

New York City Public Schools: Supporting School Reopening With a Focus on Testing and Tracing

Adam K. Edgerton, Naomi Ondrasek, Natalie Truong, and Desiree O’Neal

Abstract

Since the COVID-19 pandemic emerged in March 2020, districts across the nation have faced the difficult task of reopening school sites safely for in-person instruction and keeping them open as community infection rates have risen and fallen. It is useful to learn from the efforts of districts that have been able to reopen schools—and keep them open—using multilayered mitigation strategies that reduce the risk of in-school transmission. This brief describes reopening efforts in our nation’s largest district, New York City, which has, with some brief interruptions, maintained in-person schooling for hundreds of thousands of elementary-age students since late September 2020. Strict implementation of mitigation strategies—including masking, adequate ventilation, physical distancing, symptom screening, and testing and contact tracing—have made this work possible. This brief is part of an effort at the Learning Policy Institute to disseminate key public health research and reopening strategies to educators and policymakers.

This brief and other resources for reopening schools can be found at <https://reopening.learningpolicyinstitute.org/>.

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Since March 2020, New York City (NYC) has transitioned from becoming a pandemic *hot spot* to becoming the first large U.S. city to *reopen all of its schools*. This profile describes how the NYC Department of Education (NYCDOE) managed the school opening process, including how the department was able to bring students back by implementing multilayered mitigation strategies, which have included significant investments in testing and tracing capabilities. Drawing from the department’s documents and websites, as well as media coverage, we describe how NYC public schools organized and accomplished this work. Where applicable, we provide links to resources that may be useful for policymakers and educators navigating their own school reopening plans.

The COVID-19 Context in New York City

On March 15, 2020, as students were sent home, department officials began rapidly training teachers on remote learning models to prepare for the *closure* of all school buildings by March 23. Several dozen buildings were left open as “learning centers” to support the children of health care employees and other essential workers. Though there was an optimistic reopening date set for April 20, city officials later acknowledged that they would not be able to reopen before summer break. Instead, New York became the nation’s COVID-19 *epicenter* during March and April; by March 22, it accounted for 5% of all cases *in the world*. But *scientists* credit a spring and summer of community-wide lockdowns, combined with mandated mask wearing, with the city’s ability to bring the outbreak under control.

Background on New York City Public Schools

New York City is a densely populated, racially diverse urban center, home to *8.3 million people* as of 2019. Within the city, NYCDOE operates the largest school district in the United States, with *more than 1 million students*: 40.6% of NYC students are Hispanic,

25.5% are Black, 16.2% are Asian, 15.1% are white, and 2.7% are multiracial or not represented in the previous categories. The median household income is \$64,000, and 73% of students are economically disadvantaged.

After bringing and keeping COVID-19 cases down during the spring and summer, New York opened its schools in fall 2020 amid low community transmission rates. As the nation's largest district, NYC schools became a national test case as to whether reopening could be done safely. Planning for reopening began in earnest over the summer, when union, district, and city hall officials began meeting weekly in three groups organized around policy, learning, and health and safety. As a result of this extensive cooperation between NYCDOE and the teachers union, all parties reached a negotiated [agreement](#) to reopen schools in September 2020, averting a potential strike. Following these negotiations, the president of the union, Michael Mulgrew, [stated](#), "We now can say that New York City's public school system has the most aggressive policies and greatest safeguards of any school system in the U.S."

The union worked in partnership with NYCDOE to complete [workplace risk assessments](#) to protect educators during in-person instruction. Educators with preexisting health conditions were allowed to serve as remote-only teachers. The original September 8, 2020, opening was twice delayed because of [insufficient staff](#) (24% of teachers were granted permission to work remotely for medical reasons) and more time needed for [health and safety checks of issues such as airflow](#). Staff and union representatives used a [checklist](#) to walk through every building and generate a database of deficiencies. After consulting with ventilation experts, health and safety workers from the United Federation of Teachers identified [30 schools](#) with indoor air quality problems, which were reported to and addressed by the [Division of School Facilities](#).

A phased reopening began in earnest on September 21, 2020. This multiweek process included an additional nine professional learning days to ease the transition. During this time, the department and the union worked together to ensure that every school had a robust [Building Response Team \(BRT\)](#), consisting of multiple stakeholders with processes for assessing incidents and complaints related to health and safety. BRTs remain in effect today and operate as the command centers for every school.

When schools completed the reopening process on October 1, 2020, [500,000 students](#) chose to return for at least 1 or 2 days of in-person instruction via [hybrid instructional models](#). The remaining 480,000 students opted for entirely remote learning. White students from more affluent families have been [more likely](#) to return, a pattern that has repeated itself in other large cities such as [Chicago](#).

Families of color and less affluent families have been [less likely](#) to return their children to in-person learning for many reasons, including the disproportionately harmful impact of COVID-19 in their communities. Households in communities of color are more likely to include essential [frontline workers](#) as well as [multiple generations](#) living together, increasing the likelihood of viral exposures and household spread among family members. Some Asian families may have had their own [prior experiences](#) with deadly pandemics in their countries of origin, and there has been deep-seated [mistrust](#) of NYCDOE and government in general among Black families because of past failures to protect the health and safety of their children.

NYCDOE sought to address these concerns using data, testing, and [ongoing communication](#) with families. NYC was one of the first in the nation to conduct random surveillance testing of asymptomatic staff and students—several months before most other districts were able to implement such a program. In the [first three weeks of school](#), only 18 students and 20 staff members tested positive out of the 16,348 staff and students who participated in random surveillance testing (a 0.2% positivity rate). However, as another COVID-19 wave began across the nation in late fall 2020, schools [closed](#) on November 19, 2020, in accordance with the negotiated agreement, when community spread in the city reached a 3% positivity rate. While 1,832 cases were reported in NYC on the date of closure, there was only a 0.2% positivity rate in schools, according to ongoing surveillance testing.

Schools reopened not long after the Thanksgiving break, when the city removed its 3% citywide positivity rate threshold for school closure and adopted state-recommended policies instead. These policies, known as the [Micro-Cluster Strategy](#), originated from Governor Andrew Cuomo's [Executive Order No. 202.68](#). This new approach aimed to avoid the large-scale shutdowns that marked the spring and early summer months by adopting a more targeted approach. However, as of March 22, 2021, only about a [third](#) (300,000) of all city students are choosing in-person instruction.

Implementation of New York State's Targeted Micro-Cluster Strategy

The state's [Micro-Cluster Strategy](#) subdivides the city's boroughs into smaller regions and specifies restrictions based on local positivity rates and hospital capacity. Yellow zones indicate an area having reached the earlier NYC benchmark—a 3% positivity rate. Orange zones have a 4% positivity rate in addition to having reached 85% hospital capacity. Red zones indicate that an area has canceled elective medical procedures and is 21 days away from reaching 90% hospital capacity on the current 7-day growth trend.

These zones—yellow, orange, or red—determine restrictions within that cluster and specify testing requirements that schools in each zone must meet in order to remain open. Schools in red zones can remain open as long as there is mandatory monthly surveillance testing of a random 30% of in-person students and faculty (see Table 1). As for wider community mitigation measures, Governor Cuomo [removed](#) red and orange micro-cluster restrictions statewide on January 27, 2021, because of a decline in new cases and hospitalization rates. As of that date, areas in the Bronx, Queens, and Washington Heights remained in yellow status, but there were no red or orange clusters remaining across the state of New York.

Under the Micro-Cluster Strategy, NYCDOE began [reopening](#) schools again in phases. Preschoolers and students up to 5th grade returned to classrooms on December 7, 2020, with special education students returning on December 10, 2020. To return, these students had to consent to random surveillance testing and symptom screening, with one exception made for schools that serve students with significant disabilities. These schools were not required to [symptom screen](#) if students were incapable of responding to survey questions. [Eighty percent](#) of students with significant disabilities across all grades have now returned to in-person instruction. In the middle school grades, [62,000](#) students who opted for in-person instruction returned on February 25, 2021. High school students [returned](#) on March 22, with half of high schools offering hybrid instruction and the other half offering full-time in-person instruction for most or all of their students.

Table 1
New York State Micro-Cluster Definitions and Requirements

	Micro-Cluster Zone		
	Yellow	Orange	Red
Criteria	A 3% positivity rate and ranks within the state's top 10% of hospital admissions	A 4% positivity rate and at 85% of hospital capacity	Elective procedures have been canceled and approaching 90% of hospital capacity within 21 days
Required Testing Percentage of Students and Staff	20% of in-person	20% of in-person (minimum of 10% biweekly)	30% of in-person (minimum of 15% biweekly)
Frequency of Testing	Weekly ^a	Monthly	Monthly
Testing/School Closing Triggers	Testing is no longer required if the positivity rate drops below the zone's current 7-day positivity rate	Schools close if there are ≥ 9 positive cases in a school, or a 2% positivity rate (≥ 6 cases ^b) in NYC, or a 3% positivity (≥ 9 cases ^b) rate outside of NYC	
Testing Kits	Free through the state and distributed via local health departments		
Case Reports	Daily to the state Department of Health per executive order		

^a Yellow zones have more frequent testing because they can stop surveillance testing after 1 week, whereas orange and red zones must continue as long as they remain in orange or red status.

^b Minimum case numbers (6 or 9) reflect a minimum weekly sample size of 300.

Source: New York State guidance for school testing in [red and orange zones](#) and [yellow zones](#).

Throughout this process, the department has regularly updated its data dashboard to inform the public and to guide temporary school and classroom [closures](#). As of March 8, 2021, NYCDOE had [reported](#) 17,559 cumulative cases of COVID-19 (9,131 staff and 8,428 students) since September 14, 2020, representing 6% of staff and 1% of students; the dashboard does not disaggregate which of these cases are a result of transmission within schools. However, as of March 8, the citywide test positivity rate was [7%](#) compared to a [0.57%](#) positivity rate in schools. The city's rate reflects those who have actively sought out testing, whereas the school district has continued to conduct random surveillance testing.

On March 8, 2021, 61 (3.8%) of the department's [1,606 buildings](#) were [closed](#) for 10 days, triggered by having at least two confirmed cases in two different classrooms. Short-term 24-hour building closures, triggered by having two cases detected for which the source of transmission could not be determined, were implemented in 25 buildings (1.6%); 111 individual classrooms were also temporarily remote on this date because of at least one case, though building-wide closures were avoided.

The Micro-Cluster Strategy, coupled with surveillance testing, targeted closures, and strict mitigation measures, has enabled NYCDOE to offer in-person instruction even as community transmission and positivity rates have waxed and waned. Within-school positivity rates in boroughs that have been hardest hit, such as the Bronx and Staten Island, have consistently remained [below 1%](#) according to school surveillance testing. The department has conducted millions of tests since widespread surveillance testing began on October 9, 2020, and it continues to conduct over 7,500 tests per day to monitor student and staff health.

Surveillance Testing and Partnering With Public Health and Labor Partners Officials

To reduce the risk of in-school transmission and to meet the state's requirements for testing in schools, the department's reopening plan integrates support from the [NYC Test & Trace Corps](#), a citywide initiative that operates in partnership with NYCDOE and the Department of Health and Mental Hygiene. The Corps is a group of physicians, public health professionals, and community advocates working to combat the COVID-19 outbreak. On July 27, 2020, Mayor de Blasio announced [\\$7.8 million](#) in funding for their efforts. The Corps allows the city to isolate and care for those who test positive for the virus and to track, assess, and quarantine infected individuals.

This investment and coordination allow contact tracers from the Corps to identify cases of student-to-student, staff-to-staff, student-to-staff, and staff-to-student transmission. The Corps communicates this information to department officials to inform whether schools need to be temporarily closed. With a 90% goal for contact tracing, Corps members successfully contacted [75% of cases](#) during a reporting period from January 17 to January 30, 2021. Once contacted, students and staff remain at home in quarantine as advised. The Corps also operates a hotel placement program, where individuals can safely quarantine away from their loved ones; it has served over [8,000](#) people since June 2020. The Corps also provides daily updates on COVID-19 [testing wait times](#) at locations throughout the city. As for within-school surveillance testing, health care workers from either the Department of Health and Mental Hygiene or the Corps [visit schools](#) each week to test a random sample of students in grades 1 and higher.

Trust and communication among department officials, families, and educators is essential to keeping school buildings open. NYC offers lessons in how well-funded, carefully designed, and rigorously implemented mitigation strategies can help build confidence in the safety of in-person instruction.

Specific Mitigation Strategies in NYC Public Schools

Beginning in March 2020, NYCDOE officials developed comprehensive reopening plans that included extensive resources for viral testing. Policies around hybrid scheduling and thresholds for closing have shifted over time, but the department has maintained a commitment to implementing multilayered mitigation strategies.

Rules for Moving Between School Closure and Reopening

Since the December 2020 reopening, the department has committed to keeping elementary schools open for all students to receive 5 days of in-person instruction per week for as long as possible. The department relies upon the state's three-tier [Micro-Cluster Strategy](#) with color-coded zones (yellow, orange, and red).

Schools are allowed to operate in any zone, meaning that there is no threshold that would automatically trigger districtwide closure; however, different zones are associated with different requirements for testing frequency and population sample size (see Table 1). Instead of considering districtwide closures based on citywide metrics, the department closes schools and classrooms where cases occur, regardless of whether these cases result from in-school transmission.

Attendance Policy

All families completed a [learning preference survey](#) prior to the start of the school year. After the November closure and prior to the December reopening, families of elementary-age students and students with significant disabilities of all ages could choose either in-person or remote instruction. Students who opted to return in person had to attend school at least 1 day during the week of December 7, 2020. Families can shift to exclusively remote learning at any time using the same survey portal. All schools must follow a [department-approved process](#) for tracking and monitoring daily teacher–student engagement regardless of whether a student is remote or in person. Absences, including those related to COVID-19 and quarantine, must still be documented and excused.

Symptom Screening

NYCDOE provides [oral thermometers](#) to all students' families so that temperatures can be checked at home, every day, as part of an [online screening tool](#). Students and staff are encouraged to use this online tool, but schools also provide a paper screening form, which is completed by students or families for a school staff member upon entering the building. This form also asks whether an individual has traveled out of state, with exceptions made for Connecticut, Massachusetts, New Jersey, Pennsylvania, and Vermont. Some schools also screen all students for [fever](#) at school entry.

Quarantine Procedures

The department enforces strict [quarantine procedures](#). Students and teachers must quarantine for 10 days after exposure to a confirmed case in the same classroom. Those who test positive may return after 10 days if they have had 24 hours with no symptoms or if they have been cleared by a health care provider. A confirmed case triggers a classroom quarantine, but the school remains open. A school closes if a link between two cases in the same classroom cannot be determined or if there are two cases in two different classrooms.

Testing and Tracing

Prior to November 19, 2020, a randomly selected group of staff and students, consisting of 10–20% of a school's population, participated in mandatory monthly surveillance testing. The New York State Department of Health provides [rapid testing kits](#) on-site at the school and covers the costs. Students younger than 1st grade are exempt. Since reopening on December 7, testing frequency has [increased](#) to 20% of students and staff every week using a short nasal swab for molecular testing (which detects the presence of viral genetic material, including [influenza](#)), with results available within 3 days. This surveillance testing is now [mandatory for both students and staff](#) and is coordinated by the [NYC Test & Trace Corps](#).

Testing vendors—either BioReference Laboratories, Fulgent Genetics, or SOMOS—[deliver results](#) via phone or email address as provided by families to the department. All companies under contract with the department report results only to the patient and the ordering physician and public health authorities, which include the Centers for Disease Control, the state and city departments of health, and the Test & Trace Corps. Once a case has been confirmed, schools contact all their families and students, and a Test & Trace Corps investigation is triggered to determine instances of close contact within the school.

Ventilation

After a facilities survey, the department has continued to perform maintenance and modify operations to maximize the supply of outdoor air for ventilation. More than 95% of schools were in compliance initially, and the department built a [website](#) for updates on necessary upgrades. Families can access [school-level reports](#) to see whether classrooms used for instruction are in compliance.

According to NYCDOE [guidance](#), a building or classroom is in compliance “when air is able to flow in and out—whether through natural or mechanical means.” Buildings that have both supply and exhaust fans do not need operable windows; those that have both windows and exhaust fans meet the ventilation requirements. HVAC systems supply fresh air to rooms that do not have windows, and air dampers should be opened to between 75% and 100% to maximize outside air supply.

Physical Distancing

Individuals are required to maintain 6 feet of physical distance [at all times](#), which has necessitated significant changes to classroom capacity. The department uses a formula to calculate the space needed to maintain 6 feet of distance, resulting in a figure between one third and one half of the previous student population, dependent upon the building and the use of public assembly spaces for instruction. Every school is [required](#) to ensure that all individuals stay at least 6 feet apart, including at building entry, during movement through hallway and stairwells, while in classrooms and shared spaces, and in elevators. Arrival and dismissal times are staggered to make distancing more feasible during transition periods. Department guidance states that administrators “will work with schools to create conditions that make physical distancing possible.”

Meals

Grab-and-go meals are delivered for students to eat in classrooms. [Cafeterias](#) are not used for traditional food service but may be used as classrooms to enable distancing, in which case students who receive their instruction in cafeterias will also eat breakfast and lunch there, facing forward. Remote students still have access to these meals during designated times (9:00 a.m. to noon) at [meal hubs](#).

Sanitation

[Deep cleanings](#) are completed on a nightly basis with the use of electrostatic sprayers. There is more frequent cleaning for high-touch areas such as doorknobs and shared equipment such as laptops. The department provides teachers with cleaning supplies for classrooms.

Hygiene and Mask Use

There are [regular opportunities to wash hands](#) throughout the day, as well as increased access to hand sanitizer. All individuals, including staff, students, and essential visitors, must wear face coverings at all times, although some students are exempt: those who cannot tolerate face coverings due to medical conditions or for whom the use of face coverings is inappropriate due to age (under 2 years old) or developmental level. The district encourages individuals to bring their own face coverings, but it provides coverings to anyone who needs them. Elementary students are encouraged to design their own [unique masks](#). Additionally, the department provides printed posters to help educate students about the importance of mask use, social distancing, and handwashing. Health and safety lessons by grade level are available for teachers on a shared [Google Drive](#).

Transportation

Schools buses operate at [25% capacity](#) to allow for 6 feet of social distancing, and they are cleaned every day using [CDC-recommended](#) cleaning and disinfection protocols. This includes using soap and water first on dirty surfaces, followed by [EPA-approved](#) disinfectant, particularly on high-touch surfaces. There is nonflammable hand sanitizer (foaming) available. Everyone is required to wear a face covering at all times while riding school buses.

Recreation and Extracurriculars

All sports and extracurriculars are currently [prohibited](#) but are set to [resume](#) in April 2021.

Vaccines

NYC has prioritized teachers in [Phase 1b](#) of its vaccine rollout in [coordination](#) with the United Federation of Teachers. Teachers can use the city's COVID-19 [Vaccine Finder](#) website to schedule appointments as more doses become available.