PUBLIC SCHOOLS of BROOKLINE

Advisory Panel 4: Public Health, Safety & Logistics

Brookline Advisory Council on Public Health Meeting

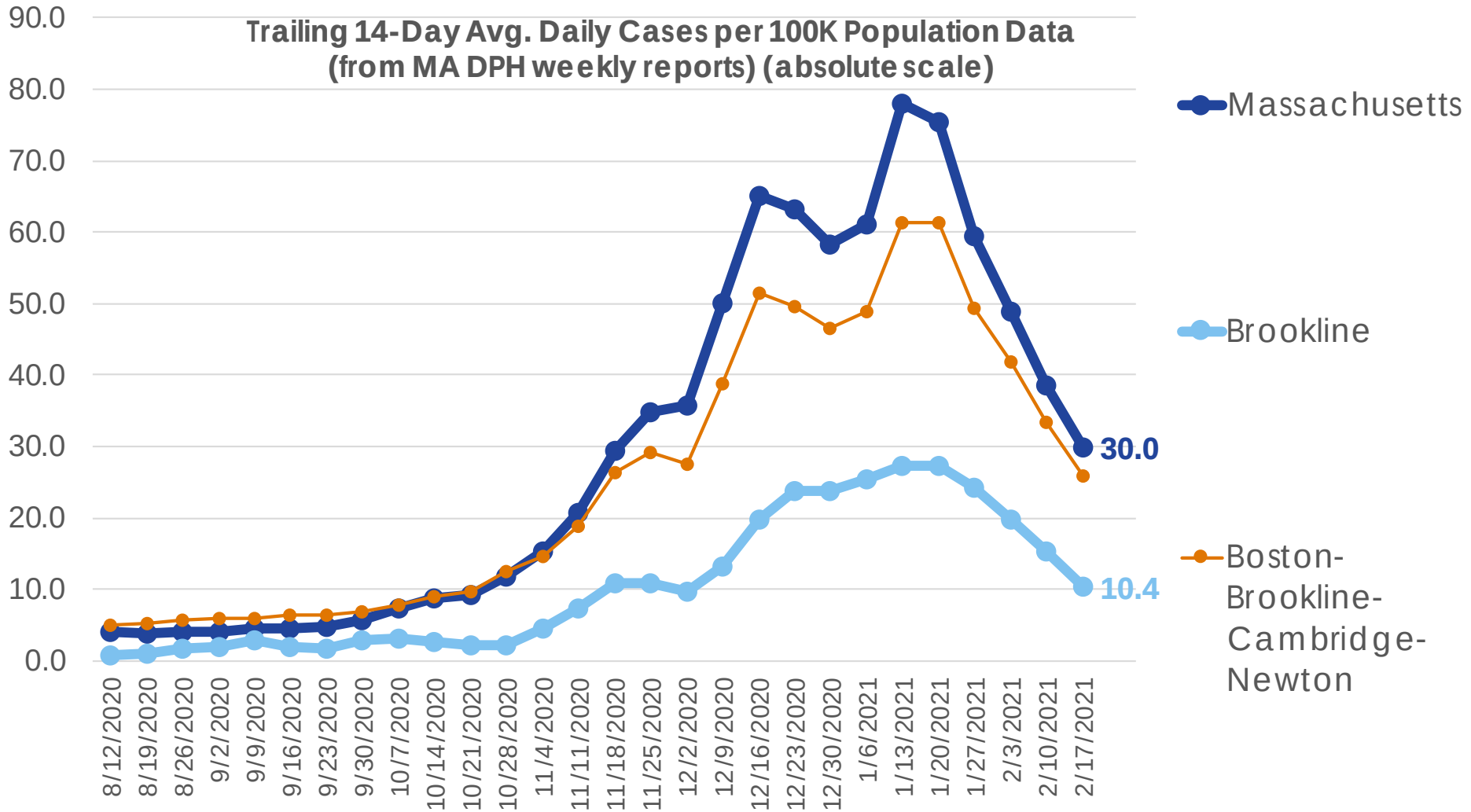
February 22, 2021

PSB Advisory Panel 4 – Who We Are

11 PSB parent volunteers with professional expertise in various areas related to public health, safety, and logistics

Meeting weekly since June to advise Supt. Marini, the School Committee, and all PSB stakeholders on the public health and safety aspects of pandemic-era school operations.

Thank you for leading Brookline's efforts to keep pandemic risk under control!



Data source: https://www.mass.gov/info-details/covid-19-response-reporting#covid-19-weekly-public-health-report-

Summary of PSB's COVID-19 Experience to Date (through 2/18/2021)

- Since the fall:
  - **90,000+ staff member-days** in buildings
  - **175,000+ student-days** in buildings

- **229 known COVID-19 cases among students and staff**
  - Nearly all believed to be community-acquired (e.g., some individuals were 100% remote)
  - 49 were present in buildings during likely contagious periods

- **Very few instances of possible in-school transmission:**
  - Only 1 likely and 2 more possible/"can't rule out" cases
  - Just 1 of 227 (0.4%) of in-school close contacts have tested positive or developed symptoms

- **Just 3 positives (0.17% positivity) out of 1,805** asymptomatic in-person staff members PCR tested between 1/15/21 (height of the winter surge) and 2/4/21

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 air changes per hour of outside or MERV-13+ filtered air; most even higher

4. **Hand hygiene and respiratory etiquette**, including handwashing/sanitizer

5. **Surface cleaning and disinfection**

6. **Contact tracing, isolation, and quarantine** through Brookline Health Dept. and PSB school nursing joint efforts

7. **Asymptomatic PCR testing:** recently added for staff; expanding soon to students

8. **Physical distancing** between individuals in school buildings

PSB's Next Steps, Based on Panel 4's Recommendations

- **Return current hybrid (2 days/week) students to full in-person school (5 days/week)**
  - Staged across grades, starting with 1st (early March) and then 2nd – 5th (late March); timing for 6th – 12th TBD

- Most class sizes still below pre-pandemic levels, but **will require relaxation of 6-foot physical distancing** requirement **between students** when **masked**
  - **Strictly maintain 6-foot distancing (or droplet barriers) when unmasked**, with enhanced ventilation
  - Try to **maintain 6-foot distancing around staff members**
  - Otherwise, goal is as much distancing as feasible and **not less than 3 feet**
  - We will continue to monitor transmission data (including virus variants) and adjust as appropriate

Rationale for Changes

1. **Available evidence suggests that 6-foot distancing provides little incremental benefit over 3-foot distancing** in masked school environment with enhanced ventilation/other controls

2. Increasing clinician and parent concerns about **widespread negative impacts of remote time on students** (e.g., isolation, myopia, lack of exercise, etc.)

3. **New (Feb. 12th) CDC guidance prioritizes full in-person instruction over strict 6-foot distancing** in communities with low/moderate incidence, like Brookline is now https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/operation-strategy.html
   - MA DESE guidance (informed by MA DPH) similarly calls for full in-person operations at Brookline's community incidence levels https://www.doe.mass.edu/covid19/on-desktop.html

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:

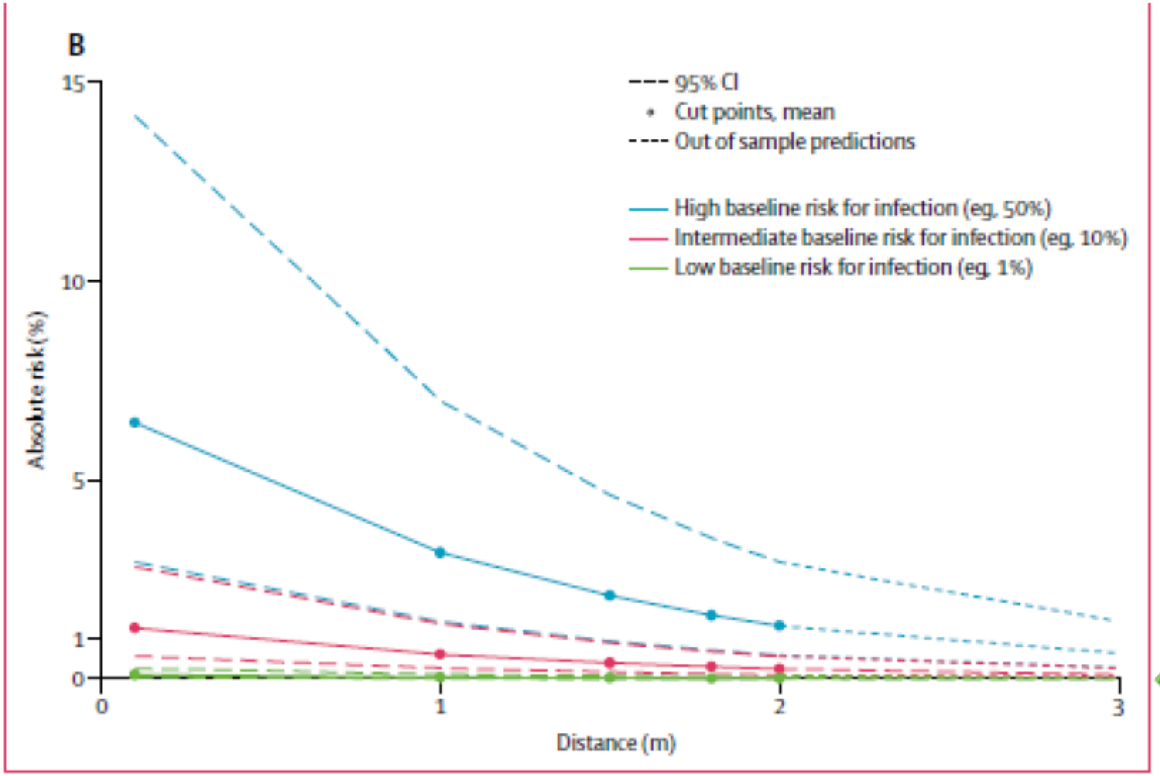
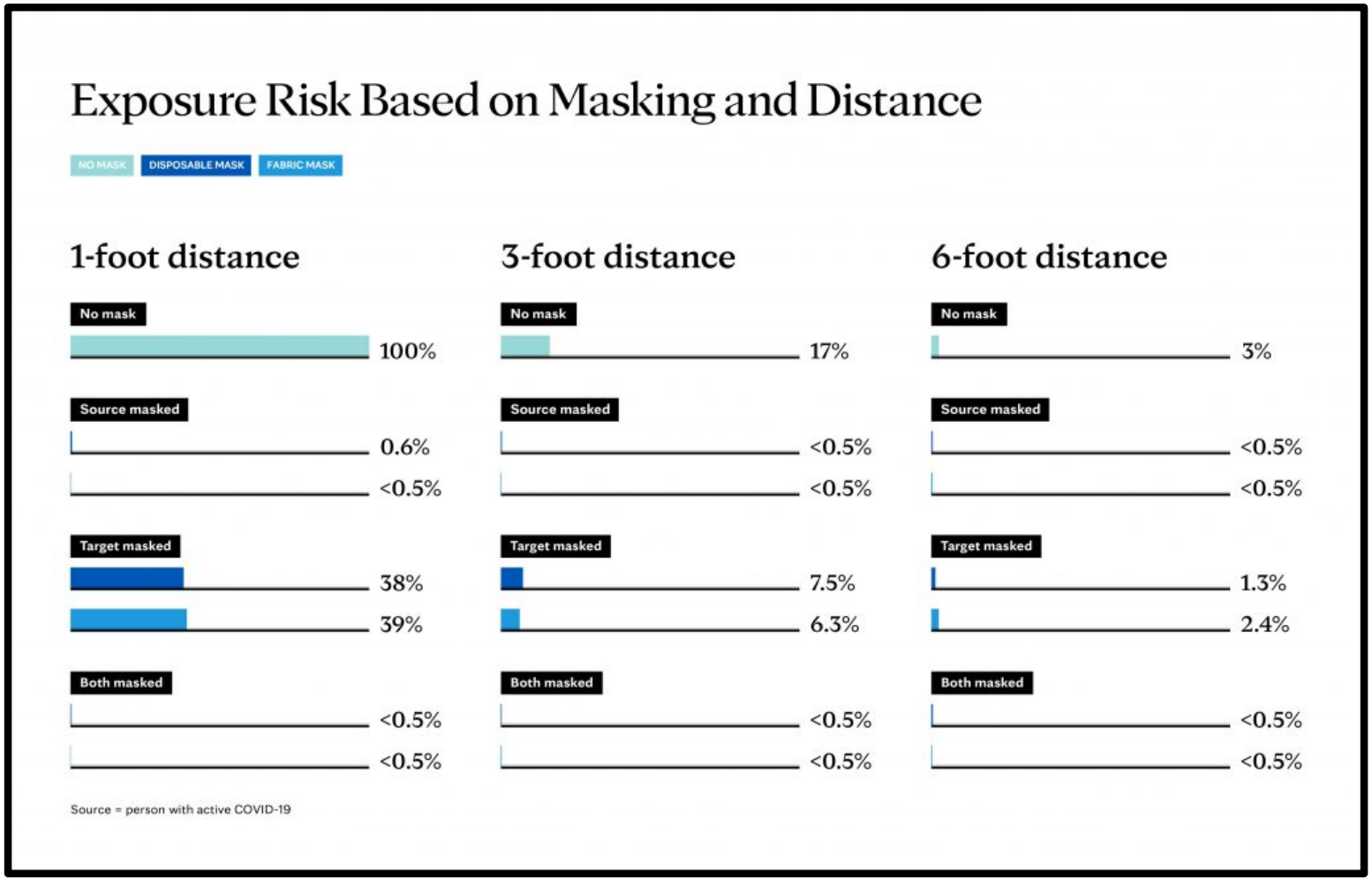


Figure 3: **Change in relative risk with increasing distance and absolute risk with increasing distance**
Meta-regression of change in relative risk with increasing distance from an infected individual (A). Absolute risk of transmission from an individual infected with SARS-CoV-2, SARS-CoV, or MERS-CoV 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.

Source: https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)31142-9/fulltext

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



Source: https://newsnetwork.mayoclinic.org/discussion/mayo-clinic-research-confirms-critical-role-of-masks-in-preventing-covid-19-infection/

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

Mask use basically removed risk differential of distance.

Source: https://newsnetwork.mayoclinic.org/discussion/mayo-clinic-research-confirms-critical-role-of-masks-in-preventing-covid-19-infection/

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 -- 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.*

Source: https://globalhealth.massgeneral.org/covidlibrary.pdf

The Balance of Public Health Risks and Benefits is Changing

Mitigating Risk of In-School SARS-CoV-2 Transmission	Mitigating Other Risks and Harms to Kids of Less In-Person School
• 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	• Increasing concern from pediatricians, mental health/ social work clinicians, and others about isolation, obesity, myopia, etc. • School Committee's Feb. 11th and Panel 4's Feb. 12th meetings focused on these concerns

Thank you for inviting us to present today!

- Panel 4 hopes for even closer collaboration with the Brookline Health Dep't and the ACPH going forward.

- Additional helpful resources:
  - PSB's science brief in support of increased in-person learning: https://www.brookline.k12.ma.us/cms/lib/MA01907509/Centricity/Domain/25/Evidence%20of%20Scientific%20Consensus_Reduction%20of%20Distancing%20Parameters_2.18.21.pdf
  - MGH's COVID-19 School and Community Resource Library: https://globalhealth.massgeneral.org/covidlibrary.pdf
  - CDC's Science Brief on Transmission of SARS-CoV-2 in K-12 Schools: https://www.cdc.gov/coronavirus/2019-ncov/more/science-and-research/transmission_k_12_schools.html
  - Panel 4's work to date can be found here: https://www.brookline.k12.ma.us/Page/2621

Appendix – For Reference As Needed

PSB Advisory Panel 4 – Who We Are

11 PSB parent volunteers with professional expertise in:

- Public health and epidemiology
- Infectious diseases
- Pediatrics
- Pulmonary/intensive care
- Occupational health
- Diagnostic testing
- Emergency preparedness and disaster response
- Health care law and compliance
- Operations

We have been meeting weekly since June to advise Supt. Marini, the School Committee, and all PSB stakeholders on the public health and safety aspects of pandemic-era school operations.

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

	Population		
Group	**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 2/17/2021 (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.

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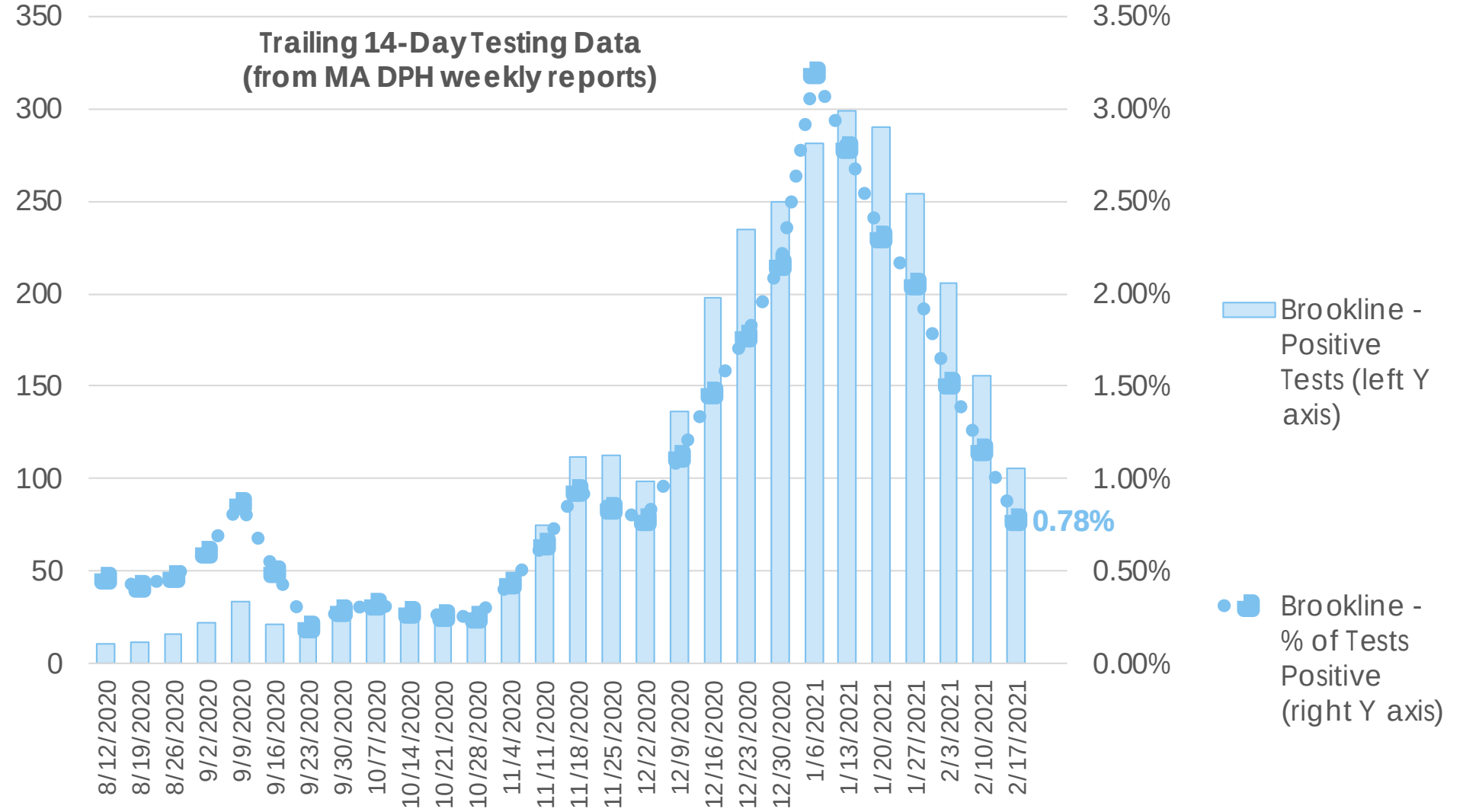
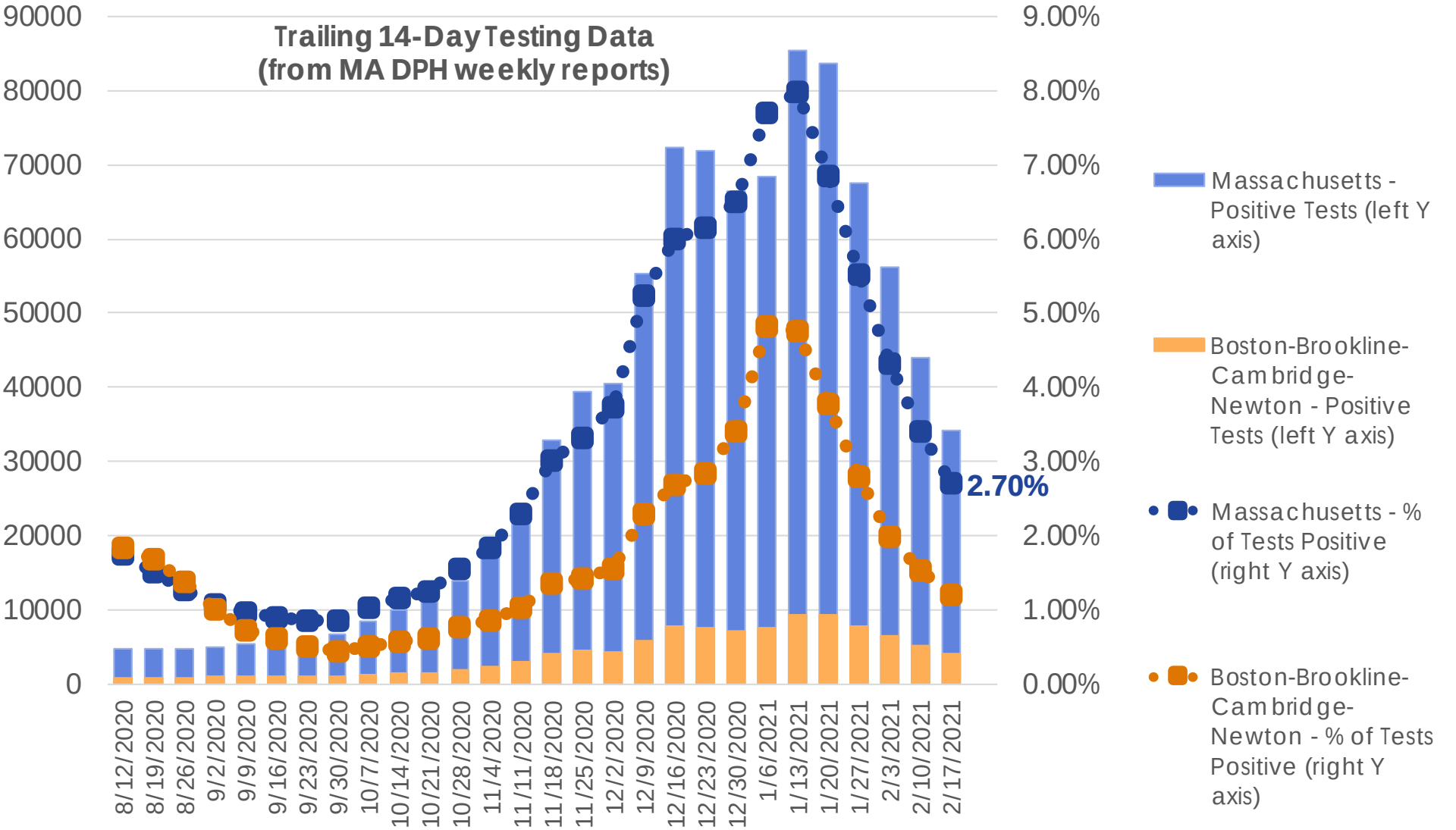
Chart source: https://www.mass.gov/info-details/covid-19-response-reporting

Trends: Test Positivity (Brookline)



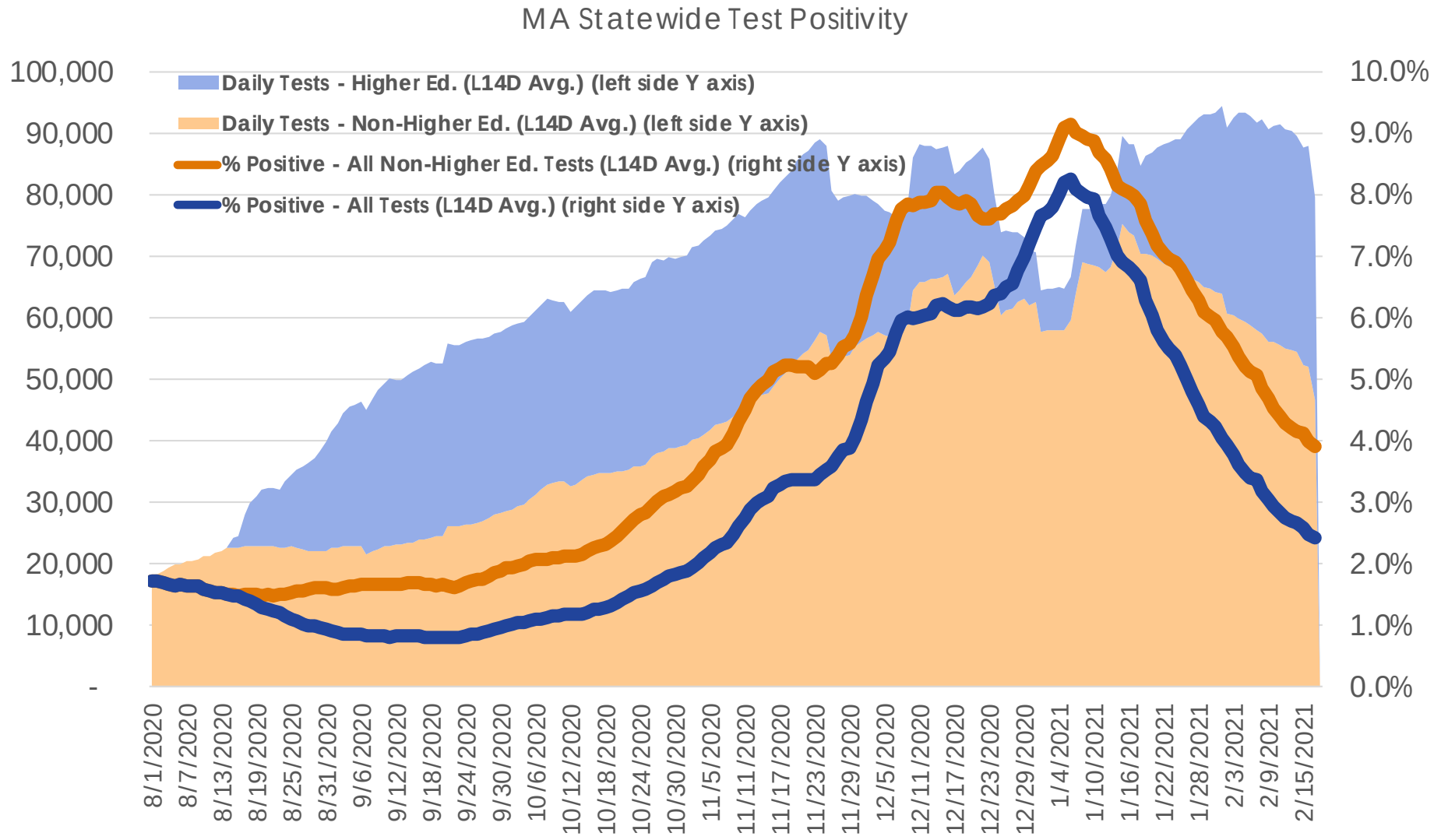
Data source: https://www.mass.gov/info-details/covid-19-response-reporting#covid-19-weekly-public-health-report-

Trends: Test Positivity (Statewide)



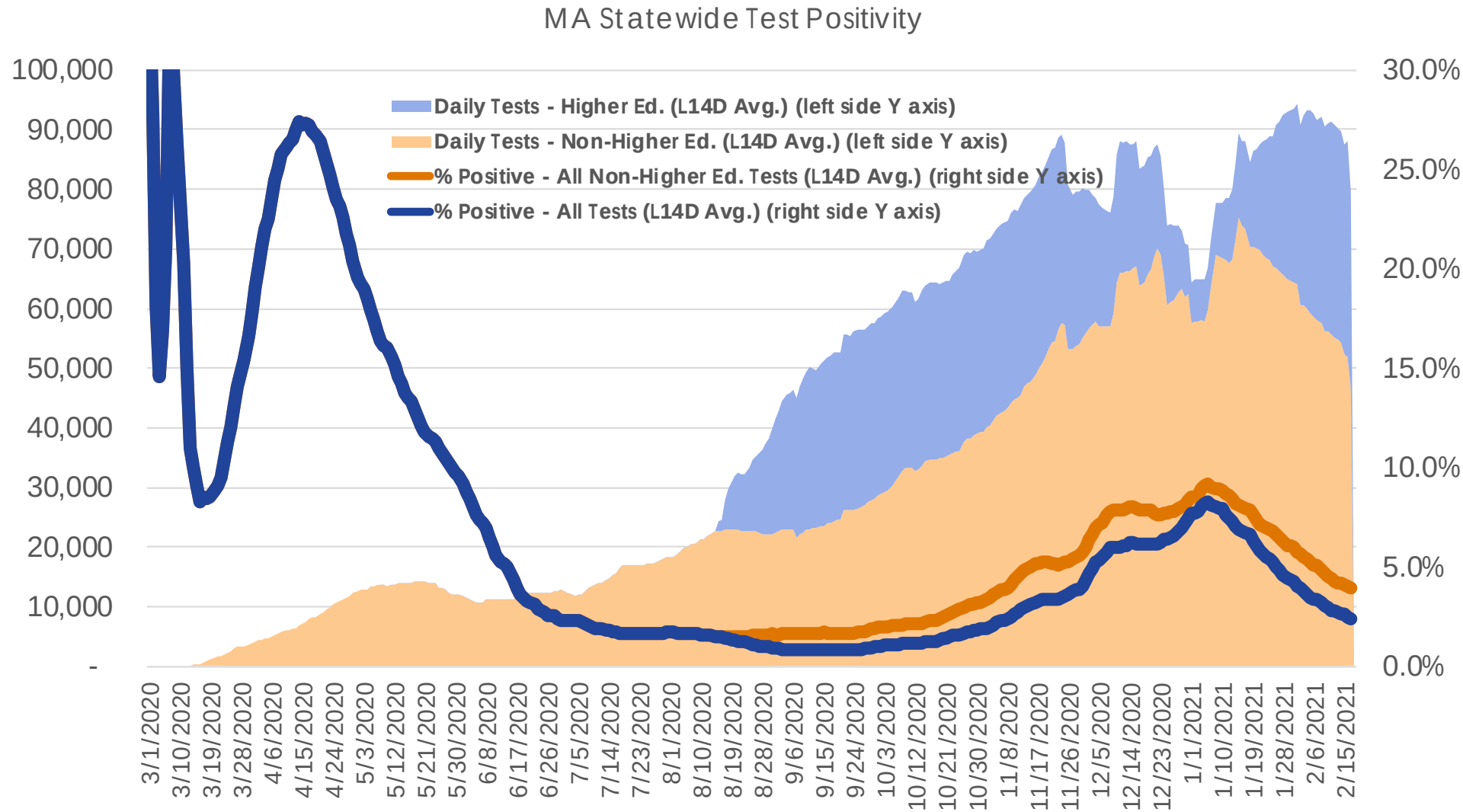
Data source: https://www.mass.gov/info-details/covid-19-response-reporting#covid-19-weekly-public-health-report-

Trends: Test Positivity and Testing Volume (Statewide)



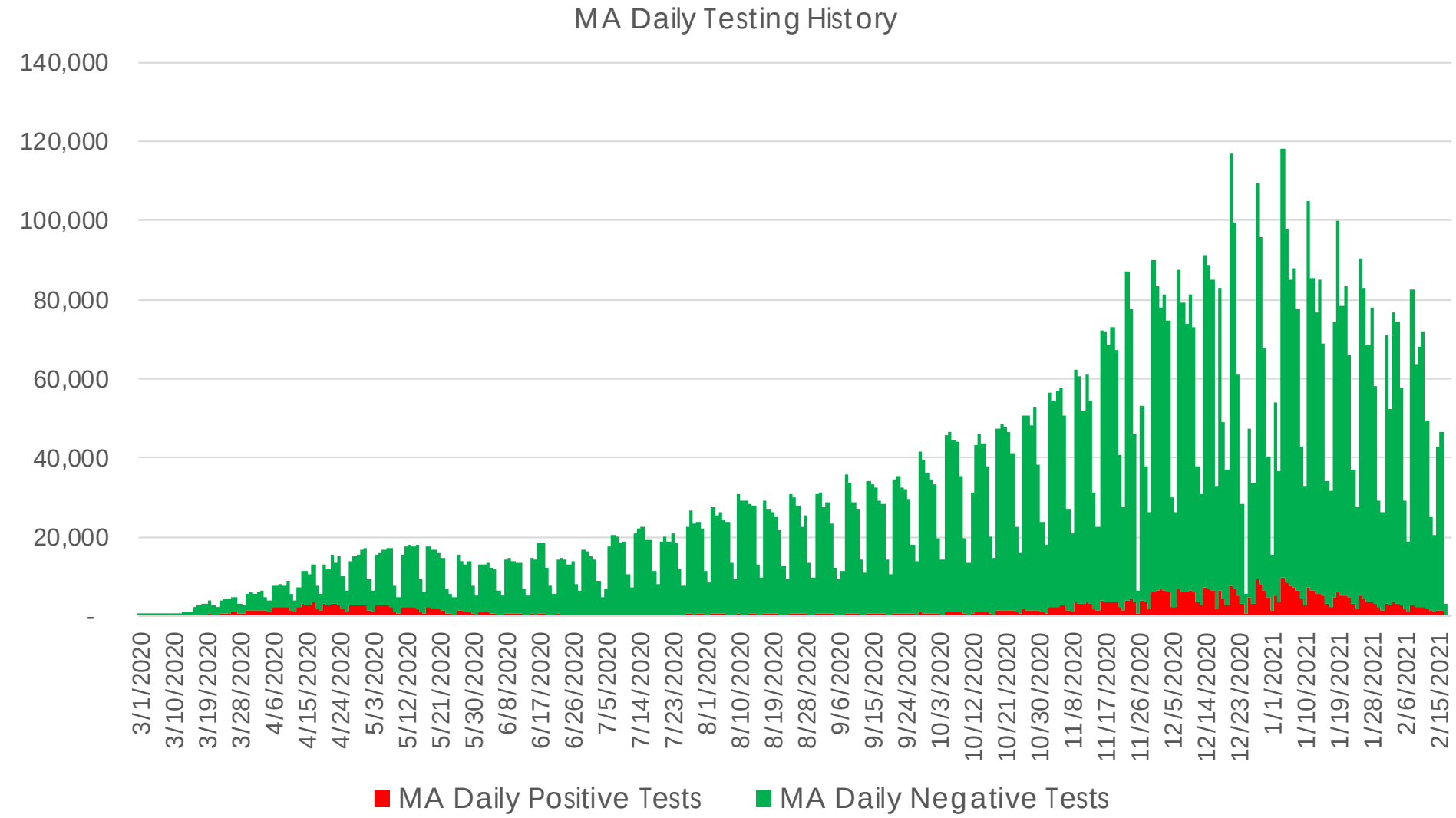
Data source: https://www.mass.gov/info-details/covid-19-response-reporting

Trends: Test Positivity and Testing Volume (Statewide)



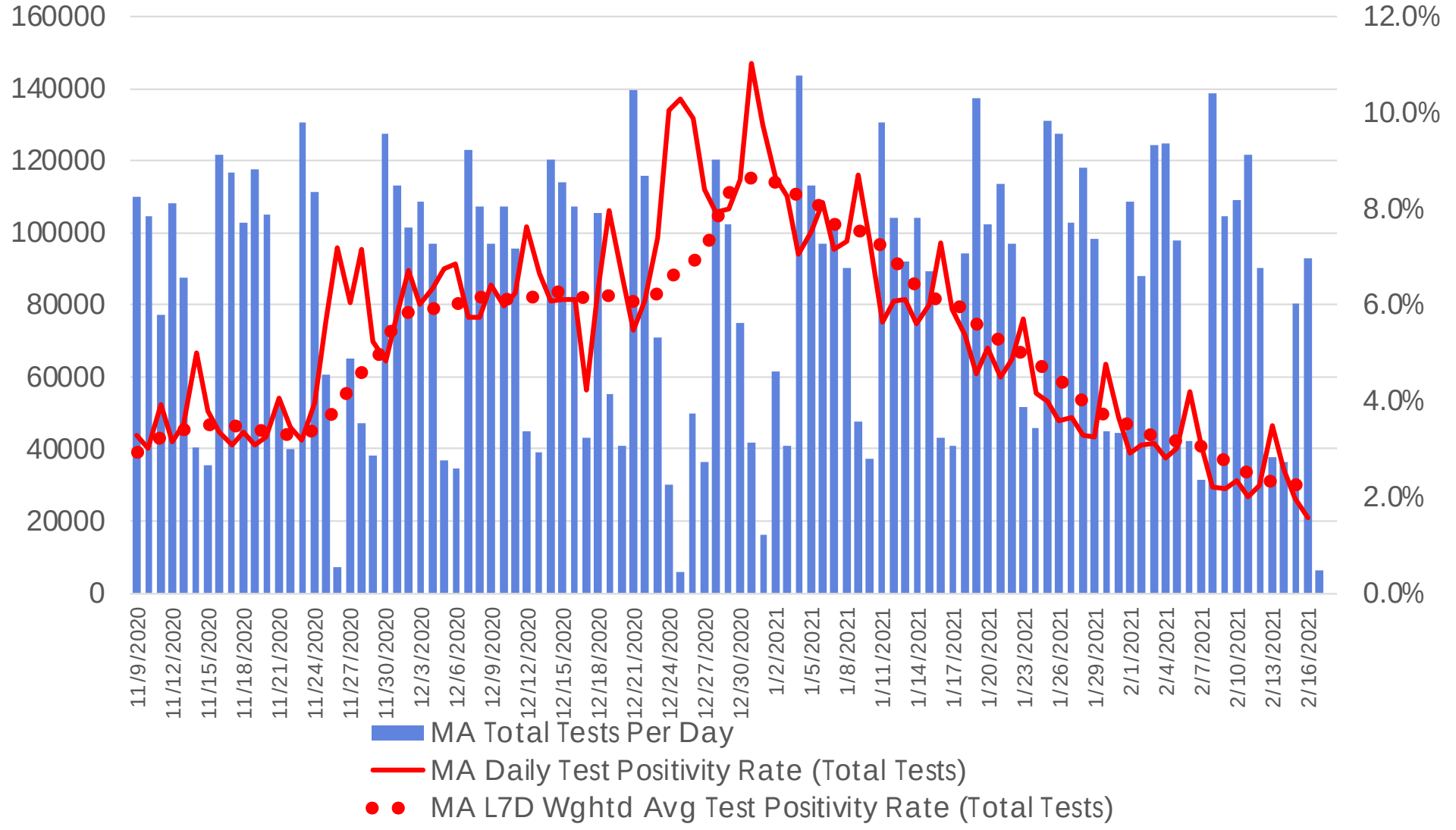
Data source: https://www.mass.gov/info-details/covid-19-response-reporting

Statewide Test Results by Day



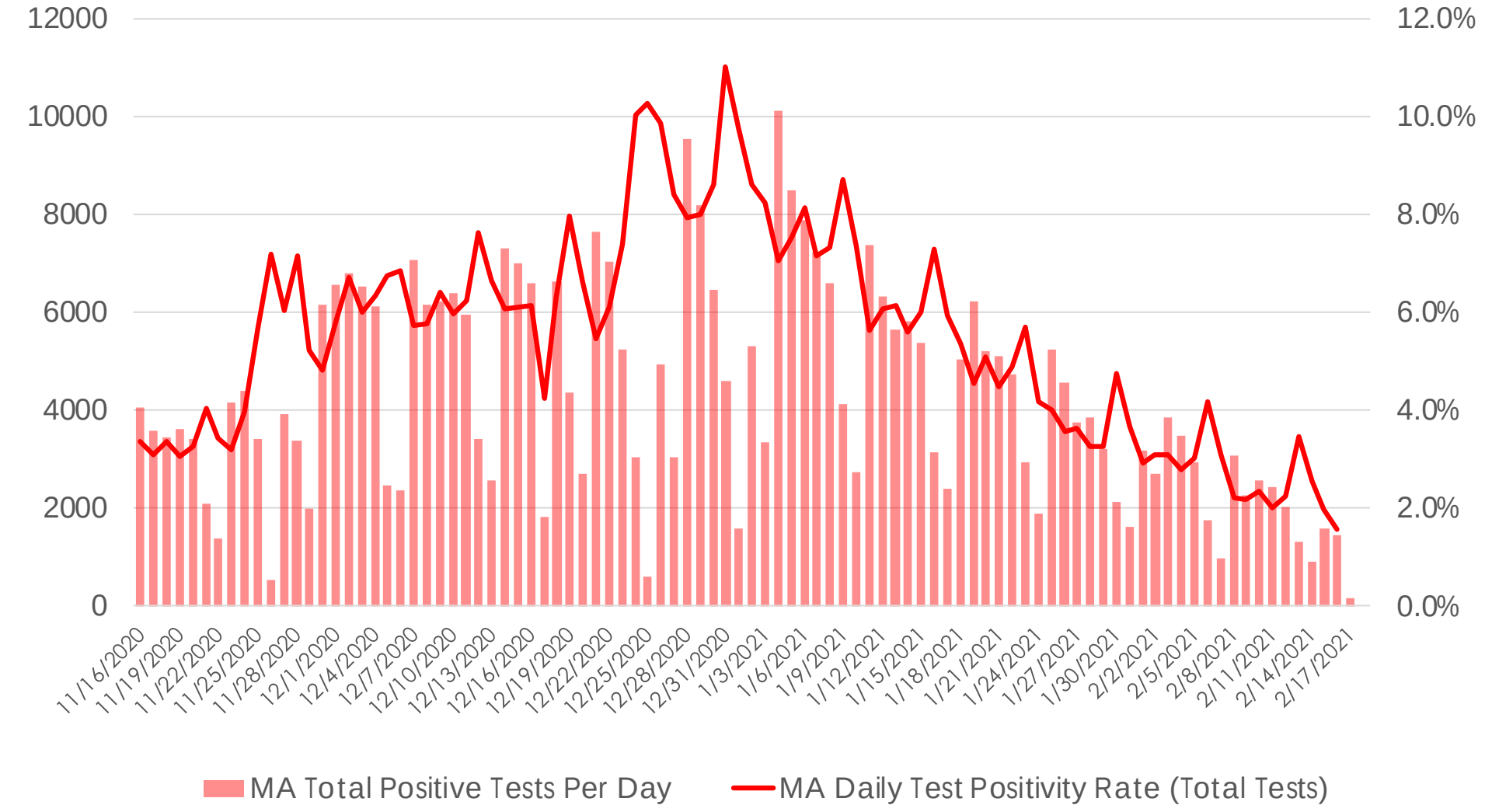
Data source: https://www.mass.gov/info-details/covid-19-response-reporting

Trends: Daily Test Volumes and Positivity (Statewide)



Data source: https://www.mass.gov/info-details/covid-19-response-reporting

Trends: Daily Positive Test Counts and Positivity (Statewide)



Data source: https://www.mass.gov/info-details/covid-19-response-reporting

Brookline in Regional Context
(as of 2/17/2021)

Municipality	Avg. Daily Cases/100k L14D	% of Tests Positive L14D	Total Tests L14D / Muni. Population
Dedham	**40.9**	**4.36%**	**15%**
Milton	**34.5**	**2.19%**	25%
Boston	**30.4**	1.45%	**34%**
Watertown	24.4	1.97%	20%
Somerville	23.1	**0.79%**	**47%**
Needham	22.7	1.56%	23%
Newton	16.2	**0.74%**	**36%**
Arlington	15.0	1.48%	**16%**
Cambridge	**14.5**	**0.53%**	**49%**
Belmont	**12.5**	1.43%	**15%**
Wellesley	**12.0**	**0.42%**	**42%**
Brookline	**10.4**	**0.78%**	21%

Data source: https://www.mass.gov/info-details/covid-19-response-reporting#covid-19-weekly-public-health-report-

Public Schools of Brookline Case Counts: Trends Over Time

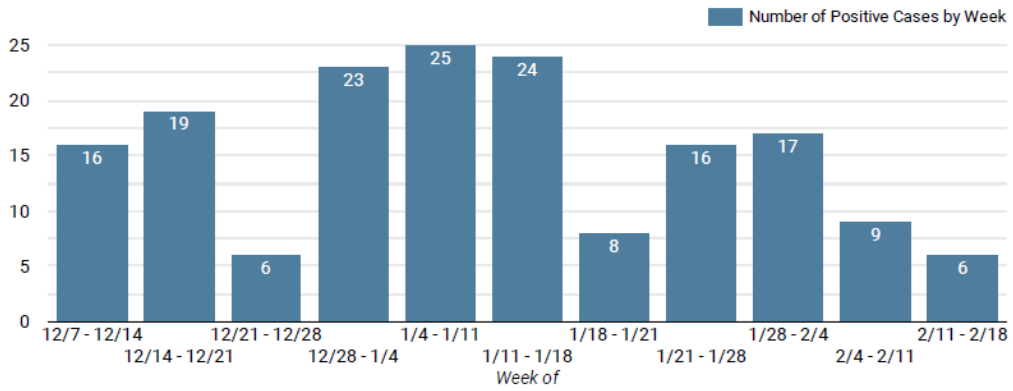
Data Last Updated: 2/19/21

PUBLIC SCHOOLS of BROOKLINE

COVID-19 CASES: DISTRICT DASHBOARD

Dashboard outlines number of positive COVID-19 cases in the PSB school community by week and learning model. For the purpose of this dataset, weeks run **Friday to Thursday.**
Source: Public Schools of Brookline School Health Services Department

Number of Positive Cases, by Week

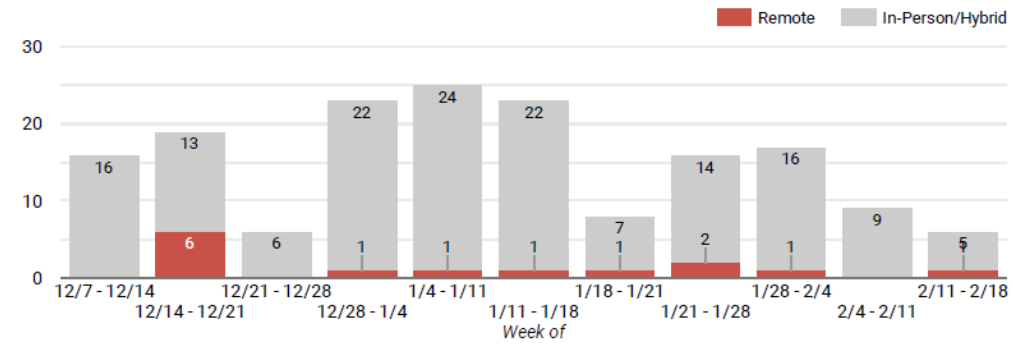


TOTAL PSB CASES TO DATE: 229

Remote: 26
Hybrid/In-Person: 203

Total among school-based students and staff: 225

Number of Positive Cases, by Week and Learning Model



TOTAL CLOSE CONTACTS*: 227 connected to 49 cases

Total positive cases with no close contacts* at school: 162

Close contacts are defined as anyone who has been within 6 feet of an positive case for at least 15 minutes during the infectious period.

Chart source: https://sites.google.com/psbma.org/psb-reopening-hub/dashboard?authuser=0

Public Schools of Brookline Case Counts: By School

Data Last Updated: 2/19/21

PUBLIC SCHOOLS of BROOKLINE

COVID-19 CASES: SCHOOL BY SCHOOL DASHBOARD

The table outlines the number of positive COVID-19 cases by week and the number of cumulative cases for the year at each school. For the purpose of this dataset, weeks run **Friday to Thursday.**
Source: Public Schools of Brookline School Health Services Department

Number of Positive Cases, by School & District Offices (Week of 2/11 - 2/18)

School/Building	Weekly Positive Cases	Cumulative Positive Cases	Close Contacts	Cases with Close Contacts
BEEP @ Beacon	0	3	-	-
BEEP @ Clark	0	2	-	-
BEEP @ Lynch	0	1	-	-
BEEP @ Putterham	0	1	-	-
Baker	0	35	-	-
Driscoll	0	16	-	-
Florida Ruffin Ridley	1	19	-	-
Heath	0	10	-	-
Lawrence	1	19	-	-
Lincoln	0	21	-	-
Pierce	0	21	-	-
Runkle	3	16	-	-
Remote Learning Academy K-8	0	10	-	-
Brookline High School	1	52	-	-
Total*	6	226	0	0

1 staff case shared between schools during week of 1.28-2.4

School/Building	Weekly Positive Cases	Cumulative Positive Cases	Close Contacts	Cases with Close Contacts
District Office	0	4	-	-

Chart source: https://sites.google.com/psbma.org/psb-reopening-hub/dashboard?authuser=0

Public Schools of Brookline Case Counts: Students (By Grade) and Staff

PUBLIC SCHOOLS of BROOKLINE

Data Last Updated: 2/19/21

COVID-19 CASES: SCHOOL BY SCHOOL DASHBOARD

The table outlines the number of positive COVID-19 cases by week and the number of cumulative cases for the year at each school. For the purpose of this dataset, weeks run **Friday to Thursday.**
Source: Public Schools of Brookline School Health Services Department

Total Number of Positive Cases, by Grade Level and Staffing (Week of 2/11 - 2/18)

Grade Level	Weekly Positive Cases	Cumulative Positive Cases
BEEP/Pre-K	0	3
Kindergarten	0	18
1st Grade	0	18
2nd Grade	0	10
3rd Grade	0	9
4th Grade	2	10
5th Grade	0	10
6th Grade	1	8
7th Grade	0	11
8th Grade	0	17
9th Grade	0	6
10th - 12th Grade	1	32
Staff (School-Based)*	2	72
Staff (District Office)	0	4
Total	6	228

1 staff case shared between schools during week of 1.28-2.4

Chart source: https://sites.google.com/psbma.org/psb-reopening-hub/dashboard?authuser=0

Public Schools of Brookline Case Counts: Asymptomatic Testing Program Results

PUBLIC SCHOOLS of BROOKLINE

Data Last Updated: 2/19/21

COVID-19 CASES: SCHOOL BY SCHOOL DASHBOARD

The table outlines the number of positive COVID-19 cases by week and the number of cumulative cases for the year at each school. For the purpose of this dataset, weeks run **Friday to Thursday.**
Source: Public Schools of Brookline School Health Services Department

Staff Asymptomatic Testing Program Results

On Friday, January 15, 2021, the Public Schools of Brookline launched the voluntary staff COVID-19 PCR testing program for all "student-facing staff". **This program is strictly for asymptomatic staff.** This program is piloted by the Broad Institute, with tests collected and brought to each school. The turn-around time for these test results is within 24 hours.

Week of	Tests Processed	Positive Results	Negative Results	TNP (Tests Not Processed)	Positvity %
1/11 - 1/15	175	1	174	5	0.57%
1/18 - 1/22	571	1	570	15	0.18%
1/25 - 1/29	612	0	612	11	0%
2/2 - 2/4	447	1	446	10	0.22%
Total	1,805	3	1,802	41	0.17%

- **1,805 total tests processed over four weeks**
  - **3 positives and 1,802 negatives**
  - **= 0.17% cumulative avg. test positivity**

Chart source: https://sites.google.com/psbma.org/psb-reopening-hub/dashboard?authuser=0

Public Schools of Brookline Case Counts: Asymptomatic Testing Program Results

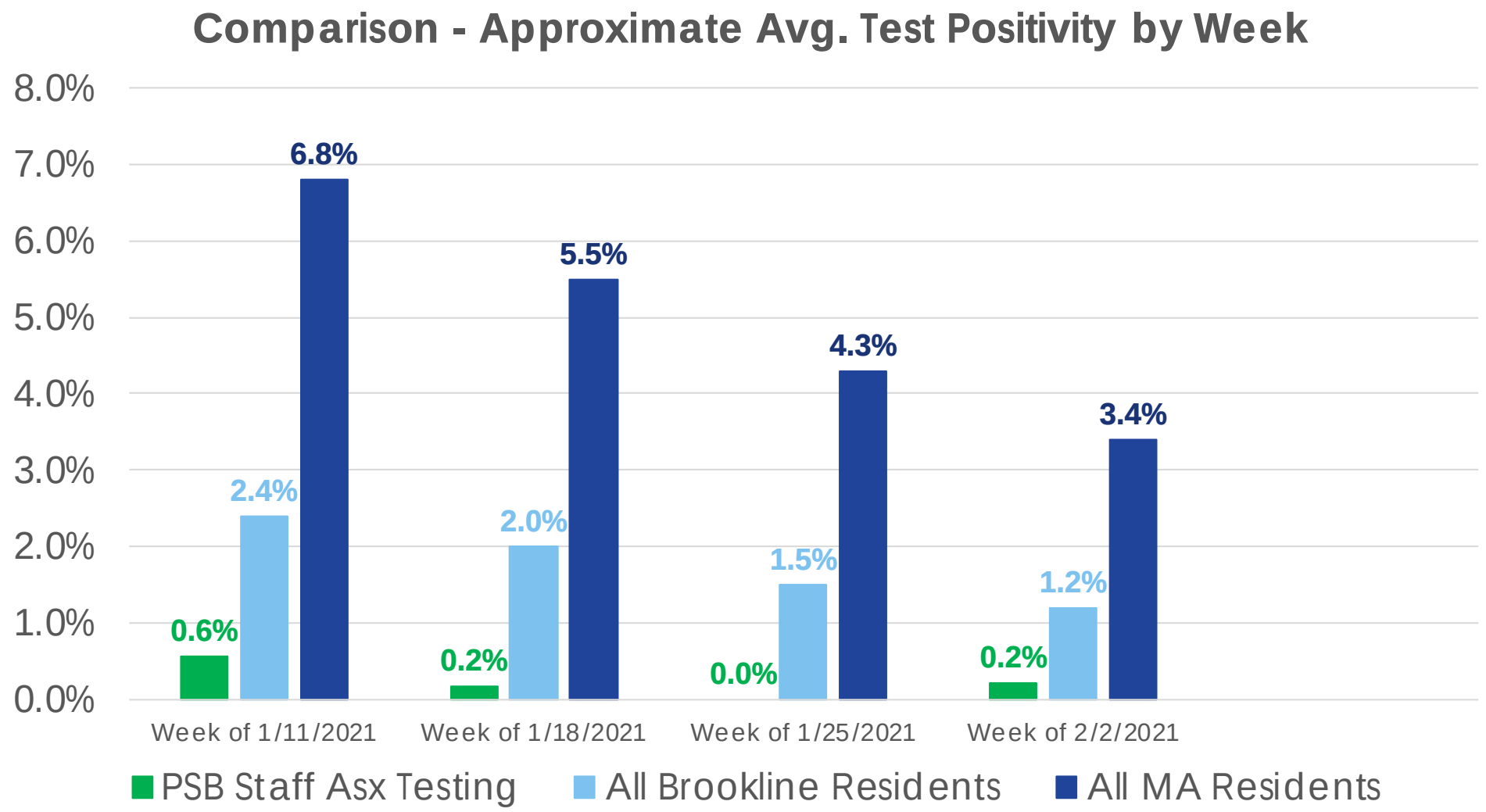


Chart source: https://sites.google.com/psbma.org/psb-reopening-hub/dashboard?authuser=0

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.

Source: https://www.cdc.gov/coronavirus/2019-ncov/downloads/community/schools-childcare/K-12-Operational-Strategy-2021-2-12.pdf

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

Table 1. CDC Indicators and Thresholds for Community Transmission of COVID-19[1]

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[2]	0-9	10-49	50-99	≥100
Percentage of NAATs that are positive during the past 7 days[3]	<5.0%	5.0%-7.9%	8.0%-9.9%	≥10.0%

[1]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.

[2]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.

[3]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.

Source: https://www.cdc.gov/coronavirus/2019-ncov/downloads/community/schools-childcare/K-12-Operational-Strategy-2021-2-12.pdf

CDC's New K-12 School Guidance: Community Transmission Levels (Brookline)

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	3 Weeks Ago	2 Weeks Ago	Prior Week	Most Recent
Approx. Brookline test positivity (per DPH weekly data)	**2.3%**	**2.1%**	**1.5%**	**1.2%**

Source: https://www.cdc.gov/coronavirus/2019-ncov/downloads/community/schools-childcare/K-12-Operational-Strategy-2021-2-12.pdf; https://www.mass.gov/info-details/covid-19-response-reporting

CDC's New K-12 School Guidance: Community Transmission Levels (Brookline)

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	3 Weeks Ago	2 Weeks Ago	Prior Week	Most Recent
Weekly Brookline case counts (per Dr. Jett @ 2/16/21 SB Mtg.)	100	81	68	39
Cases per 100,000 of population	***~165***	***~135***	***~115***	***~65***

- A comparison of MA DPH's weekly reports from last week and this week shows that Brookline's total case count rose by just **28 cases** from Feb 9th 11:59pm (1,798) to Feb 16th 11:59pm (1,826)—a **weekly rate of ~47 per 100k people (CDC's moderate/yellow zone)**

Sources: https://www.cdc.gov/coronavirus/2019-ncov/downloads/community/schools-childcare/K-12-Operational-Strategy-2021-2-12.pdf; https://www.mass.gov/info-details/covid-19-response-reporting

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

Source: https://www.cdc.gov/coronavirus/2019-ncov/downloads/community/schools-childcare/K-12-Operational-Strategy-2021-2-12.pdf

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

<table>
<tr><th>Low Transmission[1]
Blue</th><th>Moderate Transmission
Yellow</th><th>Substantial Transmission
Orange</th><th>High Transmission
Red</th></tr>
<tr><td colspan="4">All schools implement 5 key mitigation strategies: 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.
Diagnostic testing[2]: Symptomatic students, teachers, and staff and close contacts referred for diagnostic testing</td></tr>
<tr><td colspan="2" rowspan="2">K-12 schools open for full in-person instruction
Physical distancing of 6 feet or more to the greatest extent possible[3]</td><td colspan="2">Elementary schools in hybrid learning mode or reduced attendance[4]
Physical distancing of 6 feet or more is required</td></tr>
<tr><td>Middle and high schools in hybrid learning mode or reduced attendance
Physical distancing of 6 feet or more is required</td><td>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[5]</td></tr>
<tr><td>Sports and extracurricular activities occur; physical distancing of 6 feet or more to the greatest extent possible[6]</td><td>Sports and extracurricular activities occur with physical distancing of 6 feet or more required</td><td>Sports and extracurricular activities occur only if they can be held outdoors, with physical distancing of 6 feet or more</td><td>Sports and extracurricular activities are virtual only</td></tr>
</table>

Source: https://www.cdc.gov/coronavirus/2019-ncov/downloads/community/schools-childcare/K-12-Operational-Strategy-2021-2-12.pdf

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[1] Blue	Moderate Transmission Yellow	Substantial Transmission Orange	High Transmission Red
All schools implement 5 key mitigation strategies: 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. **Diagnostic testing[2]:** Symptomatic students, teachers, and staff and close contacts referred for diagnostic testing			
Screening Testing[3]			
Routine screening testing of teachers and staff offered once per week			
No screening testing for students	Routine screening testing of students offered once per week[4]		
School Status			
K-12 schools open for full in-person instruction Physical distancing of 6 feet or more to the greatest extent possible[5]		K-12 schools in hybrid learning mode or reduced attendance[6] Physical distancing of 6 feet or more is required	
Sports and extracurricular activities occur; physical distancing of 6 feet or more to the greatest extent possible[7]	Sports and extracurricular activities occur with physical distancing of 6 feet or more required	Sports and extracurricular activities occur only if they can be held outdoors, with physical distancing of 6 feet or more	Sports and extracurricular activities are virtual only

Source: https://www.cdc.gov/coronavirus/2019-ncov/downloads/community/schools-childcare/K-12-Operational-Strategy-2021-2-12.pdf

CDC's New K-12 School Guidance: CDC Director Dr. Rochelle Walensky on Distancing

From 2/12/2021 press conference announcing CDC's new guidance:

- *"With regard to transmission and six feet, you know, in these lower areas of transmission…low to moderate transmission, we are worried that people will not be able to get back to full in-person learning if we mandate six feet of physical distancing."*

- *"We believe that, at such low levels of transmission, that schools could be kept safe simply with universal masking and all the other three mitigation strategies while doing their best to limit interaction. So, we believe that, at those very low levels of transmission, that schools could be open for full, in-person learning while trying to do six feet distancing, recognizing that, in some situations, that might not be possible."*

Source: https://www.cdc.gov/media/releases/2021/t0212-cdc-update-covid-19.html

CDC's New K-12 School Guidance: A Sampling of Expert Reactions

- Dr. Joe Allen at (Healthy Buildings Program Director at Harvard / Chan School of Public Health) and Dr. Helen Jenkins (Associate Professor of Biostatistics at BU School of Public Health): *"[C]ommunity-spread metrics pose major problems. We're part of a group of faculty and researchers at Harvard, Boston University and Brown University that released a report in July using such metrics as indicators for when to open schools. We changed our position on this in light of overwhelming scientific evidence that transmission within schools can be kept low regardless of community spread, so long as good mitigation measures are in place. It's also clear that community spread is not an indicator of within-school transmission."*

- Dr. Jennifer Nuzzo, epidemiologist at the Johns Hopkins Bloomberg School of Public Health: *"A lot of communities have pursued hybrid approaches or, in some cases, just not opened, because they haven't been able to figure out that spacing issue. The whole attempt to bring kids back to school doesn't have to break down over that."*

Source: https://www.nytimes.com/2021/02/12/health/school-reopenings-cdc.html; https://www.washingtonpost.com/opinions/2021/02/12/cdc-report-schools-problems/

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.*

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-feet 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

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.[20] 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-feet 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."

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 1m 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'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 <u>not</u> a bright line and should <u>not</u> 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.

CDC Guidance on Isolation Length (for Positive Cases)

Discontinuing Home Isolation for Persons with COVID-19:

Centers for Disease Control and Prevention

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.

Source: https://www.cdc.gov/coronavirus/2019-ncov/hcp/disposition-in-home-patients.html; https://www.cdc.gov/coronavirus/2019-ncov/hcp/duration-isolation.html#:~:text=For%20most%20persons%20with%20COVID,with%20improvement%20of%20other%20symptoms.

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

Centers for Disease Control and Prevention

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.

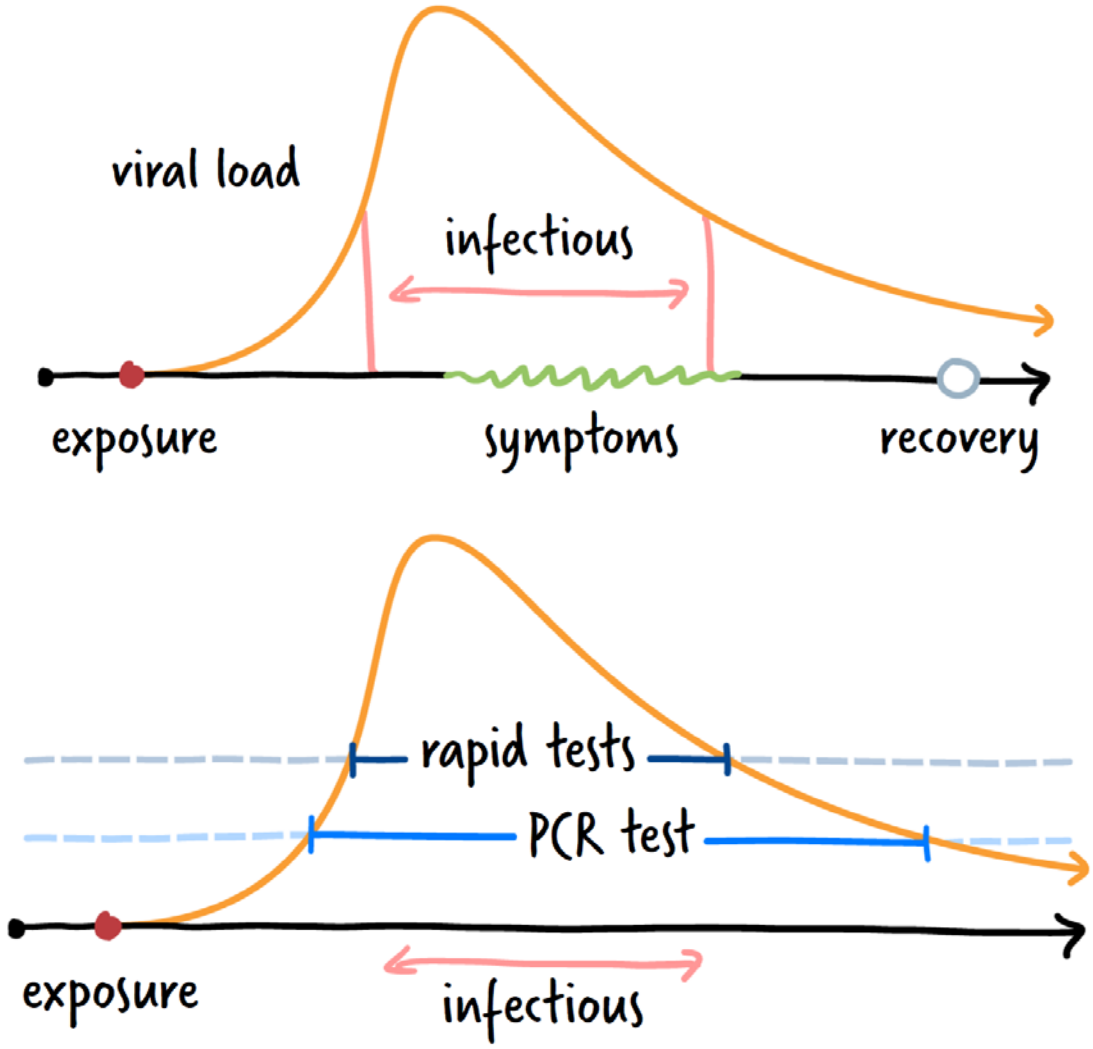
- Quarantine can end after Day 10 without testing and if no symptoms have been reported during daily monitoring.
  - With this strategy, residual post-quarantine transmission risk is estimated to be about 1% with an upper limit of about 10%.
- *When diagnostic testing resources are sufficient and available (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.

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

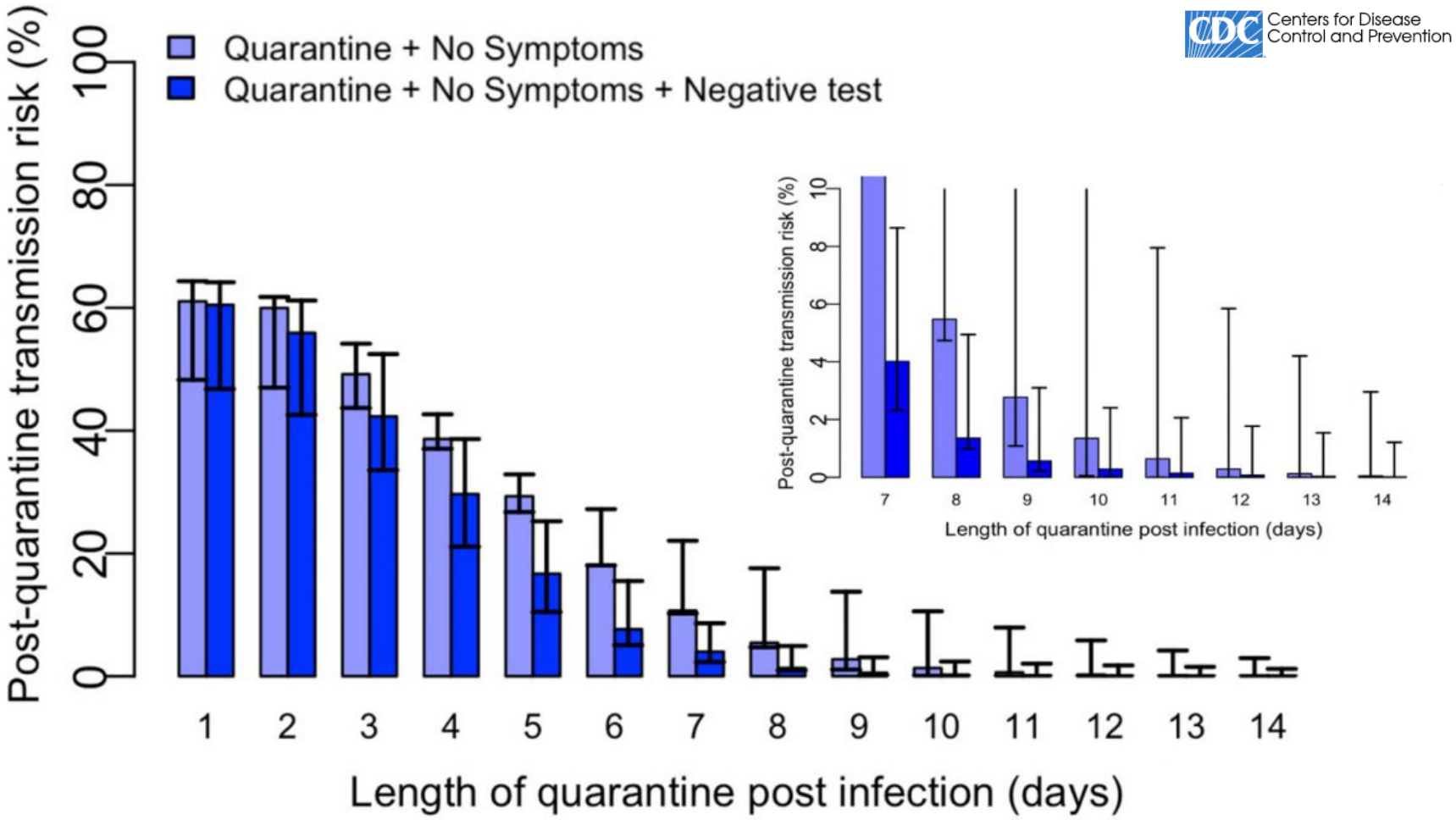
SARS-CoV-2 Infection Timeline

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



Sources: https://www.nytimes.com/interactive/2020/10/02/science/charting-a-coronavirus-infection.html

CDC Guidance on Quarantine Length (Close Contacts)



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

CDC Guidance on Quarantine Length (Close Contacts)

Centers for Disease Control and Prevention

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

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

MA DPH Guidance on Quarantine Length

Mass.gov

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.

Source: https://www.mass.gov/info-details/covid-19-isolation-and-quarantine-information

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.

Sourcehttps://www.doe.mass.edu/covid19/on-desktop/protocols/

MA DESE Guidance on Quarantine Length, ctd.

<u>At least 10 days</u>, 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.

Source: https://www.doe.mass.edu/covid19/on-desktop/protocols/

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.

Source: https://www.doe.mass.edu/covid19/on-desktop/protocols/

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

Source https://www.doe.mass.edu/covid19/on-desktop/protocols/

PSB 2020-2021 Calendar and Quarantine Impacts

Grade(s)	Model and Start Date	Approx. In-Person Days Through 2/5/21	Approx. In-Person Days 2/5/21 to Year-End
BEEP and K	Full-time starting 9/16/20	85	85
Grades 1-2	Hybrid starting week of 10/19/20	25	34 – 85
Grades 3-9	Hybrid starting week of 10/26/20	25	34 – 85
Grades 10-12	Hybrid starting 11/9/20	20	34 – 85

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

Source: https://www.brookline.k12.ma.us/cms/lib/MA01907509/Centricity/Domain/4/2020-2021%20District%20Calendar_updated_1.4.21.pdf