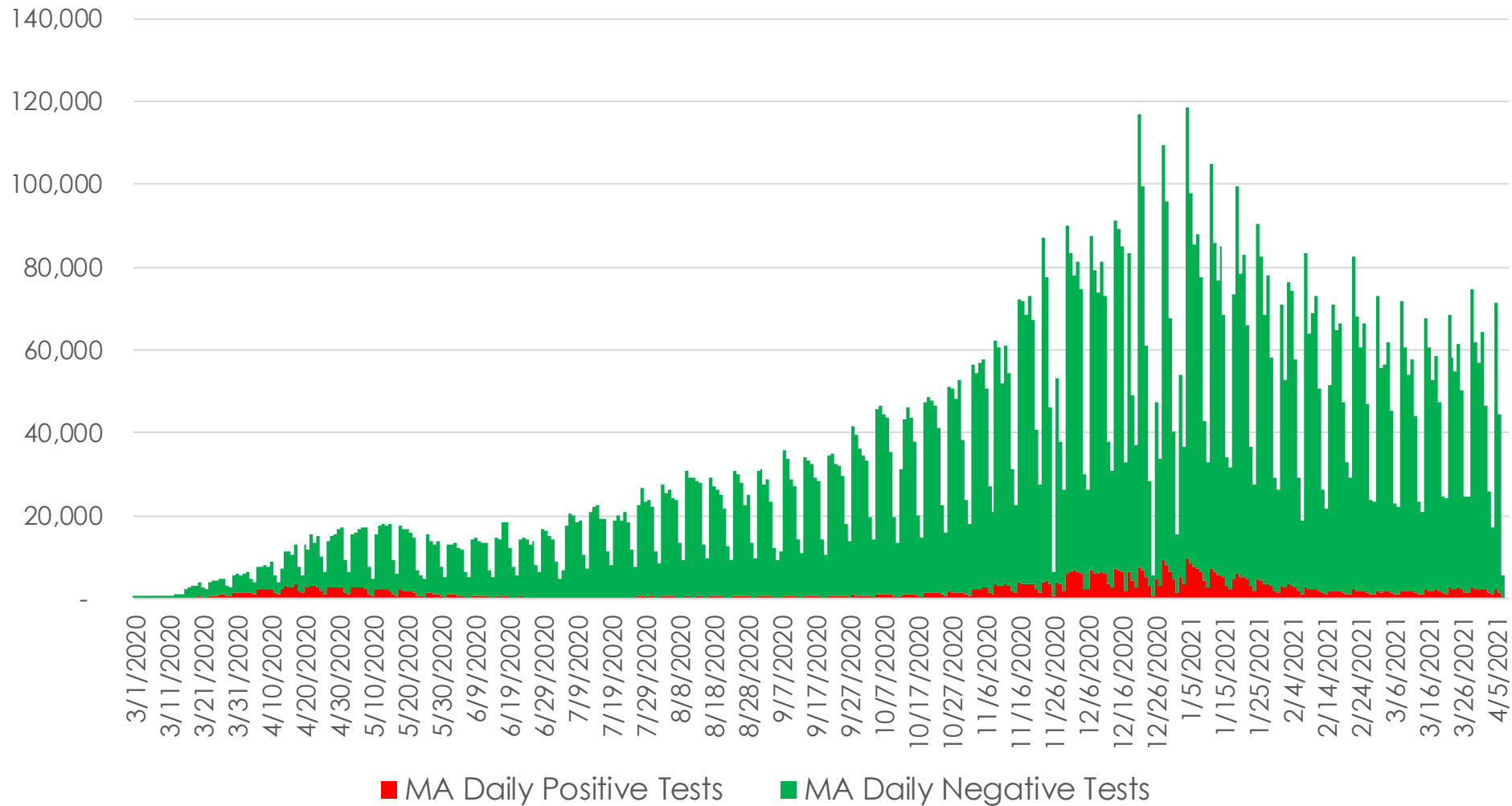


# Trends: Daily Positive Test Counts and Positivity (Statewide)



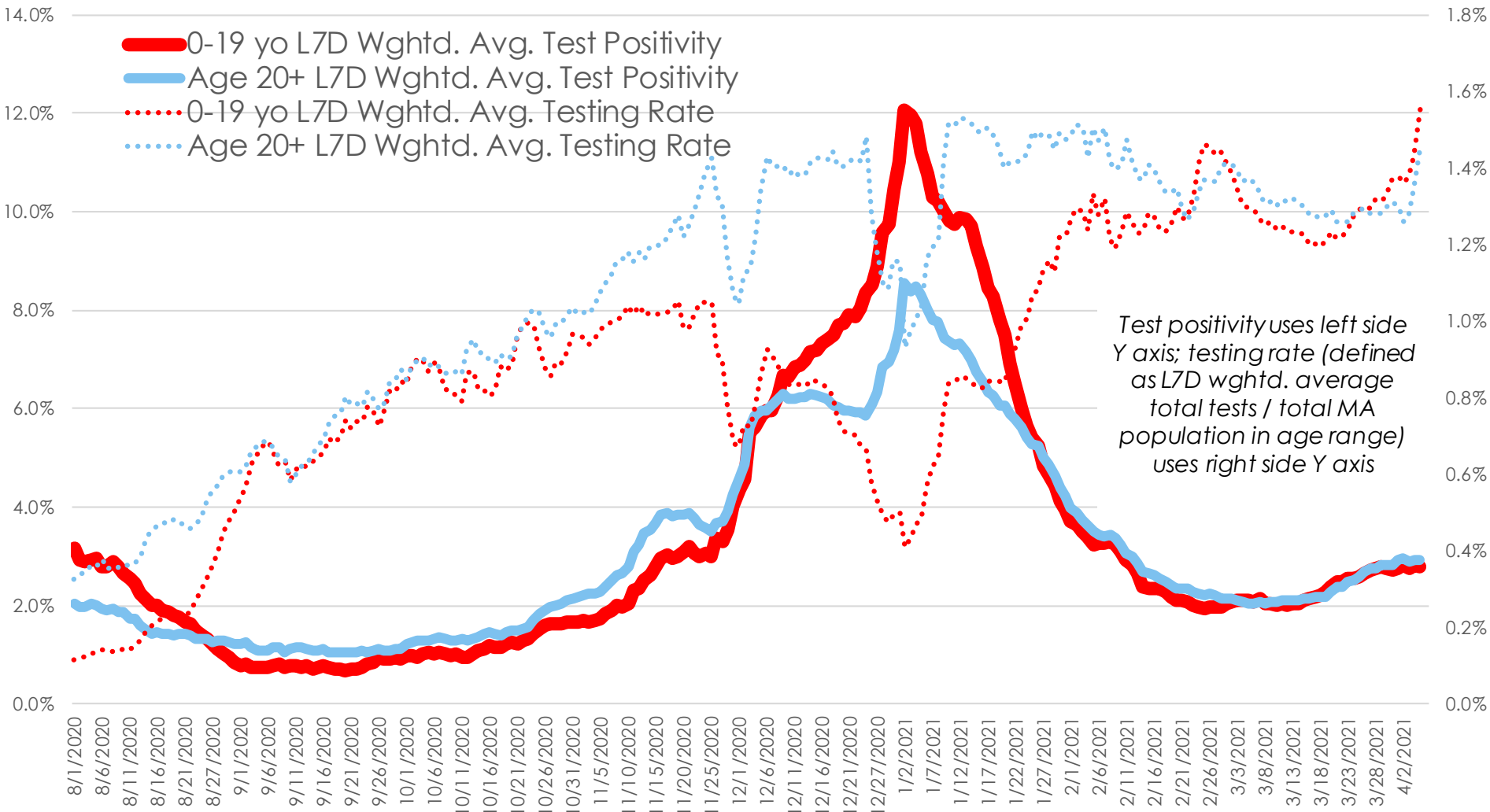
# Statewide Test Results by Day

MA Daily Testing History



# MA Testing Data Over Time: Ages 0-19 vs. Adults

## MA Statewide Average Testing Rates and Test Positivity by Age Group



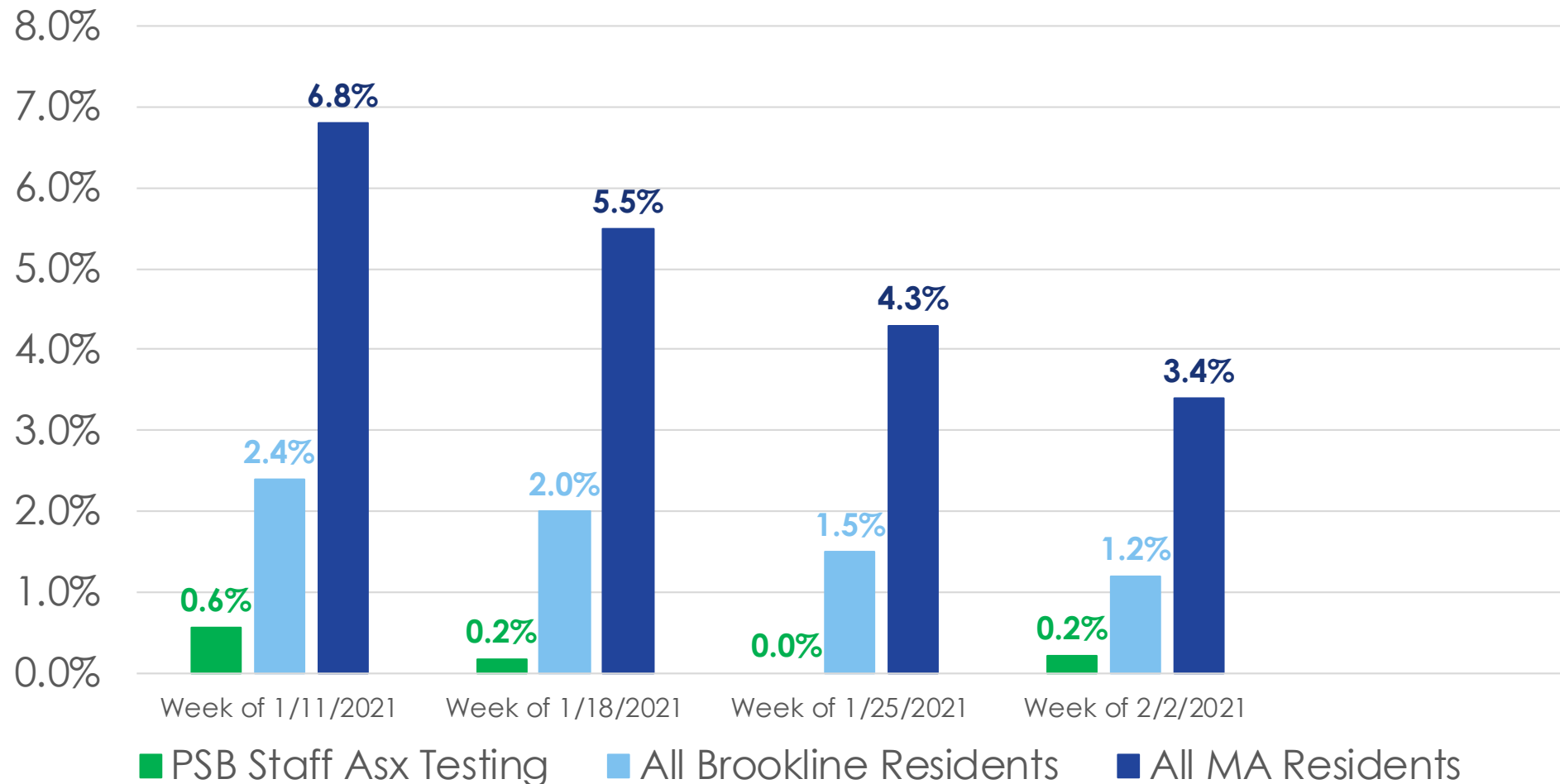
# PSB Experience

# Summary of PSB's COVID-19 Experience to Date (through 4/2/2021)

- Since the fall:
  - **130,000+ staff member-days** in buildings
  - **260,000+ student-days** in buildings
- **272 known COVID-19 cases among PSB students and staff**
  - Contact tracing completed by local health dept. + school nursing team
  - Nearly all believed to be community-acquired (e.g., some individuals were in 100% remote cohorts)
  - **58 were present in buildings during likely contagious periods** (48 hours prior to symptom onset/COVID+ test)
- **Very few instances of suspected in-school transmission:**
  - ~3 likely or “can’t rule out” cases
  - Just 1 of 275 (0.4%) of in-school close contacts has tested positive or developed COVID-19-consistent symptoms

# Public Schools of Brookline Case Counts: Asymptomatic Testing Program Results

## Comparison - Approximate Avg. Test Positivity by Week



# Mitigation Measures

# PSB's Multi-Layered Mitigation Strategy

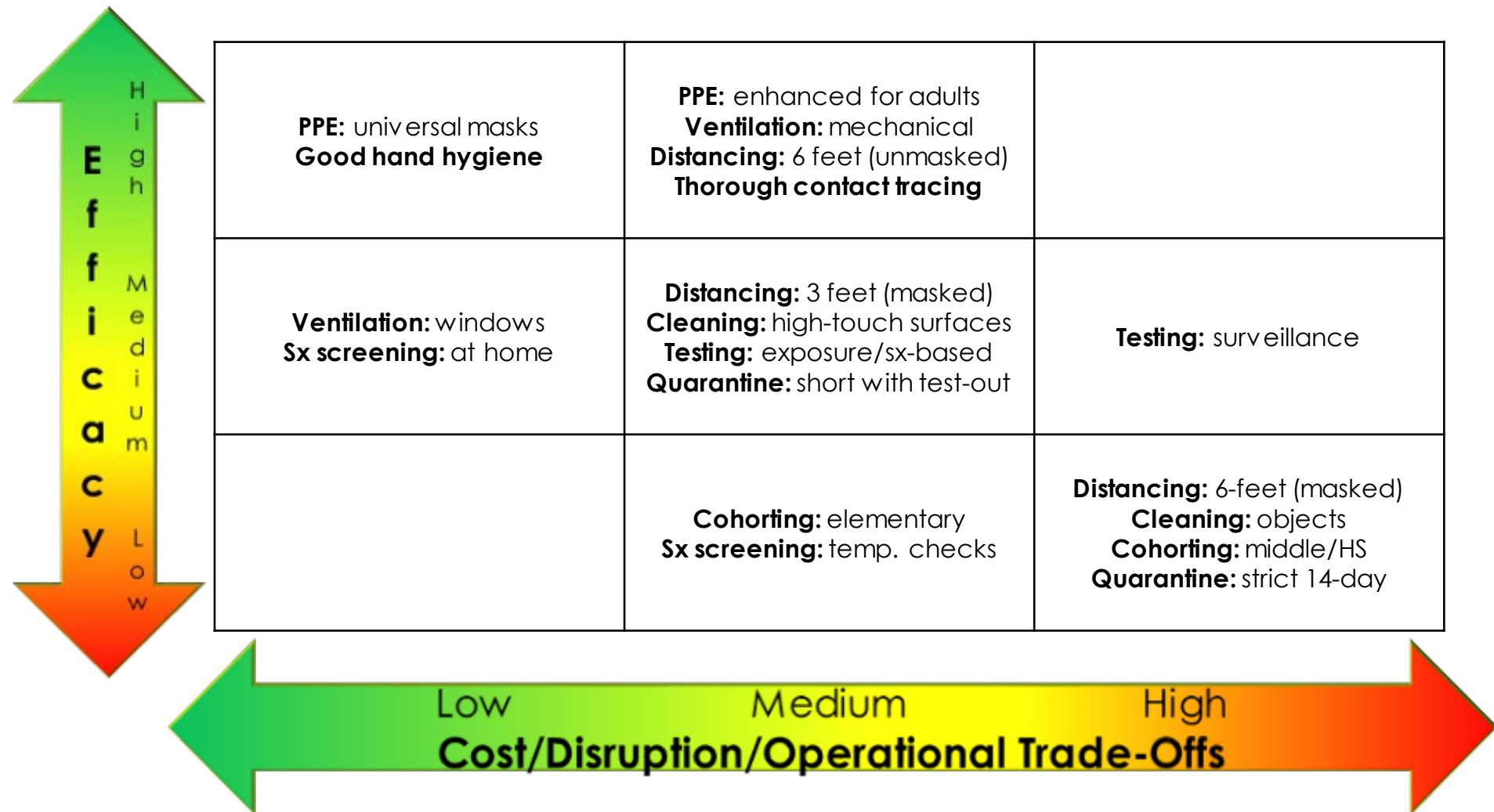
- 1. Daily symptom screening:** Repeated requests and instructions to staff and families with stay-home advice if any symptoms present
- 2. PPE:** Universal mask requirement except at designated mask breaks; face shields and eye protection made available to teachers and staff
- 3. Enhanced ventilation:** all multiple-occupant spaces getting at least 4-5 air changes per hour of outside/MERV-13+ filtered air; most even higher
- 4. Hand hygiene and respiratory etiquette,** including handwashing/sanitizer
- 5. Contact tracing, isolation, and quarantine** through Brookline Health Dept. and PSB school nursing joint efforts
- 6. Surface cleaning and disinfection**
- 7. Asymptomatic PCR testing:** pooled, with combination rapid antigen/PCR reflex
- 8. Physical distancing** between individuals in school buildings (originally 6' universally; now 3-6' when masked, with 6' during unmasked times)



# Starting Point: Which Transmission Pathways are We Trying to Control?

- Two major pathways:
  - **Larger (non-airborne) respiratory droplets at short range**
  - **Smaller (aerosol) respiratory droplets in shared, confined air spaces**
- Possible pathway but now thought to be much lower risk:
  - **Surface (fomite)-based transmission**
    - Most recent CDC Science Brief (4/5/2021) cites a  $<1/10,000$  risk estimate for infection for each touch of a contaminated surface

# Overview: Strategies to Mitigate In-School Transmission Risk

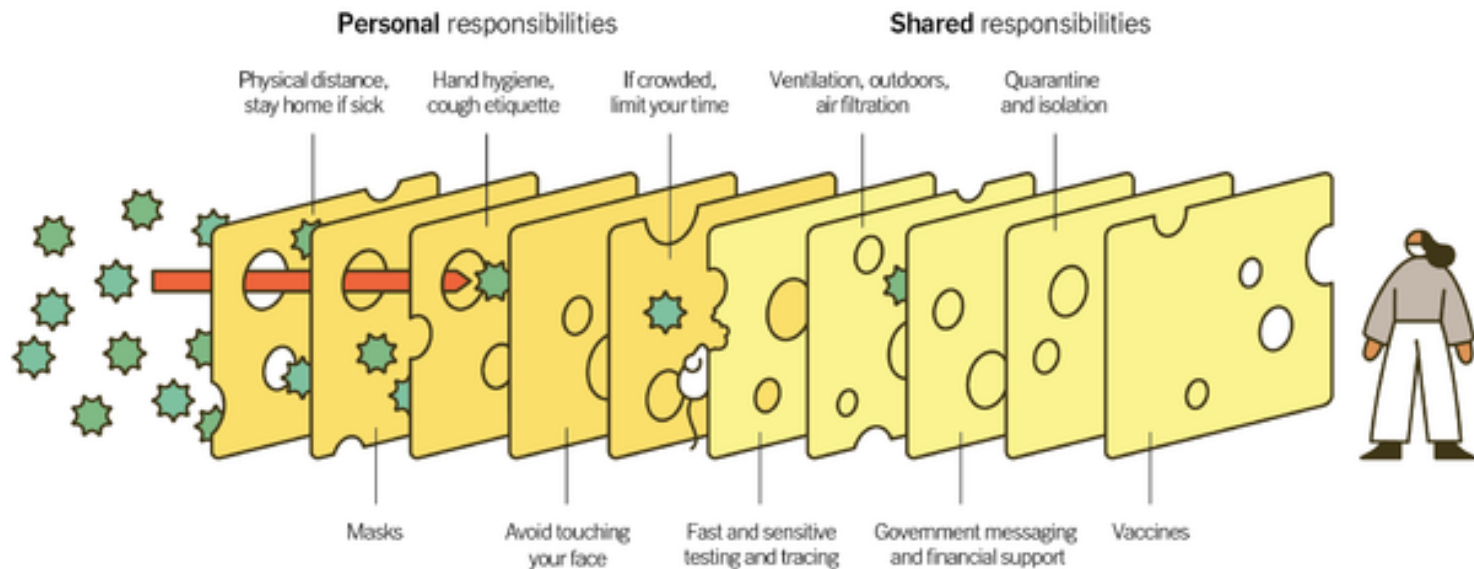


# Multi-Layered Mitigation Strategies are Key

- Multiple layers of defense means that we are not reliant upon any of them to be implemented perfectly or 100% consistently (the “Swiss Cheese” model):

## Multiple Layers Improve Success

The Swiss Cheese Respiratory Pandemic Defense recognizes that no single intervention is perfect at preventing the spread of the coronavirus. Each intervention (layer) has holes.



Source: Adapted from Ian M. Mackay (virologydownunder.com) and James T. Reason. Illustration by Rose Wong

Source: <https://www.nytimes.com/2020/12/05/health/coronavirus-swiss-cheese-infection-mackay.html>, illustration by Rose Wong, (adapted from Ian M. Mackay (virologydownunder.com) and James T. Reason)

## Goal #1: Keep Infected/Contagious Individuals Out of School Buildings as Much as Reasonably Possible

- Mitigation strategies:
  1. Daily, at-home symptom screening
  2. Clear protocols for handling development/discovery of symptoms during school
  3. Thorough case investigation and contact tracing
  4. Reasonable isolation and quarantine protocols
  5. Exposure/symptom-based testing
  6. Surveillance testing

## Goal #2: Keep Infected/Contagious Individuals from Transmitting to Others When Present In School Buildings

- Mitigation strategies:
  - 1. Universal mask wearing**
  - 2. Enhanced PPE for adults (better-fitting masks, face shields, etc.)**
  - 3. Outdoors whenever feasible**
  - 4. Enhanced ventilation/filtration indoors**
  5. Good hand hygiene
  6. Reasonable surface/object cleaning
  7. Reasonable physical distancing
  8. Droplet barriers in specific circumstances

# **Regulatory Guidance on Schools**

# MA DESE Guidance – In-Person/Remote

<https://www.doe.mass.edu/covid19/on-desktop/interpreting-dph-metrics.html>

- **Districts are expected to prioritize in-person learning across all color-coded categories, unless there is suspected in-school transmission, in accordance with DESE's Guidance on Responding to COVID-19 Scenarios.** *Transmission in schools is defined as spread of the virus between people during interactions in the school setting. While there have been positive COVID-19 cases of staff and students in schools, most of these infections have occurred outside of the school setting. If there is suspected in-school transmission, then the affected classrooms or schools should temporarily shift to remote learning, in accordance with DESE's Guidance on Responding to COVID-19 Scenarios. Classrooms and schools should reopen after appropriate mitigation strategies have been implemented, as determined in consultation with the local board of health, DPH, and DESE.*

# MA DESE Guidance – In-Person/Remote

<https://www.doe.mass.edu/covid19/on-desktop/interpreting-dph-metrics.html>

- **Districts and schools in communities designated gray, green, or yellow are expected to have students learning fully in-person, if feasible.** A hybrid model should be used only if there is no other way to meet health and safety requirements. Parents and caregivers will continue to have the option to choose a district's remote learning program for their children.
  
- **Schools in red communities should implement hybrid models, while maximizing in-person learning time for high-needs students.**
  
- ...
  
- **Fully remote instructional models should be implemented only as a last resort** in classrooms, schools, or districts when there is suspected in-school transmission or a significant municipal outbreak, in accordance with DESE's Guidance on Responding to COVID-19 Scenarios. Classrooms and schools should reopen after appropriate mitigation strategies have been implemented, as determined in consultation with the local board of health, DPH, and DESE.



# CDC's New K-12 School Guidance: Key Themes

1. From CDC's Executive Summary: "It is critical for schools to open as safely and as soon as possible, and remain open, to achieve the benefits of in-person learning and key support services."
2. Multi-layered mitigation strategies keep in-school transmission risk low.
3. Community transmission levels are important. At low to moderate levels, schools generally should operate fully in-person (even if that requires <6' physical distancing).
4. Health equity should not be overlooked.
5. Educators and staff should be vaccinated as soon as supply allows, as an additional layer of mitigation.

# CDC's New K-12 School Guidance: Community Transmission Levels

**Table 1. CDC Indicators and Thresholds for Community Transmission of COVID-19<sup>1</sup>**

Indicator	Low Transmission Blue	Moderate Transmission Yellow	Substantial Transmission Orange	High Transmission Red
Total new cases per 100,000 persons in the past 7 days <sup>2</sup>	0-9	10-49	50-99	≥100
Percentage of NAATs that are positive during the past 7 days <sup>3</sup>	<5.0%	5.0%-7.9%	8.0%-9.9%	≥10.0%

<sup>1</sup>If the two indicators suggest different levels, the actions corresponding to the higher threshold should be chosen. County-level data on total new cases in the past 7 days and test percent positivity are available on the County View tab in [CDC's COVID Data Tracker](#).

<sup>2</sup>Total number of new cases per 100,000 persons within the last 7 days is calculated by adding the number of new cases in the county (or other community type) in the last 7 days divided by the population in the county (or other community type) and multiplying by 100,000.

<sup>3</sup>Percentage of positive diagnostic and screening NAATs during the last 7 days is calculated by dividing the number of positive tests in the county (or other administrative level) during the last 7 days by the total number of tests resulted over the last 7 days. Additional information can be found on the [Calculating Severe Acute Respiratory Syndrome Coronavirus 2 \(SARS-CoV-2\) Laboratory Test Percent Positivity: CDC Methods and Considerations for Comparisons and Interpretation](#) webpage.

# CDC's New K-12 School Guidance: Key Mitigation Strategies

- **Five key mitigation strategies:**
  - ***Universal and correct use of masks***
  - ***Physical distancing\****
  - Handwashing and respiratory etiquette
  - Cleaning and maintaining healthy facilities
  - Contact tracing in combination with isolation and quarantine, in collaboration with the health department
- **Also helpful:**
  - Ventilation
  - Surveillance testing
  - Educator/staff vaccination when available

**Table 2. Recommended Implementation of Mitigation Strategies and K-12 School Learning Modes by Level of Community Transmission for Schools That Do Not Implement Expanded Screening Testing**

Low Transmission <sup>1</sup> Blue	Moderate Transmission Yellow	Substantial Transmission Orange	High Transmission Red
<p><b>All schools implement 5 key mitigation strategies:</b> Universal and correct use of masks required; physical distancing; handwashing and respiratory etiquette; cleaning and maintaining healthy facilities; contact tracing in combination with isolation and quarantine.</p> <p><b>Diagnostic testing<sup>2</sup>:</b> Symptomatic students, teachers, and staff and close contacts referred for diagnostic testing</p>			
<p>K-12 schools open for full in-person instruction Physical distancing of 6 feet or more to the greatest extent possible<sup>3</sup></p>		<p>Elementary schools in hybrid learning mode or reduced attendance<sup>4</sup> Physical distancing of 6 feet or more is required</p>	
		<p>Middle and high schools in hybrid learning mode or reduced attendance Physical distancing of 6 feet or more is required</p>	<p>Middle and high schools in virtual only instruction unless they can strictly implement all mitigation strategies, and have few cases; schools that are already open for in-person instruction can remain open, but only if they strictly implement mitigation strategies and have few cases<sup>5</sup></p>
<p>Sports and extracurricular activities occur; physical distancing of 6 feet or more to the greatest extent possible<sup>6</sup></p>	<p>Sports and extracurricular activities occur with physical distancing of 6 feet or more required</p>	<p>Sports and extracurricular activities occur only if they can be held outdoors, with physical distancing of 6 feet or more</p>	<p>Sports and extracurricular activities are virtual only</p>

**Table 3. Recommended Implementation of Mitigation Strategies, Testing, and Safe K-12 School Learning Modes by Level of Community Transmission for Schools that Implement Expanded Screening Testing**

Low Transmission <sup>1</sup> Blue	Moderate Transmission Yellow	Substantial Transmission Orange	High Transmission Red
<p><b>All schools implement 5 key mitigation strategies:</b> Universal and correct use of masks required; physical distancing; handwashing and respiratory etiquette; cleaning and maintaining healthy facilities; contact tracing in combination with isolation and quarantine.</p> <p><b>Diagnostic testing<sup>2</sup>:</b> Symptomatic students, teachers, and staff and close contacts referred for diagnostic testing</p>			
<p><b>Screening Testing<sup>3</sup></b></p>			
<p>Routine screening testing of teachers and staff offered once per week</p>			
<p>No screening testing for students</p>	<p>Routine screening testing of students offered once per week<sup>4</sup></p>		
<p><b>School Status</b></p>			
<p>K-12 schools open for full in-person instruction Physical distancing of 6 feet or more to the greatest extent possible<sup>5</sup></p>		<p>K-12 schools in hybrid learning mode or reduced attendance<sup>6</sup> Physical distancing of 6 feet or more is required</p>	
<p>Sports and extracurricular activities occur; physical distancing of 6 feet or more to the greatest extent possible<sup>7</sup></p>	<p>Sports and extracurricular activities occur with physical distancing of 6 feet or more required</p>	<p>Sports and extracurricular activities occur only if they can be held outdoors, with physical distancing of 6 feet or more</p>	<p>Sports and extracurricular activities are virtual only</p>

# Physical Distancing

# MA DPH/DESE Guidance on Distancing for Schools

<https://www.doe.mass.edu/covid19/on-desktop.html> (8/19/2020 Joint Memo)

- Physical distancing is a critical tool in preventing the spread of COVID-19. The CDC and DPH recommend 6 feet of distance between individuals. The World Health Organization and the American Academy of Pediatrics recommend a minimum of 3 feet of distance. **DESE recommends that districts aim for 6 feet of distance where feasible. When 6 feet is not feasible, 3 feet is an acceptable minimum as long as staff and students wear masks covering the nose and mouth at all times.** If the 3 feet minimum is applied on the bus, all staff and students regardless of age must wear masks at all times. Please note that decisions to apply a 3-foot minimum will likely increase the number of close contacts associated with the occurrence of a case.
  - CDC, Social Distancing, Quarantine, and Isolation. (2020, May 6). Retrieved from <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/social-distancing.html>
  - DPH, COVID-19 Prevention and Treatment (2020). Retrieved from <https://www.mass.gov/info-details/covid-19-prevention-and-treatment#social-distancing->
  - WHO, Considerations for school-related public health measures in the context of COVID-19. (2020, May 10). Available at <https://www.who.int/publications/i/item/considerations-for-school-related-public-health-measures-in-the-context-of-covid-19>
  - American Academy of Pediatrics (2020). COVID-19 Planning Considerations: Guidance for School Re-entry Retrieved from <https://services.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/clinical-guidance/covid-19-planning-considerations-return-to-in-person-education-in-schools/>



# MA DESE Guidance on Distancing for Schools

<https://www.doe.mass.edu/covid19/on-desktop.html> (9/21/2020 FAQs)

## ▣ **How should mask breaks be conducted?**

*It is recommended that students have at least two mask breaks per day (e.g. mealtime and recess). As it is recommended that students younger than second grade wear masks, it is important to note that they may need additional mask breaks during the day. Mask breaks should be held outdoors, if feasible. **Students must be at least 6 feet apart during mask breaks.** Hand washing facilities or hand sanitizer must be available when entering and leaving this space. Students should remove masks as outlined above.*



# WHO Guidance on Distancing for Schools

<https://www.who.int/news-room/q-a-detail/coronavirus-disease-covid-19-schools>

- **“Hygiene and daily practices at the school and classroom level: *Physical distancing of at least 1 metre [3.3-foot] between individuals including spacing of desks*, frequent hand and respiratory hygiene, age-appropriate mask use, ventilation and environmental cleaning measures should be in place to limit exposure.”**
  
- Also:
  - **“Teacher and support staff should wear masks *when they cannot guarantee at least a 1-metre distance from others* or if there is widespread transmission in the area.”**
    - [https://www.who.int/docs/default-source/coronaviruse/risk-comms-updates/update39-covid-and-schools.pdf?sfvrsn=320db233\\_2](https://www.who.int/docs/default-source/coronaviruse/risk-comms-updates/update39-covid-and-schools.pdf?sfvrsn=320db233_2)

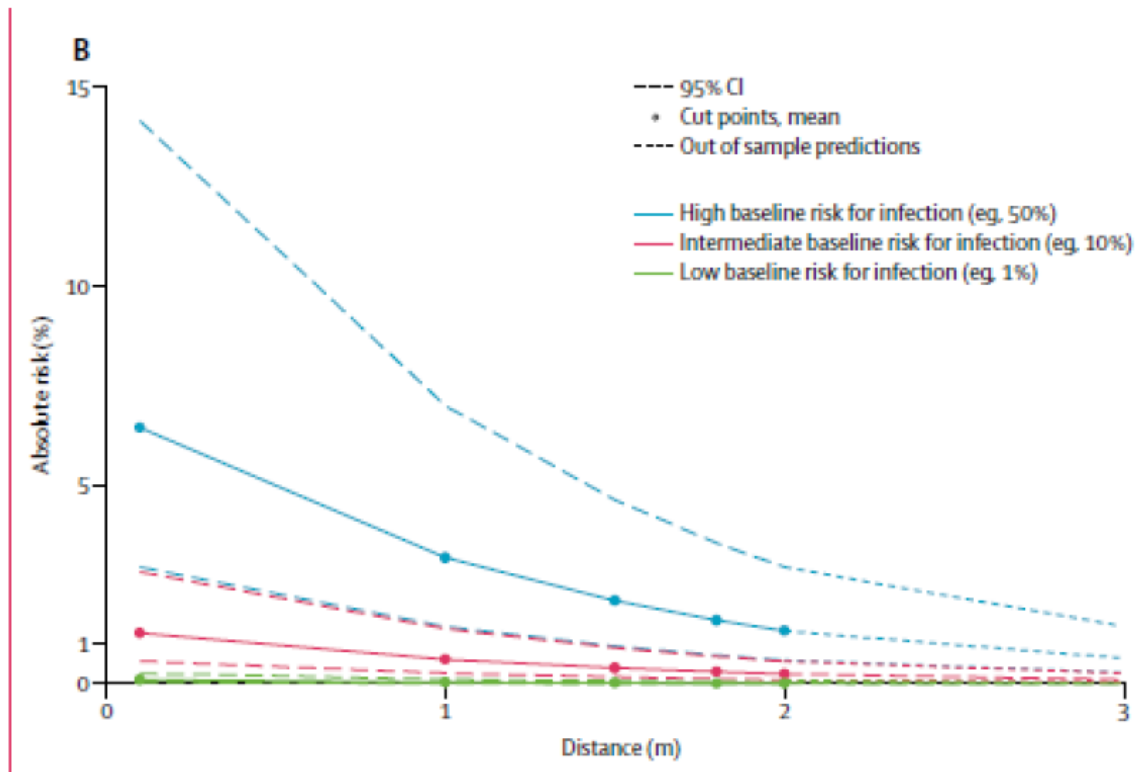
# American Acad. of Pediatrics Guidance for Schools

<https://services.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/clinical-guidance/covid-19-planning-considerations-return-to-in-person-education-in-schools/>

- “In many school settings, 6 feet between students is not feasible without drastically limiting the number of students. Some countries have been able to successfully reopen schools after first controlling community-wide spread of SARS-CoV-2 while using 3 feet of distance between students without increases in community spread.<sup>20</sup> Physical distance between desks should follow current public health guidance, and desks should be placed at least 3 feet apart and ideally 6 feet apart. ... **Schools should weigh the benefits of strict adherence to a 6-foot spacing rule between students with the potential downside if remote learning is the only alternative.**”
- **Elementary Schools:** “Desks should be placed at least 3 feet apart, and ideally 6 feet apart. If this reduces the amount of time children are present in school, harm may outweigh potential benefits.”
- **Secondary Schools:** “Desks should be placed 6 feet apart when feasible.”
- “Given what is known about SARS-CoV-2 transmission dynamics, adults within schools should maintain a distance of 6 feet from other people as much as possible, particularly around other adult staff.”

# Mitigation Impact of Distancing

The following graph from [Chu, et al. in \*The Lancet\*, June 1, 2020](#) may be particularly helpful in understanding the nature of the relationship between distancing and infection risk mitigation:



**Figure 3: Change in relative risk with increasing distance and absolute risk with increasing distance**  
Meta-regression of change in relative risk with increasing distance from an infected individual (A). Absolute risk of transmission from an individual infected with SARS-CoV-2, SARS-CoV, or MERS-CoV with varying baseline risk and increasing distance (B). SARS-CoV-2=severe acute respiratory syndrome coronavirus 2. SARS-CoV=severe acute respiratory syndrome coronavirus. MERS-CoV=Middle East respiratory syndrome coronavirus.

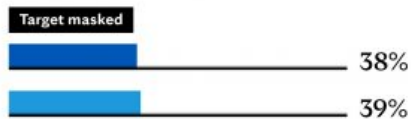
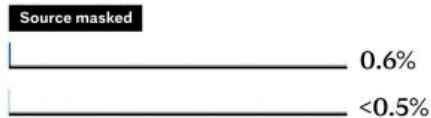
PSB's environment is best represented by the green line in our view (low baseline risk of infection)—meaning the absolute risk difference between 3ft and 6ft distancing is insignificant.

# Mitigation Impact of Distancing vs. Masks (unpublished Mayo Clinic data)

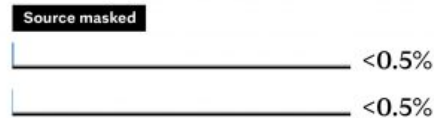
## Exposure Risk Based on Masking and Distance

NO MASK   DISPOSABLE MASK   FABRIC MASK

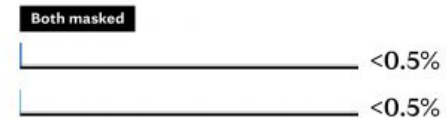
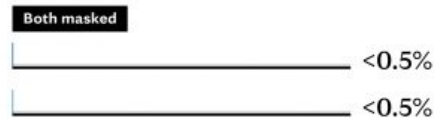
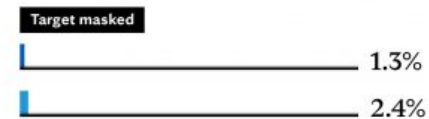
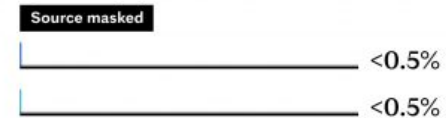
### 1-foot distance



### 3-foot distance



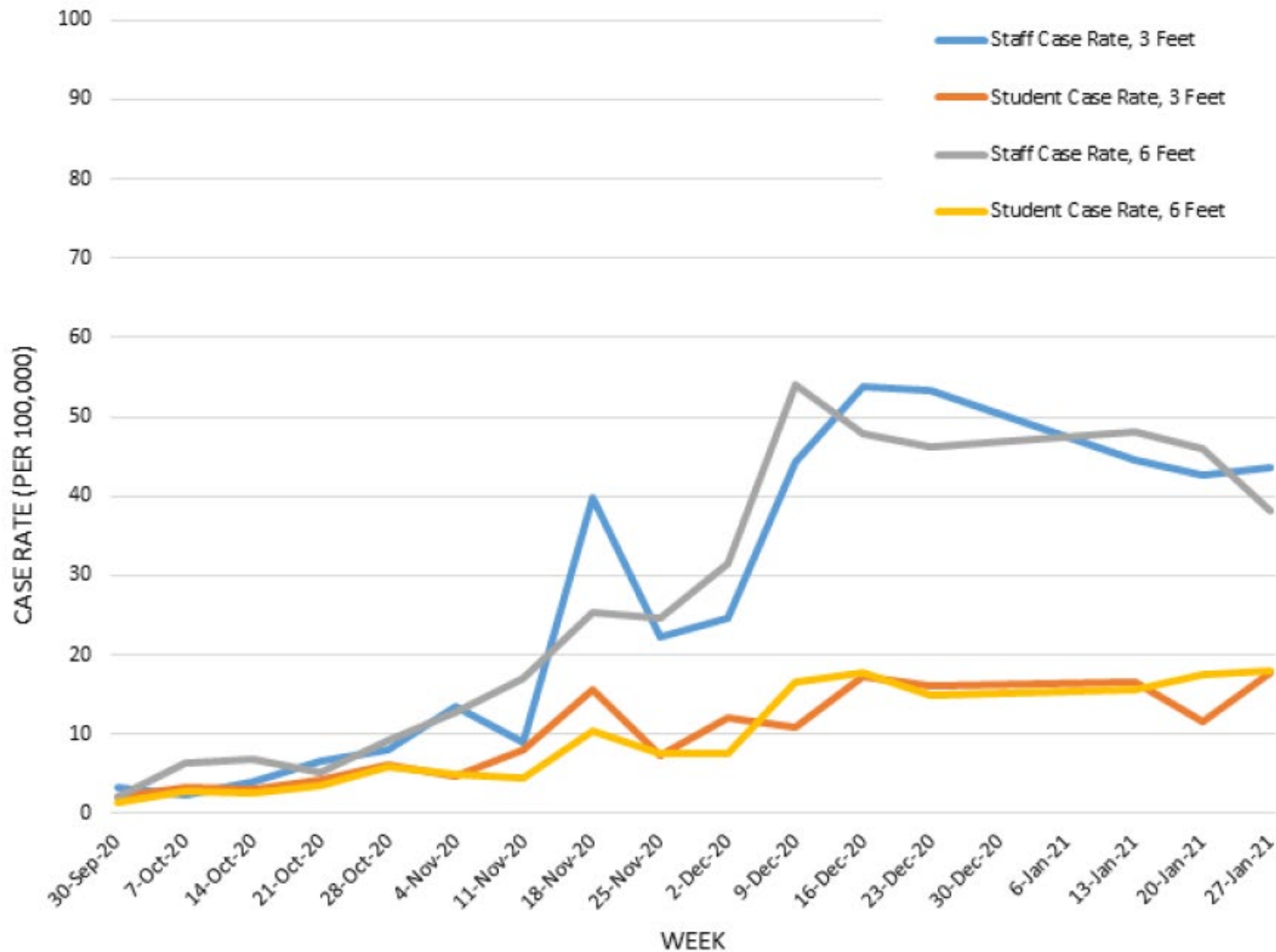
### 6-foot distance



Source = person with active COVID-19

*Mask use basically removed risk differential of distance.*

# No Material Difference in 3 ft vs 6 ft Distancing in MA School Settings (van den Berg, et al. March 2021)



# CDC's Latest Guidance on Distancing in Schools

(Updated March 19, 2021)



*“In summary, the preponderance of the available evidence from U.S. schools indicates that even when students were placed less than 6 feet apart in classrooms, there was limited SARS-CoV-2 transmission when other layered prevention strategies were consistently maintained; notably, masking and student cohorts. International studies further support these conclusions. Greater physical distancing (at least 6 feet) should be prioritized whenever masks cannot be used (for example, while eating). ... Recommended physical distance between adults in schools is still 6 feet. ...*

*Consistent with recommendations from WHO and the American Academy of Pediatrics, using a distance of at least 3 feet between students in classrooms could provide a feasible definition of physical distancing so long as other prevention measures are maximized. These include mask requirements for both students and staff, maintaining healthy facilities such as improved ventilation, frequent hand hygiene, and encouraging students and staff to stay home when they have symptoms of COVID-19 or have been in close contact with someone who has known or suspected COVID-19.”*

# Studies Focused on School-Based Transmission Risk Generally Say “Low Risk” at Less Distancing

- Multiple studies and commentary are collected in the [Massachusetts General Hospital Global Health COVID-19 School and Community Resource Library](https://globalhealth.massgeneral.org/covidlibrary.pdf) -- summary note on page 145:
  - *11. Physical Distancing - Maintaining physical distancing of approximately 1m (~3 feet) between all persons is likely associated with a reduction in risk of transmission of COVID-19, although most data to support efficacy of physical distancing were generated in the absence of the use of face masks. **There are no direct comparisons of 3' vs. 6' distancing in schools where mask-wearing is universal. Over the course of the fall 2020 semester, several reports have described low rates of in-school transmission at distances less than 6'.** Please see Section 4D for available data on distance in each published report of school-associated transmission risk.*



# Studies Focused on School-Based Transmission Risk Generally Say “Low Risk” at Less Distancing

- Brandal LT, Ofitserova TS, Meijerink HM. [Minimal transmission of SARS-CoV-2 from paediatric COVID-19 cases in primary schools, Norway, August to November 2020](#). Euro Surveill. 2021;26:2002-11. (“minimal child-to-child and child-to-adult transmission in primary schools” with [1-meter physical distancing](#), but no masks worn in school).
- Gandini S, Rainisio M, Iannuzzo ML, Bellerba F, Cecconi F, Scorrano L. [No evidence of association between schools and SARS-CoV-2 second wave in Italy](#). medRxiv 2021. ePub January 8, 2021. (incidence among students “lower than that in the general population of all but two Italian regions”; incidence among teachers statistically the same as the general population when matched for age; “COVID-19 infections rarely occur at school and that that transmission from students to teachers is very rare” with precautions including “compulsory 1 m seat to seat distance”).



# Studies Focused on School-Based Transmission Risk Generally Say “Low Risk” at Less Distancing

- Kriemler S, Ulyte A, Ammann P, et al. [Surveillance of acute SARS-CoV-2 infections in school children and point-prevalence during a time of high community transmission in Switzerland](#). Preprint. MedRxiv. 2020; Posted 2020 December 26. doi:10.1101/2020.12.24.20248558 (“In a setting of high incidence of SARS-CoV-2 infections, unrecognized virus spread within schools was very low. Schools appear to be safe with the protective measures in place (e.g., clearly symptomatic children have to stay at home, prompt contact tracing with individual and class-level quarantine, and structured infection prevention measures in school).” [physical distancing [appears to have been 1.5-meter.](#)]
- Fricchione et al., Public Health Management and Practice, 12/30/20, [Data-Driven Reopening of Urban Public Education Through Chicago’s Tracking of COVID-19 School Transmission](#) (“Data collected in the nation’s largest Catholic school system suggest that implementation of layered mitigation strategies creates a low- but not zero-risk environment for in-person learning in public schools. Chicago data revealed a lower attack rate for students and school staff than for the city overall during a period of moderate to high COVID-19 incidence.”) [6-foot distancing apparently used only when students were unmasked; less distance used when masked. See <https://globalhealth.massgeneral.org/covidlibrary.pdf> (page 52) ]

# Panel 4

# Recommendations

# The Balance of Public Health Risks and Benefits is Changing



## Mitigating Risk of In-School SARS-CoV-2 Transmission

- We know a lot more now than we did in March or August
- Strong national and global evidence that school-based risk can be kept low
- PSB's experience to date matches that
- 6' distancing is not the lynchpin

## Mitigating Other Risks and Harms to Kids of Less In-Person School

- Increasing concern from pediatricians, mental health/ social work clinicians, and others about isolation, obesity, myopia, etc.
- School Committee's Feb. 11<sup>th</sup> and Panel 4's Feb. 12<sup>th</sup> meetings focused on these concerns; data increasingly available

# Panel 4's Updated Recommendations to PSB

1. The available evidence on infection prevention, plus the increasing clarity and concern around negative impacts of remote schooling on children, indicates to us that it is **now time to increase in-person time offered to all students—returning to full in-person in a staged manner across grades** to allow for planning, logistics, and ongoing monitoring, **but not unreasonably delayed**.
2. **During MASKED times indoors, 6-foot distancing indoors remains a goal where feasible, but is not a bright line and should not be a basis to limit in-person time for students.** Desk distance between students should be reduced to the extent needed to allow full in-person operations, **but not below 3 feet**. PSB should try to continue to give adults consistent 6-foot distancing from others as much as possible (especially from other adults, but also from students if feasible).
3. **During UNMASKED times, it is important to maintain 6-foot distancing or to fully compensate with a combination of existing enhanced ventilation measures and physical droplet barriers.** We strongly recommend that adults remain masked and use face shields while indoors in the presence of anyone who is unmasked.
4. **We will continue to monitor** for changes (including any impact of virus variants) and commit to alerting PSB immediately if we see any reason to pause/rollback.

# Panel 4's Updated Lunch/Snack Recommendations (in order of preference)

- 1. Outside (@ 6-foot distancing or as close as feasible)**
  - Consider foam cushions/floor puzzle pieces for seating on ground
- 2. Inside @ strict 6-foot distancing from any other person**
  - Consider sending ½ classroom to recess while other half eats and then trading places, if staffing allows (OK to combine masked cohorts for recess if needed)
  - Consider standing/sitting on floor around room periphery as needed
- 3. Inside @ 6-foot distancing from any other unmasked person, with droplet barriers used if any other (masked) students are sitting within 3-6 feet**
  - Consider showing video to keep students' attention forward into barriers and trying to limit student conversation until all masks back on

*For inside options (2 and 3): provide as much ventilation as possible (minimum 4.0 ACH), limit unmasked duration as much as reasonably possible, and supervising adults should wear masks and face shields.*

# Cafeteria Tables



*~4 ft distancing (with barriers) would allow for ~50% seat usage on most café tables, but DESE guidance doesn't yet address this option*

# Cafeteria Table Dividers

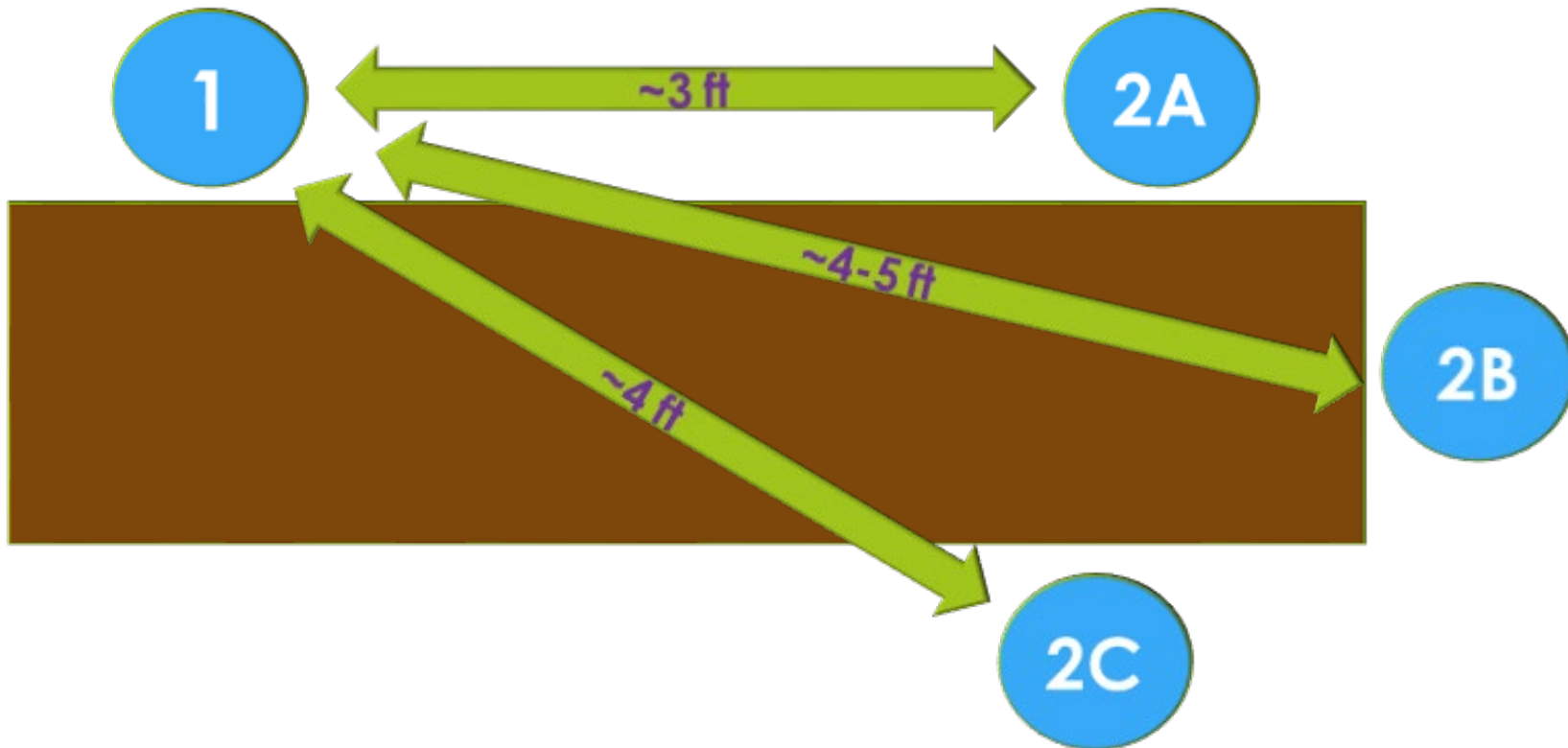


# Classroom Dividers



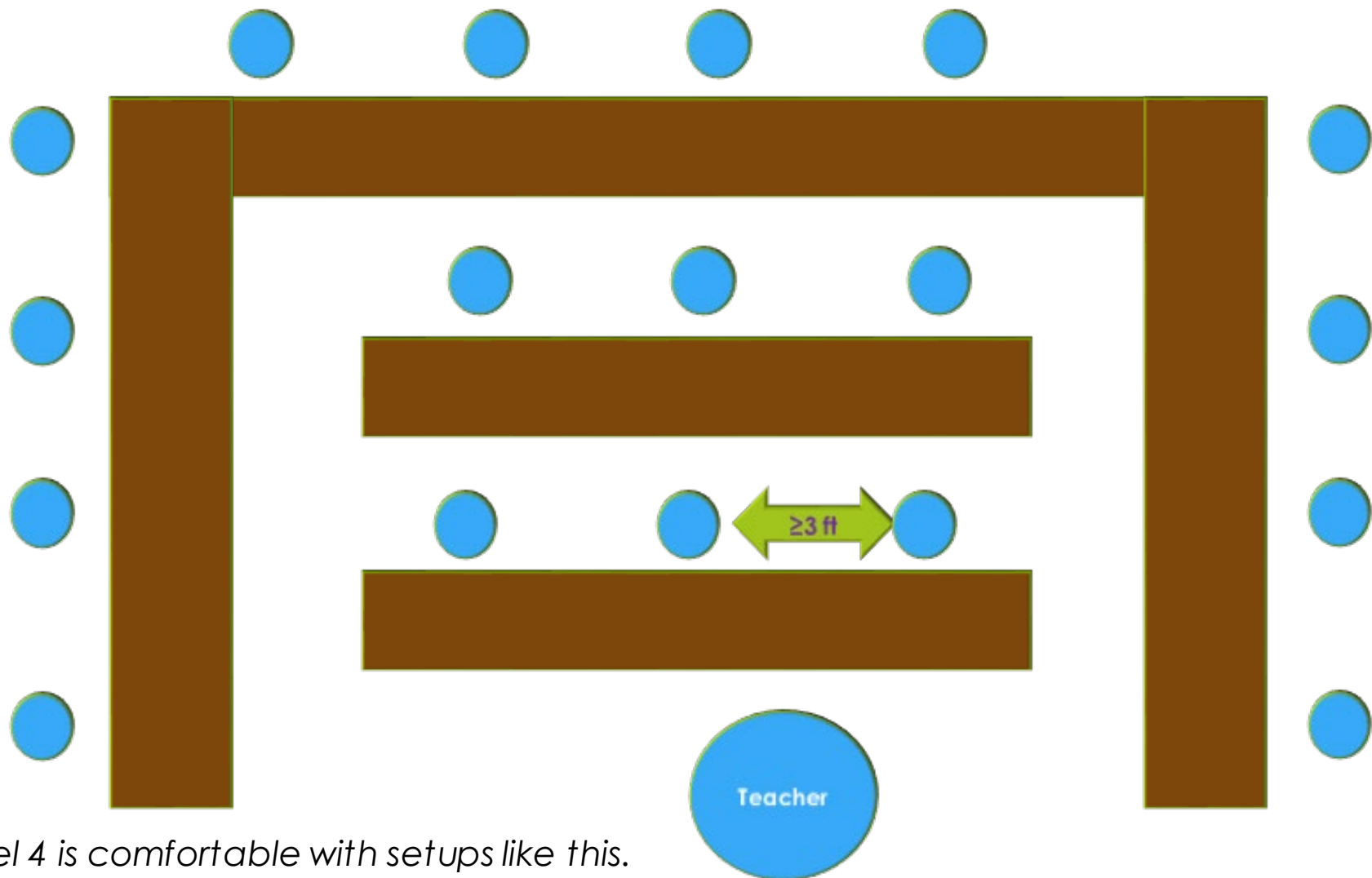


# Classroom Seating Arrangements



*Panel 4 is comfortable seating two students at a ~5-6 foot long table using any of these configurations: 1+2A, 1+2B, or 1+2C*

# Classroom Seating Arrangements



*Panel 4 is comfortable with setups like this.*

# Contact Tracing, Isolation, Quarantine

# Update on Contact Tracing from Brookline Public Health Commissioner, Dr. Swannie Jett

1. The Department of Brookline Public Health nor any entity such as schools will conduct contact tracings. If there's any outbreaks the BPH will conduct epidemiology investigations at that time.
2. All cases and contacts (including all daycares, all k-12 schools and the general public) will go directly to the Contact Tracing Collaborative of MDPH for contact tracings.
3. Department of Brookline Public Health will allow CTC to manage all cases and contact tracings, so they will align with the MA Department of Public Health COVID-19 related guidelines. These may vary depending on the case situation. I will not modify or use Board of Health authority for local rule in relation to any scenario for MDPH guidelines unless there's a serious outbreak and eradication of local transmission is paramount.
4. Everyone is still required by law to contact the local board of health to report positive cases of exposure. The exposure should be reported directly to the Health Commissioner. We will investigate if any epidemiological outbreaks or clusters occur and decide next appropriate steps at that time.

# MA Community Tracing Collaborative

Greatest act of love  
is answering the call.



Spread the word.  
**Stop** the virus.

## Community Tracing Collaborative overview

The Commonwealth of Massachusetts created the COVID-19 Community Tracing program to help support local health departments from every community in their contact tracing work. The program focuses on reaching out to people who have tested positive for COVID-19 and the contacts they have been close to, making sure they have the support they need to isolate or quarantine. When the MA COVID Team calls, you can do your part by answering the phone and providing helpful information that will help flatten and reduce the curve in Massachusetts.

## Why your help matters

Through what's called contact tracing, local health departments and the Collaborative are reaching out to everyone who tested positive and people who have been exposed. We are proud to be the first state in the nation to initiate contact tracing and your participation is critical to our shared success. Contact tracing is your way to impact the lives of many in our state and beyond and help stop the spread of COVID-19

# MA Community Tracing Collaborative

## How answering the call stops the spread



# MA DPH Guidance on Quarantine Length

☰ Menu



Search Mass.gov

SEARCH

## COVID-19 isolation and quarantine information

Isolating and quarantining are related but distinct approaches to limiting COVID-19's spread. In short: Isolate if you're sick, quarantine if you have been exposed.

**You must isolate** if you are symptomatic or have tested positive for COVID-19. This means you must be alone, without direct contact with anyone else, until you can no longer spread the virus. This typically lasts about 10 days.

**You must quarantine** if you were exposed to someone with COVID-19 but haven't shown symptoms or had a positive COVID-19 test. It's best if you can quarantine for 14 days. However, if 10 days after your exposure you have no symptoms, you can end quarantine. You can end your quarantine after 7 days if you get tested and are negative for the virus.

# MA DPH Guidance on Quarantine Length

## Learn about quarantining

You must quarantine if you are not sick but are a close contact to someone diagnosed with COVID-19 or if you've been traveling outside Massachusetts. You may be contacted by a local health official or the [Commonwealth's Community Tracing Collaborative](#) ([/info-details/learn-about-the-community-tracing-collaborative](#)) regarding any contact with those who have COVID-19.

- Please note that individuals who had COVID-19 in the last 90 days (from day of symptom onset or day of first positive test if asymptomatic), AND individuals who have received either two doses of the Moderna or Pfizer COVID-19 vaccines or a single dose of the Janssen COVID-19 vaccine, at least 14 days ago are not required to quarantine following an exposure.



# CDC Guidance on Isolation Length (for Positive Cases)

## Discontinuing Home Isolation for Persons with COVID-19:



Accumulating evidence supports ending isolation and precautions for persons with COVID-19 using a symptom-based strategy. Specifically, researchers have reported that people with mild to moderate COVID-19 remain infectious no longer than 10 days after their symptoms began, and those with more severe illness or those who are severely immunocompromised remain infectious no longer than 20 days after their symptoms began. Therefore, CDC has updated the recommendations for discontinuing home isolation as follows:

**Persons with COVID-19 who have symptoms** and were directed to care for themselves at home may discontinue isolation under the following conditions:

- At least 10 days\* have passed since symptom onset **and**
- At least 24 hours have passed since resolution of fever without the use of fever-reducing medications **and**
- Other symptoms have improved.

\*A limited number of persons with severe illness may produce replication-competent virus beyond 10 days, that may warrant extending duration of isolation for up to 20 days after symptom onset. Consider consultation with infection control experts. See Discontinuation of Transmission-Based Precautions and Disposition of Patients with COVID-19 in Healthcare Settings (Interim Guidance).

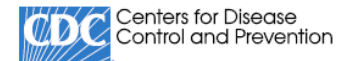
**Persons infected with SARS-CoV-2 who never develop COVID-19 symptoms** may discontinue isolation and other precautions 10 days after the date of their first positive RT-PCR test for SARS-CoV-2 RNA.

# CDC Guidance on Quarantine Length (Close Contacts)

## Options to Reduce Quarantine for Contacts of Persons with SARS-CoV-2 Infection Using Symptom Monitoring and Diagnostic Testing

Updated Dec. 2, 2020

Print

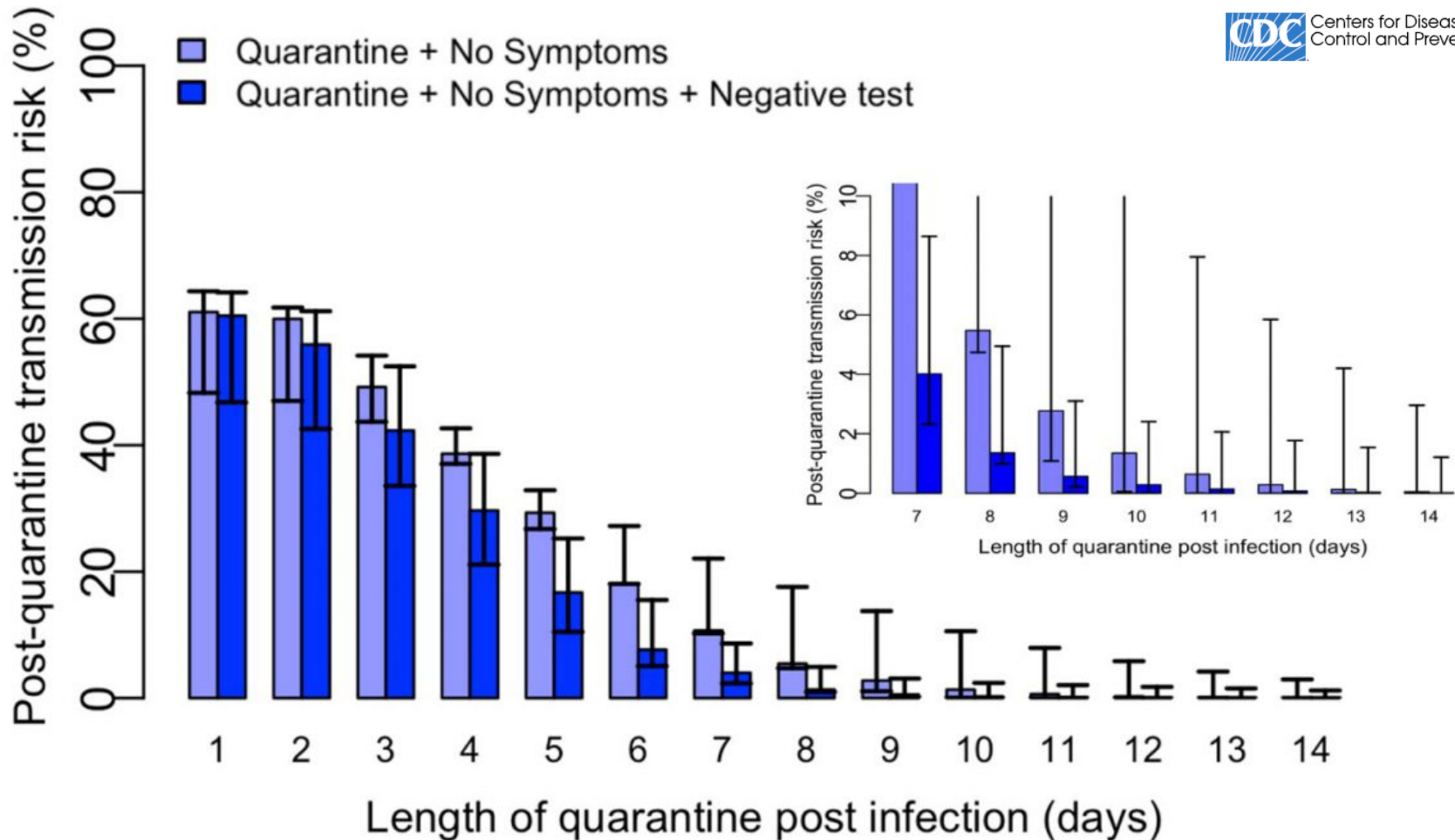
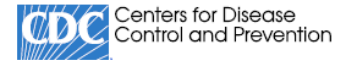


Local public health authorities determine and establish the quarantine options for their jurisdictions. CDC currently recommends a quarantine period of 14 days. However, based on local circumstances and resources, the following options to shorten quarantine are acceptable alternatives.

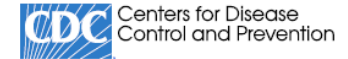
- Quarantine can end after Day 10 without testing and if no symptoms have been reported during daily monitoring.
  - With this strategy, residual post-quarantine transmission risk is estimated to be about 1% with an upper limit of about 10%.
- *When diagnostic testing resources are sufficient and available (see bullet 3, below)*, then quarantine can end after Day 7 if a diagnostic specimen tests negative and if no symptoms were reported during daily monitoring. The specimen may be collected and tested within 48 hours before the time of planned quarantine discontinuation (e.g., in anticipation of testing delays), but quarantine cannot be discontinued earlier than after Day 7.
  - With this strategy, the residual post-quarantine transmission risk is estimated to be about 5% with an upper limit of about 12%.

In both cases, additional criteria (e.g., continued symptom monitoring and masking through Day 14) must be met and are outlined in the full text.

# CDC Guidance on Quarantine Length (Close Contacts)



# CDC Guidance on Quarantine Length (Close Contacts)



Planned day after which quarantine is completed and can be discontinued	Residual post-quarantine transmission risk (%) with and without diagnostic testing of a specimen within 48 hours before time of planned discontinuation of quarantine					
	No testing		RT-PCR testing		Antigen testing	
	Median	Range	Median	Range	Median	Range
7	10.7	10.3-22.1	4.0	2.3-8.6	5.5	3.1-11.9
10	1.4	0.1-10.6	0.3	0.0-2.4	1.1	0.1-9.5
14	0.1	0.0-3.0	0.0	0.0-1.2	0.1	0.0-2.9

# MA DESE Guidance on Quarantine Length

**Policy of when a close contact may return to school:** All close contacts should be tested but must self-quarantine, consistent with the guidance outlined below. The local board of health, in consultation with the school's COVID-19 response person, are best suited to advise on which quarantine option applies to a specific case. In accordance with the federal Center for Disease Control, close contacts must quarantine for the time period listed below:

**At least 7 days**, provided that all of the following are satisfied:

- They are tested (either polymerase chain reaction (PCR) or antigen test) on day 5 or later from their last exposure to the positive individual and receive a negative test result
- They have not experienced any symptoms up to this point
- They conduct active monitoring for symptoms through day 14, and self-isolate if new symptoms develop

*While most exposed close contacts do not contract COVID-19, this quarantine option may not identify 5% of those who still have the potential to transmit infection after quarantine ends. In other words, 95% of individuals who could still transmit infection after quarantine ends would be identified with this strategy.*

# MA DESE Guidance on Quarantine Length, ctd.

**At least 10 days**, provided that all of the following are satisfied:

- They have not experienced any symptoms up to this point
- They conduct active monitoring for symptoms through day 14 and self-isolate if new symptoms develop
- No test is necessary under this option for the purposes of exiting quarantine

*While most exposed close contacts do not contract COVID-19, this quarantine option may not identify 1% of those who still have the potential to transmit infection after quarantine ends. In other words, 99% of individuals who could still transmit infection after quarantine ends would be identified with this strategy.*

# MA DESE Guidance on Quarantine Length, ctd.

- At least 14 days** after the last exposure to the person who tested positive, if:
- They have experienced any symptoms during the quarantine period, even if they have a negative COVID-19 test; or
  - They are unable to conduct active monitoring of symptoms

*This option provides the maximal risk reduction.*

# MA DESE Guidance on Quarantine Length, ctd.

When individuals exit quarantine, masking and other safety measures remain critical. It may be best for individuals who are not be able to adhere to masking and distancing to exit quarantine after 10 or 14 days. Active monitoring requires individuals to actively monitor their symptoms and take temperature once daily. If even mild symptoms develop or the individual has a temperature of 100.0 F, they must immediately self-isolate, and contact the public health authority overseeing their quarantine, and be tested.

<https://www.mass.gov/guidance/information-and-guidance-for-persons-in-quarantine-due-to-covid-19>

<https://www.cdc.gov/coronavirus/2019-ncov/more/scientific-brief-options-to-reduce-quarantine.html>



# PSB 2020-2021 Calendar and Quarantine Impacts

Grade(s)	Model and Start Date	Approx. In-Person Days Through 3/19/21	Approx. In-Person Days 3/19/21 to Year-End
<b>BEEP and K</b>	Full-time starting 9/16/20	110	60
<b>Grades 1-5</b>	Hybrid since late Oct. '20; full-time starting Mar. '21	35 – 45	55 – 60
<b>Grades 6-8</b>	Hybrid starting Oct. '20; full-time starting Apr. '21	35	50
<b>Grades 9-12</b>	Hybrid starting 10/26 - 11/9/20	30 – 35	25 – 45

Quarantine Length	Impact on 2-Day/ Week Hybrid	Impact on 5-Day/ Week Full In-Person
<b>14-day</b>	4 school days	10 school days
<b>10-day</b>	2-4 school days	6-8 school days
<b>7-day</b>	2 school days	5 school days

# Equity and Disparate Impact

# COVID-19:

## Equity and Disparate Impacts

- The evidence available to date shows that:
  - Overall, the pandemic clearly has **hit Black and Latinx (and likely also Indigenous North American and many multi-racial) individuals and families harder** than White and Asian/Pacific-American individuals and families in terms of:
    - Case rates
    - Population level rates of hospitalization/serious illness/death
- Key point: these are not effects of genetic differences, but rather of structural racism and other societal factors***
- Black and Latinx parents and caregivers, as a group, have **expressed more concerns** about risk of school-related transmission than have White and Asian-American parents/caregivers:
  - Concern about increased risk to themselves and their children
  - Concern about increased risk to older family members who might be more likely to live in the same (multi-generational) household

# From March 2021 Meta-Analysis in Annals of Internal Medicine (Mackey, et al.)

<i>[all indexed to NH-White]</i>	<b>Infection Rate</b>	<b>Hospitalization Rate</b>	<b>Death Rate</b>
<b>Non-Hispanic White American</b>	1.0	1.0	1.0
<b>Black/African American</b>	1.5 – 3.5	1.5 – 4.0	1.2 – 3.2
<b>Hispanic American</b>	1.3 – 7.7+	~1.5 – 4.0	1.2 – 3.2
<b>Asian American</b>	~1.0	~1.0	~1.0

“6 main findings. **First**, African American/Black populations experience disproportionately higher SARS-CoV-2 infection rates and excess mortality due to COVID-19 (high strength of evidence) but not higher case-fatality rates (moderate strength of evidence). **Second**, Hispanic populations experience disproportionately higher infection rates and excess mortality due to COVID-19, but not higher case-fatality rates (moderate strength of evidence). **Third**, African American/Black and Hispanic populations have an increased risk for hospitalization due to COVID-19 (moderate strength of evidence). **Fourth**, Asian populations appear to have similar rates of infections, hospitalizations, and deaths as White populations (low strength of evidence). **Fifth**, American Indian, Alaska Native, and Pacific Islander populations experience excess mortality due to COVID-19 (low strength of evidence). **Finally**, observed disparities are more likely to be due to exposure-related factors than susceptibility (that is, comorbid conditions) (low strength of evidence).”

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# Harvard/Chan SPH Study Aug. 2020 (Figueroa, et al.)

- ▣ “Across Massachusetts cities and towns, significant COVID-19 disparities are evident along multiple **dimensions—particularly race/ethnicity, foreign-born noncitizen status, household size, and job type**. Higher proportions of Black or Latino residents within a community were significantly associated with higher rates of COVID-19 cases. The factors examined in our study [e.g., proportion of foreign-born noncitizens in a community, household size, food service occupation, etc.] explained this relationship for Latino populations but did not appear to explain the higher rates among Black populations. Further research into the social and economic factors underlying COVID-19-related disparities and new policies to address risk factors and institutional racism will be critical to controlling the epidemic and improving health equity.”

# Per 12/18/2020 Analysis by Melnik, et. al at UMass Donahue Inst./UMass Amherst

Key demographic variables in infection risk here in MA:

- *“For each additional percentage point of households in a community that are “overcrowded,” the number of COVID-19 cases increases by 35.0 per 10,000 members of the population.*
- *For each additional thousand dollars of per capita income, the number of COVID-19 cases decreases by 3.6 per 10,000 members of the population.*
- *For each additional 1,000 persons per square mile, the number of COVID-19 cases increases by 11.8 per 10,000 members of the population.*
- *As the household size increases by 0.1, the number of COVID-19 cases increases by 24 per 10,000 members of the population.”*

# Hospitalization and Esp. Death Risk Skews Heavily to Older Age Groups (Most Already Vaccine Eligible)



Massachusetts Department of Public Health | COVID-19 Dashboard  
Data by Patient Age, Sex, Race, and Hispanic Ethnicity

The report on March 17, 2021 reflects data from the two week period February 28, 2021 to March 13, 2021.  
\*These data are updated once per week.

## Navigation

- Today's Overview
- Overview Trends
- COVID-19 Cases
- COVID-19 Testing
- Hospitalization
- COVID-19 Deaths
- Higher Ed & LTCF
- Patient Breakdown
- City and Town
- Resources
- Data Archive

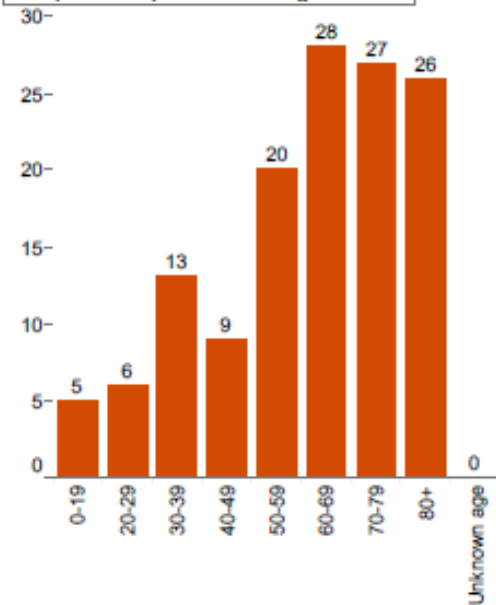
## Date Filter

3/17/2021

## Age groups

Confirmed and probable cases, hospitalizations, and deaths by age group

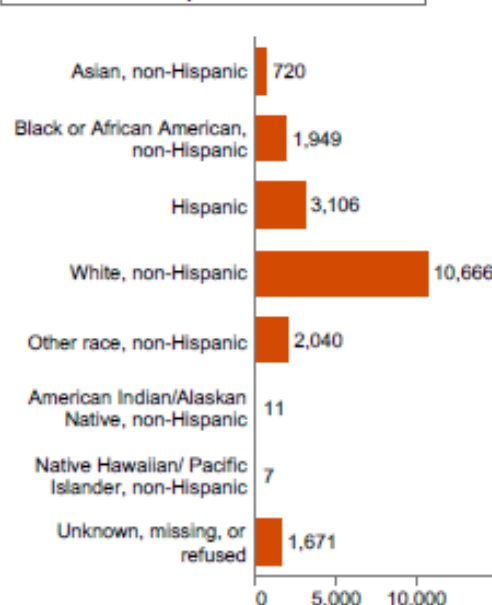
Hospitalized patients during the last



## Race and Hispanic ethnicity

Confirmed and probable cases, hospitalizations, and deaths by race and ethnicity

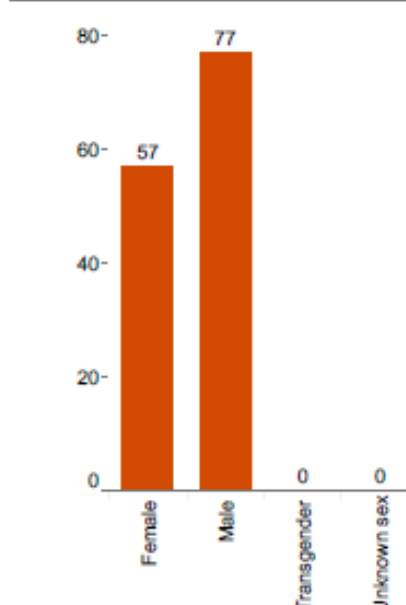
Total number of patients ever been



## Sex

Confirmed and probable cases, hospitalizations, and deaths by sex

Hospitalized patients during the last



All data included in this dashboard are preliminary and subject to change. Data Sources: COVID-19 Data provided by the Bureau of Infectious Disease and Laboratory Sciences and the Registry of Vital Records and Statistics; Created by the Massachusetts Department of Public Health, Bureau of Infectious Disease and Laboratory Sciences, Office of Integrated Surveillance and Informatics Services. \*Cells with fewer than 5 observations or that can be used to calculate cells with fewer than 5 observations have been suppressed.

# Hospitalization and Esp. Death Risk Skews Heavily to Older Age Groups (Most Already Vaccine Eligible)



## Massachusetts Department of Public Health | COVID-19 Dashboard Data by Patient Age, Sex, Race, and Hispanic Ethnicity

The report on March 17, 2021 reflects data from the two week period February 28, 2021 to March 13, 2021.  
\*These data are updated once per week.

### Navigation

- Today's Overview
- Overview Trends
- COVID-19 Cases
- COVID-19 Testing
- Hospitalization
- COVID-19 Deaths
- Higher Ed & LTCF
- Patient Breakdown
- City and Town
- Resources
- Data Archive

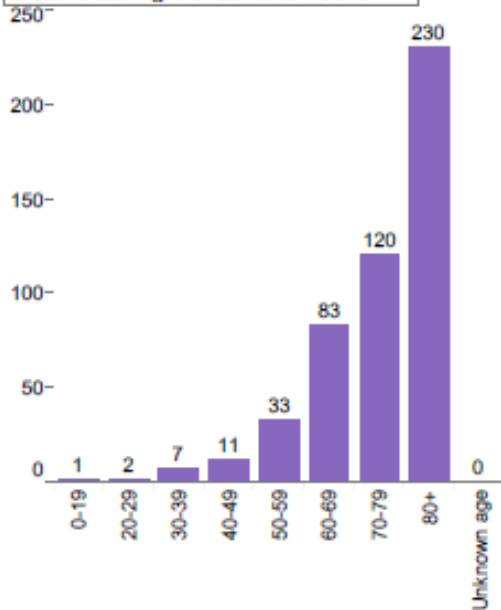
### Date Filter

3/17/2021

### Age groups

Confirmed and probable cases, hospitalizations, and deaths by age group

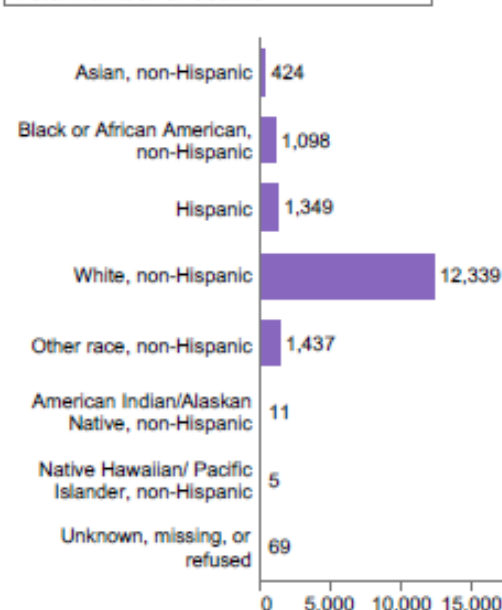
Deaths during the last two weeks



### Race and Hispanic ethnicity

Confirmed and probable cases, hospitalizations, and deaths by race and ethnicity

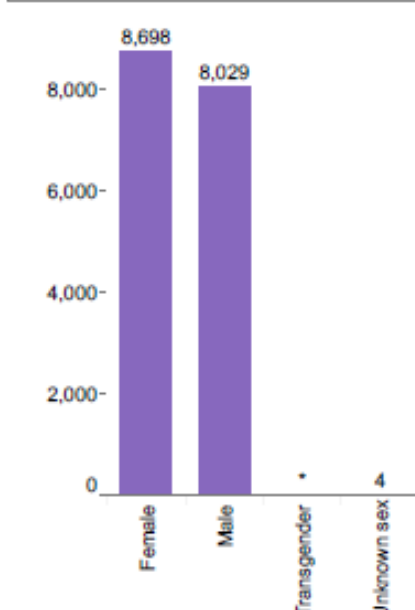
Total number of deaths



### Sex

Confirmed and probable cases, hospitalizations, and deaths by sex

Total deaths



All data included in this dashboard are preliminary and subject to change. Data Sources: COVID-19 Data provided by the Bureau of Infectious Disease and Laboratory Sciences and the Registry of Vital Records and Statistics; Created by the Massachusetts Department of Public Health, Bureau of Infectious Disease and Laboratory Sciences, Office of Integrated Surveillance and Informatics Services. \*Cells with fewer than 5 observations or that can be used to calculate cells with fewer than 5 observations have been suppressed.

# Overall, Black and Latinx Communities in MA Have Shouldered Disproportionately Higher Shares of Total Infections

## What we know:

*For Black, Latinx, and Multi-Racial people, these are larger shares of total population*

(MA statewide data - cumulative through 3/17/21)	Total Cases
Black/African American (non-Hispanic)	36,581
Hispanic	130,171
Asian (non-Hispanic)	16,905
Native Hawaiian/Pacific Islander (non-Hispanic)	165
Indigenous North American (non-Hispanic)	534
White (non-Hispanic)	229,456
Other Race (non-Hispanic)	50,301
Unknown/Missing/Refused	142,264

# But a Black or Latinx Person in MA Does Not Appear to Face More Risk of Hospitalization/Death Once Infected

## What we know:

For Black and Latinx people, these are larger shares of total population

(MA statewide data - cumulative through 3/17/21)	Total Cases	Total No. of People Ever Hospitalized (% of cases)	Total Deaths (% of cases)
Black/African American (non-Hispanic)	36,581	1,949 (5.3%)	1,098 (3.0%)
Hispanic	130,171	3,106 (2.4%)	1,349 (1.0%)
Asian (non-Hispanic)	16,905	720 (4.3%)	424 (2.5%)
Native Hawaiian/Pacific Islander (non-Hispanic)	165	7 (4.2%)	5 (3.0%)
Indigenous North American (non-Hispanic)	534	11 (2.1%)	11 (2.1%)
White (non-Hispanic)	229,456	10,666 (4.6%)	12,339 (5.4%)
Other Race (non-Hispanic)	50,301	2,040 (4.1%)	1,437 (2.9%)
Unknown/Missing/Refused	142,264	1,671 (1.2%)	69 (0.0%)

# Is a Black/Latinx PSB Student at Greater Risk of Infection than a White/Asian Student?

- Assuming they have similar pre-existing medical histories and similar safety behaviors (e.g., mask wearing, hand washing, etc.) **NO—at least not in-school infection.**
- Due to systemic racism and other socioeconomic conditions, the average Black/Latinx student may have higher overall risk of infection from exposures **outside of school** (e.g., parent/caregiver occupational exposures, etc.)
- But being present in school – even fully in-person – does **not** put Black/Latinx students at greater risk of infection than White or Asian students, based on available data



# Simple Example Using Made-Up Numbers





# CDC Science Brief: Transmission of SARS-CoV-2 in K-12 Schools (Updated March 19, 2021)

- Collects and summarizes 72 U.S. and international study results:
- Key observations include:
  - Children and adolescents can be infected with and spread SARS-CoV-2 but may do so less commonly than adults (evidence mixed and biological mechanism unclear)
  - Children <10 years old seem to be less likely to be infected than adolescents or adults (evidence more consistent)
  - “Susceptibility to SARS-CoV-2 infection and the proportion among those infected experiencing symptoms both generally increase with age.”

# CDC Science Brief: Transmission of SARS-CoV-2 in K-12 Schools (Updated March 19, 2021)

- Key observations specific to school settings include:
  - “Based on the data available, in-person learning in schools has not been associated with substantial community transmission.”
  - Outbreaks can occur in school settings when prevention strategies are not implemented or followed (e.g., inconsistent mask wearing).
  - “Evidence suggests that staff-to-staff transmission is more common than transmission from students to staff, staff to student, or student to student.”
  - “Though outbreaks do occur in school settings, multiple studies have shown that transmission within school settings is typically lower than – or at least similar to – levels of community transmission, when prevention strategies are in place in schools.”



## Hershow, et. al., CDC MMWR 3/26/2021, “**Low SARS-CoV-2 Transmission in Elementary Schools – Salt Lake County, Utah, 12/3/2020 – 1/31/2021**”

- Investigated COVID-19 cases in **20 elementary schools**
  - Student population = 56% free/reduced lunch eligible; 47% non-white (mostly Hispanic/Latino)
- Contemporaneous community incidence in the county = **41- 96 avg. daily new cases per 100k people**
- 51 COVID+ index patients (40 students + 11 staff members)
- 1,041 susceptible in-school contacts identified and followed
  - 735 (71%) were tested;
  - 12 were COVID+ (1.6%) (11 students + 1 staff member)
  - 5 of the 12 COVID+ were classified as school-associated (0.7% of tested)
    - 2 featured “poor mask use”; 2 featured “poor distancing behavior”

## Hershow, et. al., CDC MMWR 3/26/2021, “Low SARS-CoV-2 Transmission in Elementary Schools – Salt Lake County, Utah, 12/3/2020 – 1/31/2021”

- Reported in-school mask use was high (86%) and 90% of schools reportedly used HEPA filtration in “high-risk areas”
- Other widespread mitigation measures included classroom cohorting, staggered mealtimes, cancelation of (in-person) after-school activities, hand washing/sanitizing, cleaning
- Median desk distance was 3 feet
- Close contact quarantine rules in effect using CDC definition (<6 feet for  $\geq 15$  min in 24 hr period)
  - In December, applied regardless of mask wearing
  - In January, changed to no quarantine required if both index case and contact were masked
    - Of 158 masked close contacts allowed to keep attending school in January; 70% were tested and “no school associated-cases were detected”

## Hershow, et. al., CDC MMWR 3/26/2021, “**Low SARS-CoV-2 Transmission in Elementary Schools – Salt Lake County, Utah, 12/3/2020 – 1/31/2021**”

- Authors' conclusion: *“In an urban county with high SARS-CoV-2 community incidence, comprehensive testing of contacts detected low school-associated transmission in elementary schools, with a secondary attack rate of 0.7%. These results suggest that when  $\geq 6$  ft distancing is not feasible, schools in high-incidence communities can still limit in-school transmission by consistently using masks and implementing other important mitigation strategies.”*
- NB: of the 5 school-associated cases, all households were tested and further transmission was detected in 3 of the 5 households (6 out of 8 members of those households were COVID+)
- I.e., infected students' household members appeared to be at greater risk of transmission than their classmates or teachers were

Dawson, et. al., CDC MMWR 3/26/2021, “Pilot Investigation of SARS-CoV-2 Secondary Transmission in K-12 Schools Implementing Mitigation Strategies — St. Louis County and City of Springfield, Missouri, Dec. 2020”

- Two-week pilot study Dec. 7-18, 2020 in 22 schools
  - Avg. daily case incidence in communities was 51 – 71 per 100,000 people
- 37 COVID+ students/staff, with 156 in-school close contacts identified and followed
  - 102 close contacts tested; 2 (2%) were COVID+ (both believed to be single cases, not clusters, of school-based transmission)
  - 42 student close contacts were allowed to keep attending school through a modified quarantine approach
    - 21 were tested; zero were COVID+
- Masks required; 3+-foot distancing in place in most of the studied schools (6-foot in roughly 25%); simple ventilation interventions

Gold, et. al., CDC MMWR 2/26/2021, “**Clusters of SARS-CoV-2 Infection Among Elementary School Educators and Students in One School District — Georgia, Dec. 2020–Jan. 2021**”

- Investigation of SARS-CoV-2 transmission in a Georgia school district’s elementary schools between 12/1/2020 and 1/22/2021
  - ~2,600 students and ~700 staff members present in-person for 6-7 weeks
  - Community background case rates more than tripled from 28 to 101 avg. daily new cases per 100,000 people

## Gold, et. al., CDC MMWR 2/26/2021, “Clusters of SARS-CoV-2 Infection Among Elementary School Educators and Students in One School District — Georgia, Dec. 2020–Jan. 2021”

- 9 case clusters identified, involving 13 educators and 32 students at six elementary schools
  - Clusters (including household members) ranged from 3 – 16 people
  - 8 clusters involved at least one educator and probable educator to student transmission
  - 69 household members of COVID+ students/staff tested; 18 (26%) were COVID+
  - Students sat <3 ft apart and ate lunch at their desks
  - In 7 clusters, transmission “might have occurred” during small group instruction sessions in close proximity
  - Generally good mask use, but specific instances of inadequacy “likely contributed to spread” in 5 of the 9 clusters

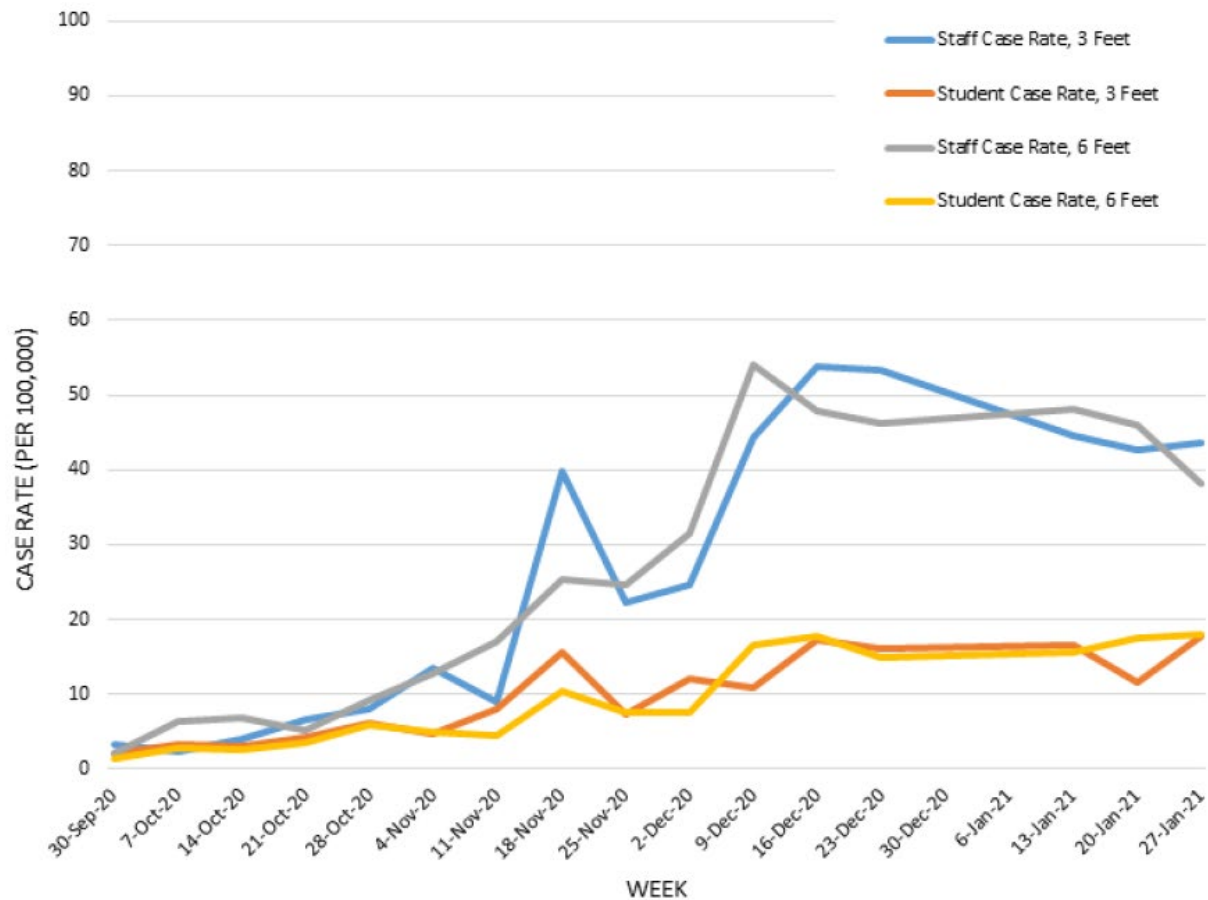


## Gold, et. al., CDC MMWR 2/26/2021, “Clusters of SARS-CoV-2 Infection Among Elementary School Educators and Students in One School District — Georgia, Dec. 2020–Jan. 2021”

- Key observations from the investigators:
  1. “[E]ducators can play an important role in in-school transmission”
  2. “[I]n-school transmission can occur when physical distancing and mask compliance are not optimal”
  3. “To ensure safer in-person learning during the COVID-19 pandemic, schools should implement multicomponent mitigation strategies, including efforts to prevent infection among educators, and promoting consistent, correct mask use and physical distancing wherever possible, especially during mealtime when masks are not being worn.”

# van den Berg, et al., Clinical Infectious Diseases, March 10, 2021

“Effectiveness of three versus six feet of physical distancing for controlling spread of COVID-19 among primary and secondary students and staff: A retrospective, state-wide cohort study.”



# Key Ongoing Issue: Potential Impacts of SARS-CoV-2 Variants of Concern (VOCs)

Based on what is known so far...	More Transmissible than Wild Type?	More Virulent than Wild Type?	Vaccine Efficacy Impacts?	Differential Impacts on Kids vs Wild Type?	% of Sequenced Cases in Mass. (per CDC, but likely outdated)
<b>B.1.1.7</b> ("U.K.")	Yes (~50-100%)	Likely yes	Minimal	None known	18.6%
<b>B.1.427/ B.1.429</b> ("California")	Yes (~20%)	Unclear	Minimal to Moderate	None known	3.6%
<b>P.1</b> ("Brazil")	Likely yes	Likely yes	Moderate	None known	1.4%
<b>B.1.351</b> ("South Africa")	Yes (~50%)	Unclear	Moderate	None known	0.2%

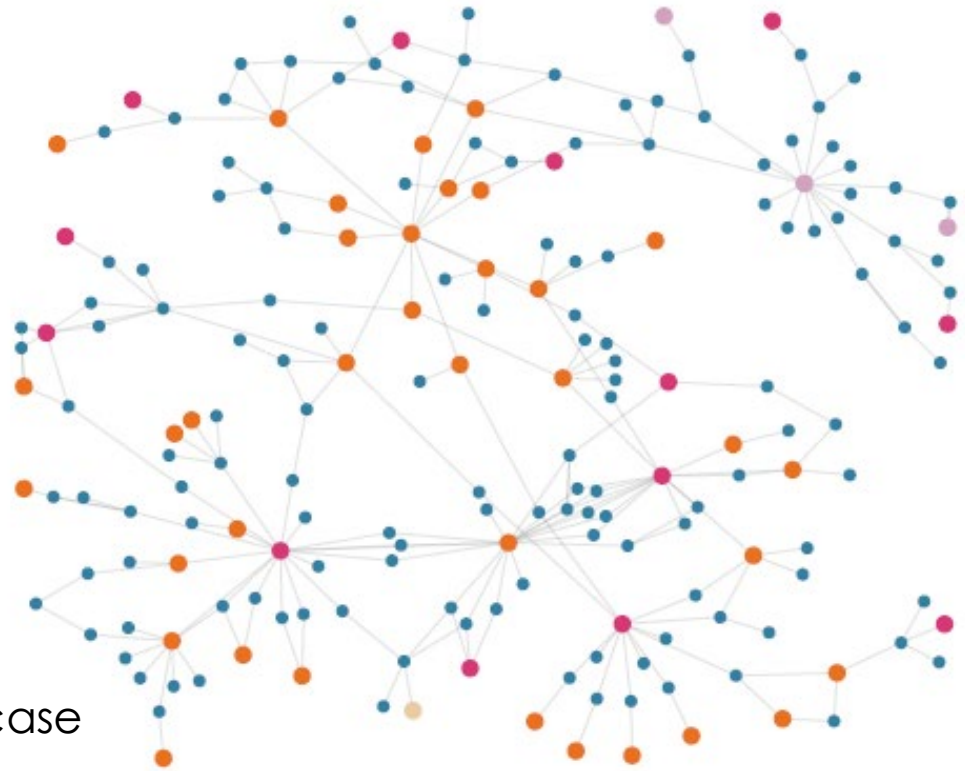
Sources: <https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/variant-proportions.html>;  
<https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/variant-surveillance/variant-info.html>;  
<https://www.mayoclinic.org/diseases-conditions/coronavirus/expert-answers/covid-variant/faq-20505779>;  
<https://directorsblog.nih.gov/2021/03/30/infections-with-u-k-variant-b-1-1-7-have-greater-risk-of-mortality/>;  
<https://www.bmj.com/content/373/bmj.n879>; <https://www.nature.com/articles/d41586-020-00502-w>;  
<https://science.sciencemag.org/content/372/6538/eabg3055>

# SARS-CoV-2 Variant Impacts on K-12 Schools

- Minnesota has seen, and extensively traced, partially B.1.1.7-driven outbreaks centered around youth sports and other activities—including some school-based spread.
  - In-school spread does not seem to be the primary driver
  - Consistency of mask wearing and other mitigation measures unclear, so efficacy hard to assess
  - Dr. Michael Osterholm of Univ. of Minn. CIDRAP is raising alarms very publicly
- In Europe, countries are moving in varying directions in terms of in-person versus remote school operations in the face of B.1.1.7 surges.
  - Notably, the UK (where B.1.1.7 originated) has been moving back into full in-person school since early March—with no widespread in-school transmission issues publicly apparent so far.

# What's Going on in Minnesota?

- COVID-19 (partially B.1.1.7) clusters extensively traced and mapped primarily to youth sports, with some school transmission in January – February.



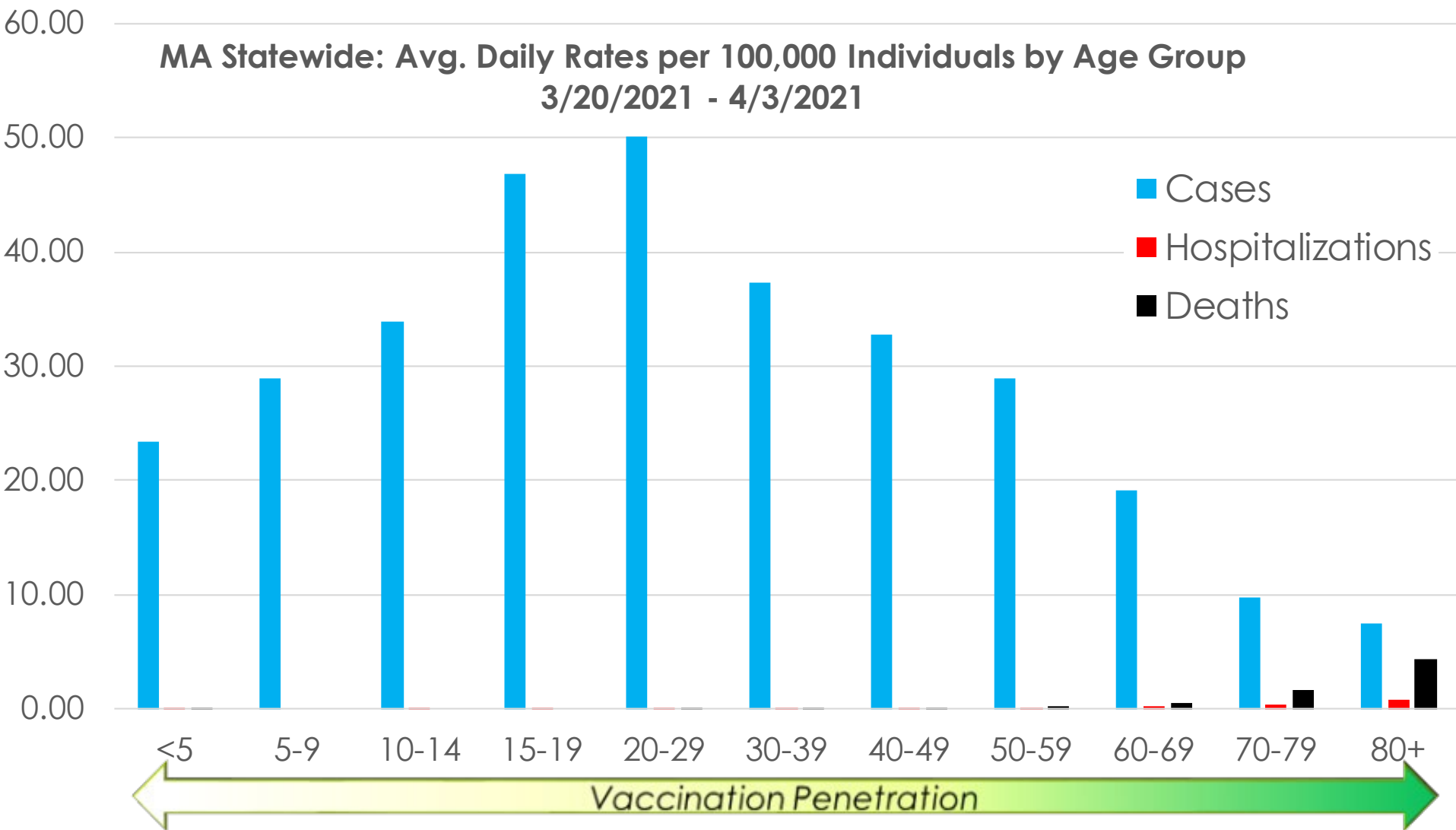
- Key to tracing diagram:

- **Blue** = confirmed COVID-19 case
- **Orange** = “sports” (including 10 high school teams, 10 club teams, 12 teams in a sports association, 3 fitness/rec centers)
- **Red** = school
- **Pink** = child care

# Since Early March

- MN Dept. of Health issued public warning in early March focused on youth sports and gyms
- Dr. Walensky at White House Task Force briefing this past week:
  - B.1.1.7 VOC is now the most common lineage in the U.S.
  - CDC is seeing increasing case numbers and hospitalization among younger people
  - Clusters being reported around the country centered on daycare centers, youth sports, extra-curriculars
  - Still no indication of significant in-school transmission when CDC-recommended precautions are taken
- Dr. Fauci on "Good Morning America" on April 6<sup>th</sup>:
  - "We're finding out that it's the team sports where kids are getting together, obviously many without masks, that are driving it, rather than in the classroom spread ...When you go back and take a look and try and track where these clusters of cases are coming from in the school, it's just that."

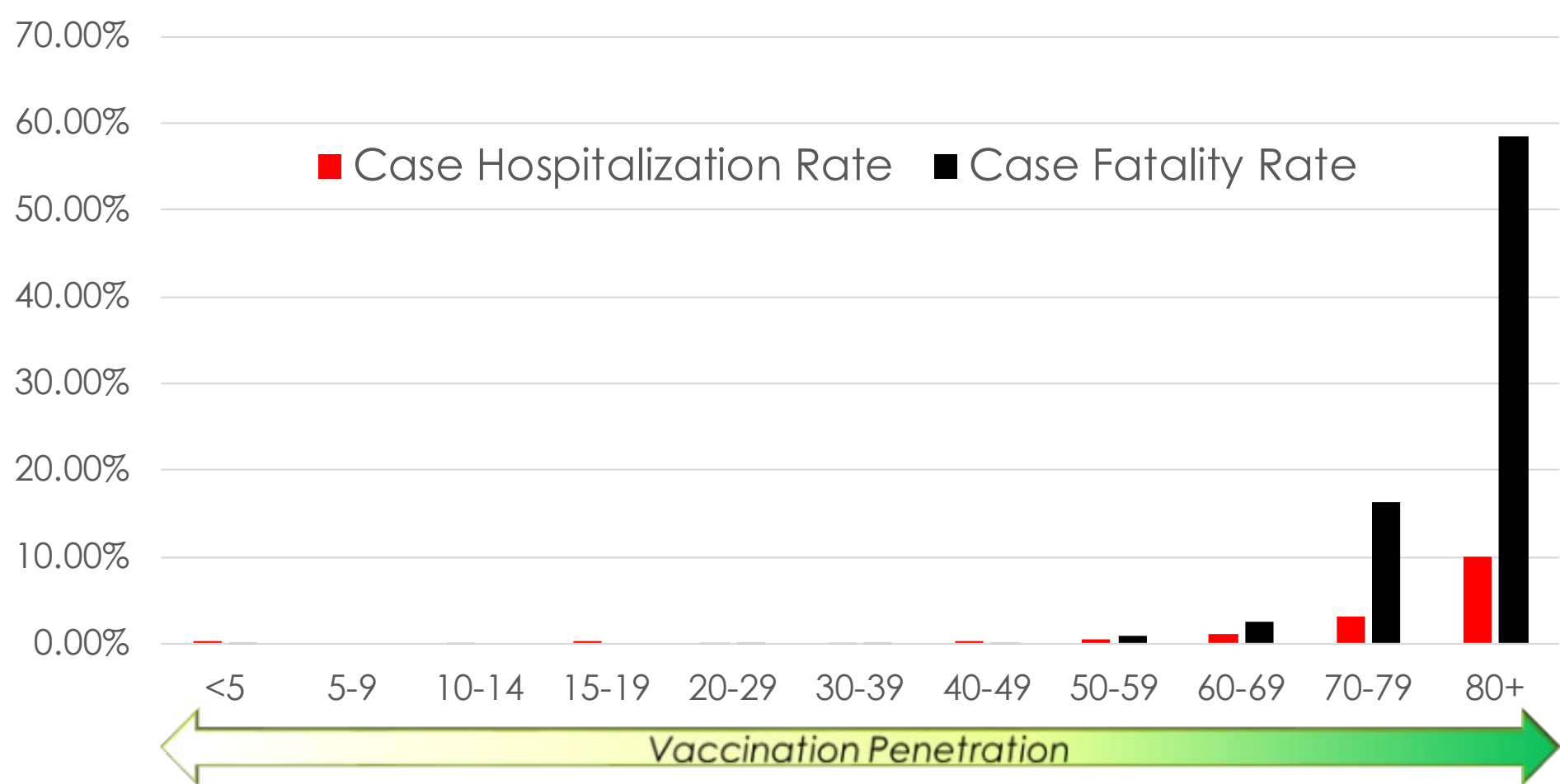
# Most Recent MA DPH Case Data By Age



Source: <https://www.mass.gov/doc/covid-19-raw-data-april-7-2021/download>

# Most Recent MA DPH Case Severity Data By Age

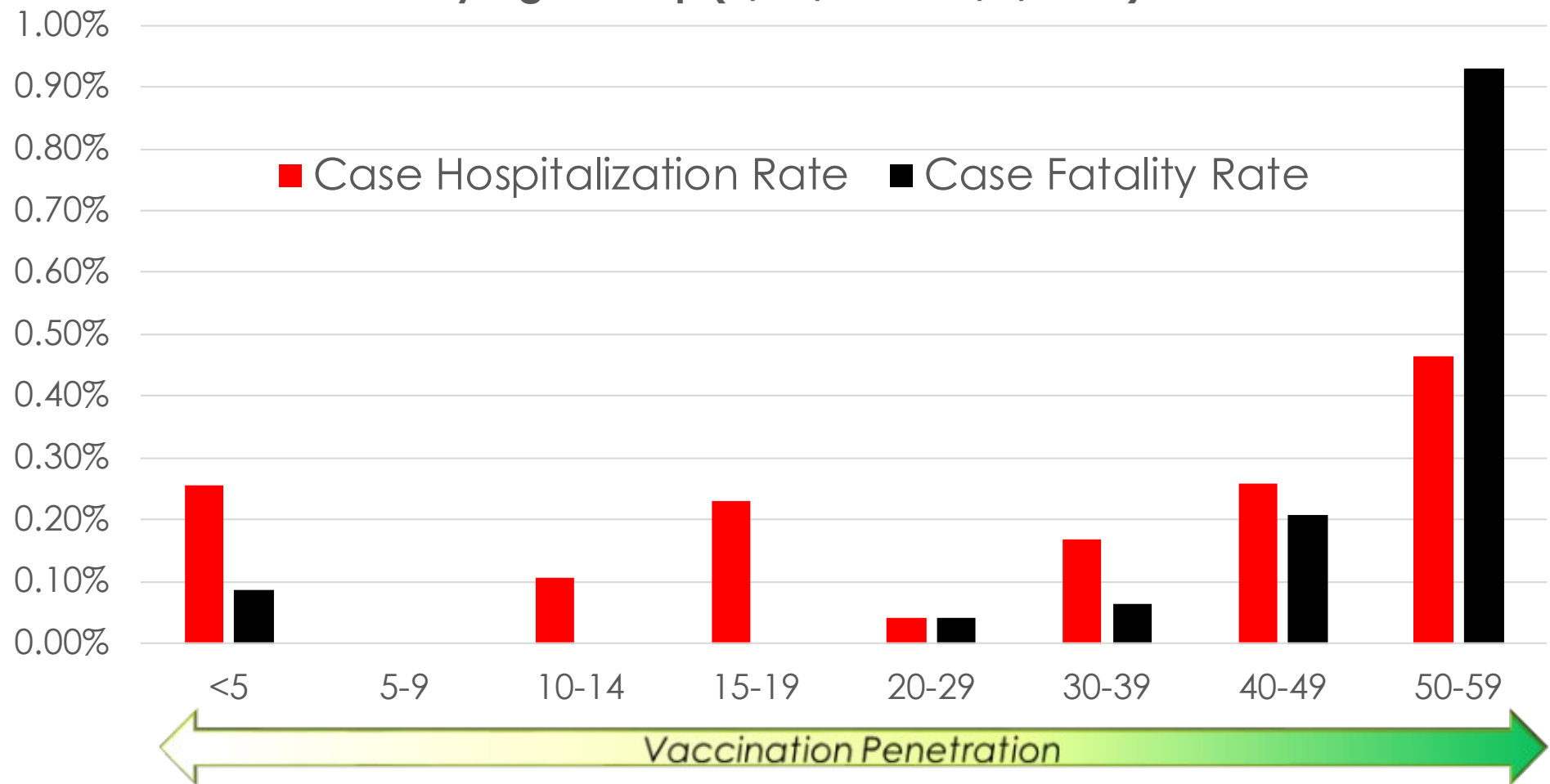
## MA Statewide: Case Hospitalization and Fatality Rates by Age Group (3/20/2021 - 4/3/2021)





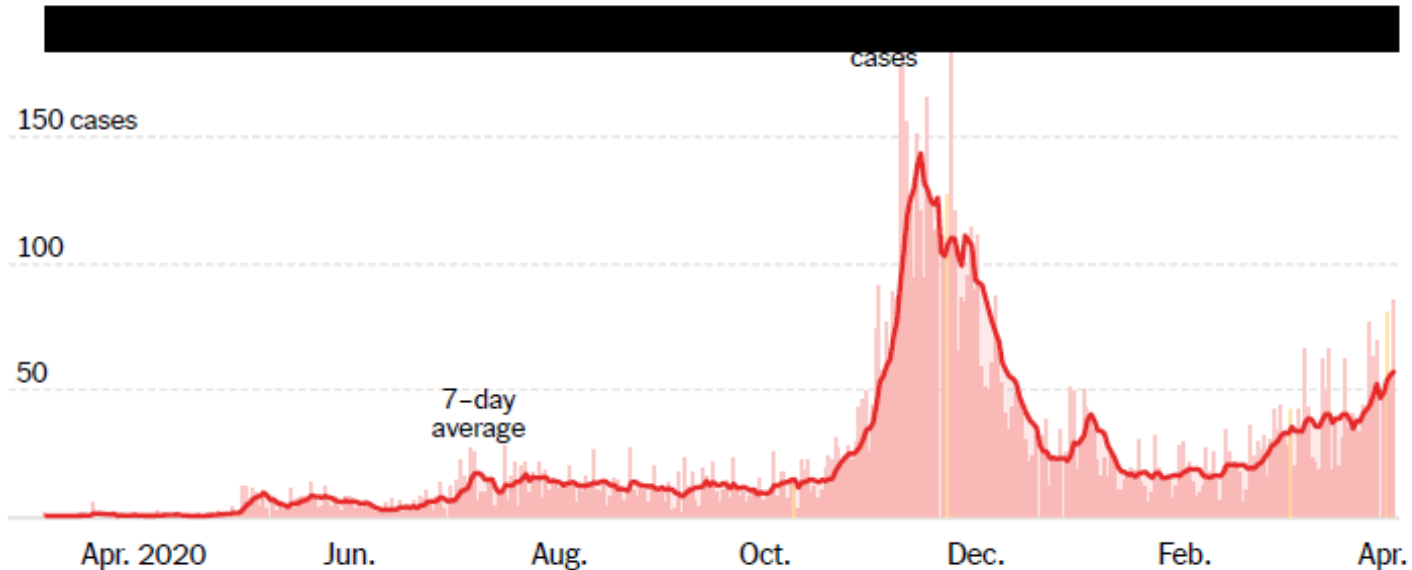
# Most Recent MA DPH Case Severity Data By Age (Excluding Ages >59 to Zoom In)

## MA Statewide: Case Hospitalization and Fatality Rates by Age Group (3/20/2021 - 4/3/2021)



# Since Early March, Carver County as a Whole Has Seen Increased Case Rates

New reported cases by day

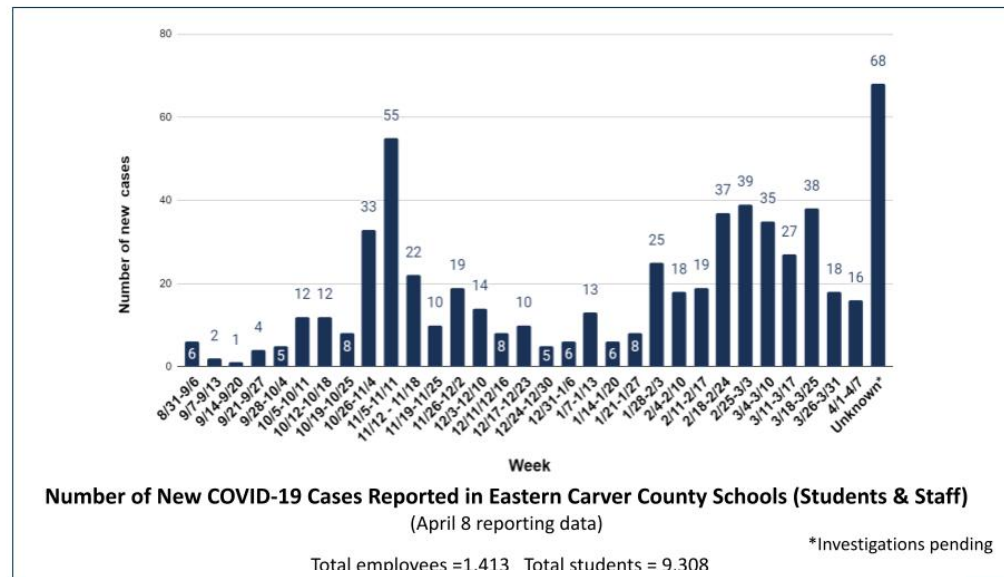


[About this data](#)

An average of **57 cases per day** were reported in Carver County, a **41 percent increase** from the average two weeks ago. Since the beginning of the pandemic, at least **1 in 11** residents have been infected, a total of **9,296 reported cases**.

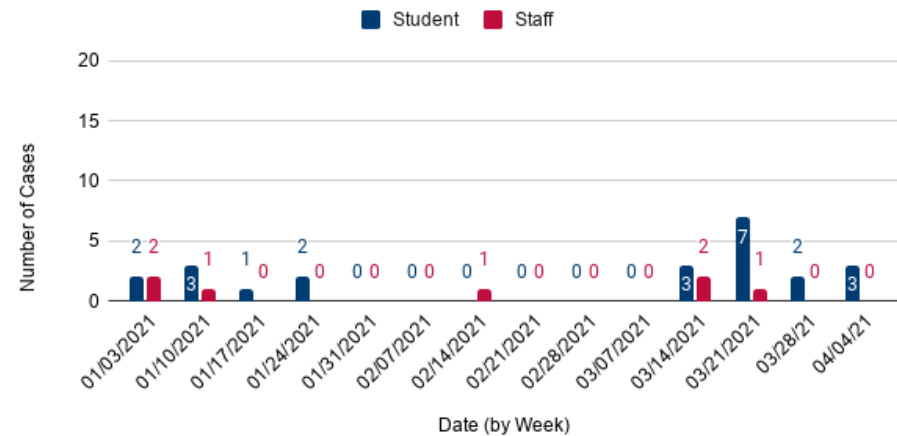
# But Has Not Fueled Significantly Different Student/Staff Case Patterns

- Eastern Carver County, MN school district case dashboard (far right bar is “unknown,” not most recent week):



- Watertown-Mayer, MN school district case dashboard:

Number of New Student Cases & Number of New Staff Cases (2021)



# UK Schools Status

	Already Back to In-Person	Still Remote
<b>England</b>	All age groups, since March 8, 2021	Students who are shielding “clinically extremely vulnerable” individuals
<b>Northern Ireland</b>	Primary school students, since March 22, 2021	Post-primary students (returning mid-April)
<b>Scotland</b>	Primary school students and some secondary students	Remaining students returning to full in-person by mid-April
<b>Wales</b>	Primary school students and some secondary students	Remaining students returning to full in-person by mid-April

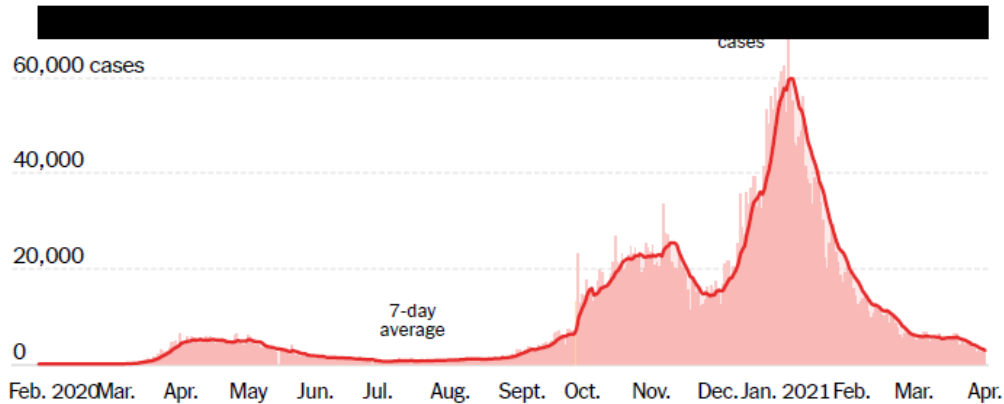
***Since March, masks have been required of adults and secondary school students when moving around school and in common areas, and also recommended in classrooms “unless social distancing can be maintained.” Not expected to be worn in PE class or outdoors.***

Sources: <https://www.bbc.com/news/education-51643556>; <https://www.bbc.com/news/education-56651135>; <https://www.gov.uk/government/publications/guidance-on-shielding-and-protecting-extremely-vulnerable-persons-from-covid-19/guidance-on-shielding-and-protecting-extremely-vulnerable-persons-from-covid-19>; [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/976213/Face\\_coverings\\_in\\_education\\_April\\_2021.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/976213/Face_coverings_in_education_April_2021.pdf)

# UK Pandemic Status

## United Kingdom Coronavirus Map and Case Count

Updated April 9, 2021, 7:41 A.M. E.T.



	TOTAL REPORTED	ON APRIL 8	14-DAY CHANGE
<b>Cases</b>	4.3 million+	3,030	-48% ↘
<b>Deaths</b>	126,980	53	-58% ↘

Day with reporting anomaly. 14-day change trends use 7-day averages.

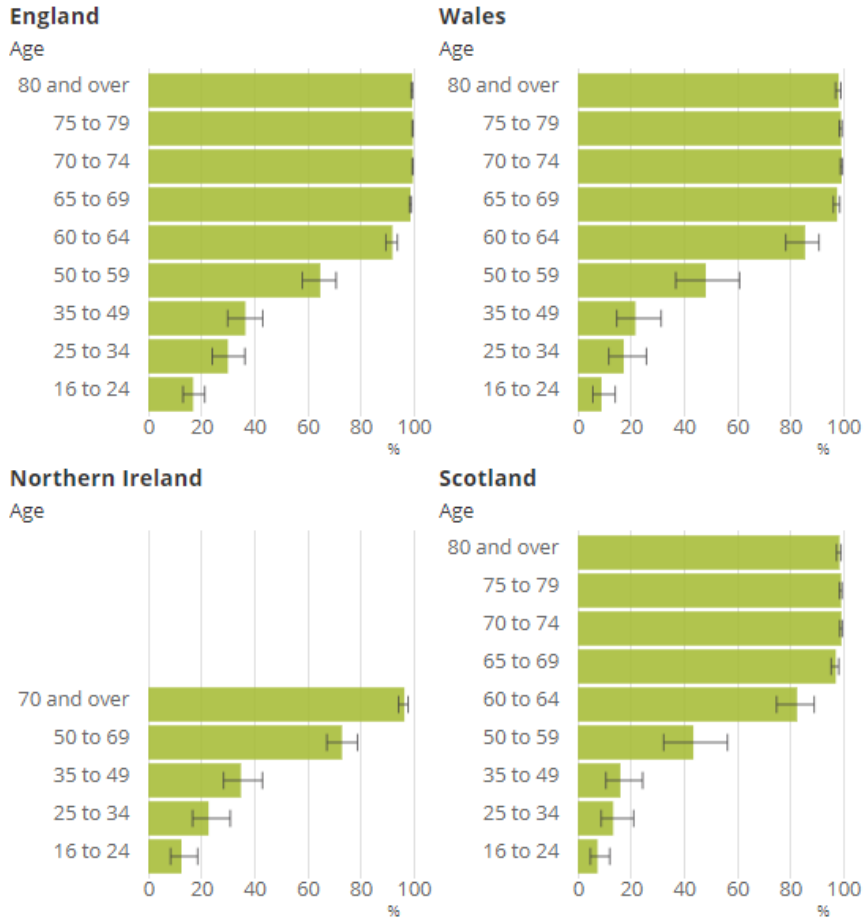
### Reported cases and deaths by country and local area

This table is sorted by places with the most cases per 100,000 residents in the last seven days. Select deaths or a different column header to sort by different data.

Cases
Deaths

	TOTAL CASES	PER 100,000	DAILY AVG. IN LAST 7 DAYS	▼ PER 100,000
+ Scotland	221,146	4,067	331	6
+ England	3,821,151	6,826	2,378	4
+ Northern Ireland	117,919	6,512	75	4
+ Wales	210,219	6,697	82	3

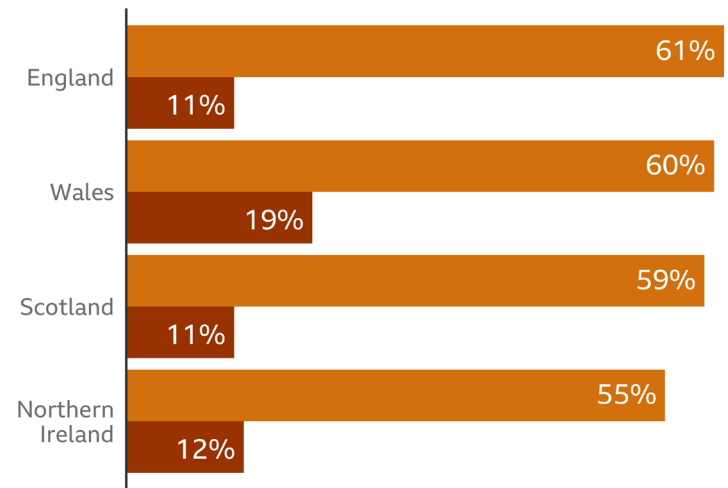
# UK Vaccination Status



Source: Office for National Statistics – Coronavirus (COVID-19) Infection Survey

## Vaccines across the UK

Percentage of people aged 18 and over who have received the **first** and **second** dose of the vaccine



Population figures used to calculate the percentages are based on estimates from the national statistical agencies

Source: UK government dashboard, data to 7 Apr

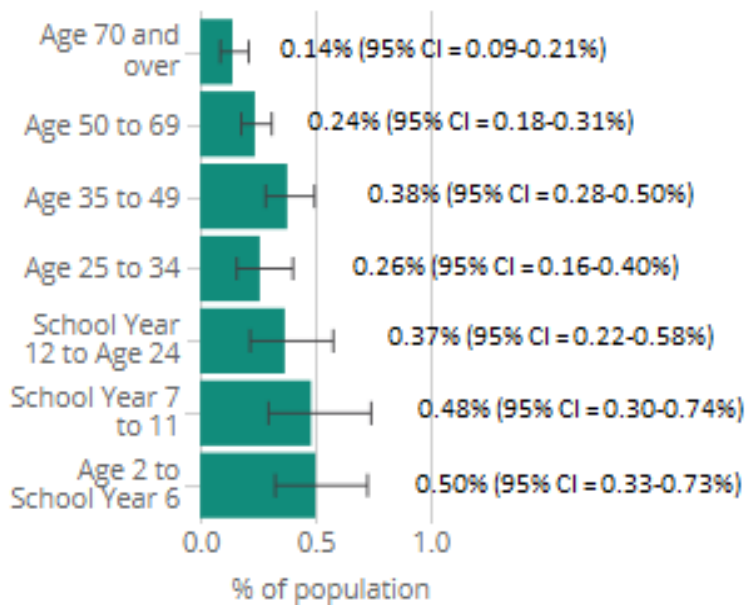


**MA residents: 23% fully vaccinated + 17% partially vaccinated (as of 4/8/21)**

# England – Data from Week Ending ~March 27, 2021 (Vast Majority of Cases are Likely B.1.1.7 VOC)

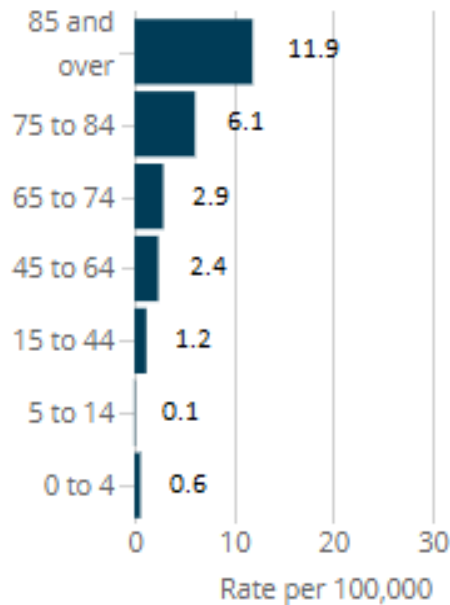
## Infections

Estimated percentage of the population testing positive for the coronavirus (COVID-19) on nose and throat swabs, week ending 3 April 2021



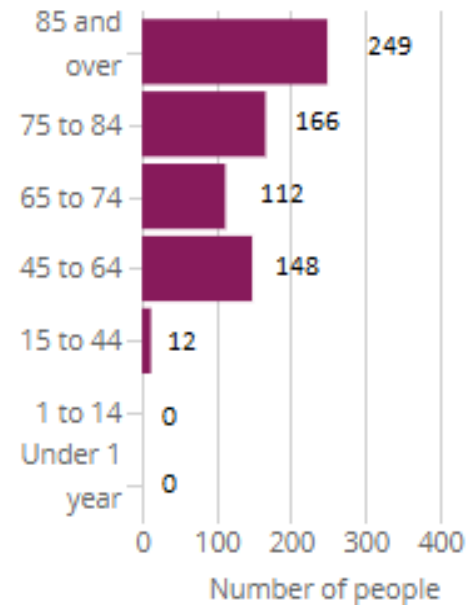
## Hospital admissions

Overall COVID-19 positive hospital admission rates per 100,000, week ending 4 April 2021



## Deaths

Number of deaths involving the coronavirus (COVID-19) by age group, England, registered week ending 26 March 2021



Source: Office for National Statistics and Public Health England

# CDC Updates on Surface (Fomite)-Based Transmission Risk (April 5, 2021)



- Quantitative microbial risk assessment (QMRA) study findings suggest that risk of SARS-CoV-2 infection via fomite transmission route is  $<1$  in 10,000 per touch of a contaminated surface.
- “When accounting for both surface survival data and real-world transmission factors, the risk of fomite transmission after a person with COVID-19 has been in an indoor space is minor after 3 days (72 hours), regardless of when it was last cleaned.”
- One QMRA study looked at prevention measures:
  - Good hand hygiene can “substantially reduce” risk of fomite transmission.
  - 1-2x/day surface disinfection “had little impact on reducing estimated risks.”



# CDC Updates on Surface (Fomite)-Based Transmission Risk (April 5, 2021)



- CDC's risk assessment: "The principal mode by which people are infected with SARS-CoV-2 (the virus that causes COVID-19) is through exposure to respiratory droplets carrying infectious virus. It is possible for people to be infected through contact with contaminated surfaces or objects (fomites), but the risk is generally considered to be low."
- CDC's updated recommendations:
  - Routine cleaning (at least 1x/day) with soap/detergent should be enough to further reduce the already low risk of fomite transmission in most cases.
  - When a COVID+ person has been indoors within the last 24 hours, high-touch surfaces within that space should additionally be disinfected.
  - Wear well-fitting masks and improve ventilation wear possible (or else avoid entering contaminated space for 24 hours).
- More specific guidance here: <https://www.cdc.gov/coronavirus/2019-ncov/community/disinfecting-building-facility.html>