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September 10, 2020

Parker Teed
Rulemaking Coordinator
State Board of Education
600 Washington Street SE
Olympia, Wash. 98504
Sent via email to: rulescoordinatorSBE@k12.wa.us

Re: Proposal to Permanently Adopt the Emergency Rule on Instructional Hours

Dear Mr. Teed,

This letter is submitted as a public comment opposing the State Board of Education proposal to permanently adopt an emergency rule that took effect on July 22, 2020 without public notice or participation. These comments are submitted on behalf of Adrienne Stuart, Reid Wilkes, Cristine Beckwith and Carolina Landa, who are parents of children enrolled in Washington public schools and petitioners in *Wilkes et al. v. Wash. State Board of Education,* Thurston County Superior Court Cause No. 20-2-01870-34. The parents are joined in these comments by the undersigned representatives of non-profit organizations which advocate for the rights of children.

The commenters support the right of all children to receive a basic education as defined by statute and the Washington Supreme Court. They are concerned that in response to the COVID-19 pandemic, the State Board of Education (SBE) acted along with the Office of the Superintendent of Public Instruction (OSPI) to strip away the basic education that is constitutionally required for every student. The commenters want to ensure that health and safety are protected without damaging the educational opportunities which are vital to the academic, social, and emotional development of children.

Rulemaking Cannot Abrogate Statutory and Constitutional Law

Article IX, section 1 of the Washington Constitution makes it "the paramount duty of the state to make ample provision for the education of all children residing within its borders." It imposes an affirmative duty on the State to fully fund a "basic education," while also giving all Washington children a positive right to have the State make ample provision for their education. In addition, article IX, section 2 of the Constitution says: "The legislature shall provide for a general and uniform system of public schools." To be "uniform" means "every

child shall have the same advantages and be subject to the same discipline as every other child."[1]

The Legislature has defined the minimum instructional requirements for the "basic education" necessary to satisfy its paramount duty. Under RCW 28A.150.220(2), each school district must provide an annual average of at least 1,000 instructional hours a year in grades K-8 and 1,080 instructional hours a year in grades 9-12. Under RCW 28A.150.220(5), each school district's basic educational program "shall be accessible to all" school-aged students and shall consist of at least 180 school days per school year.

The Legislature required SBE to adopt rules to "implement and ensure compliance" with these basic education instructional requirements. *See* RCW 28A.150.220(7). SBE cannot adopt rules to abrogate those requirements, or to take basic education rights away from the million-plus K-12 students living in Washington. Moreover, under *McCleary v. State*, 173 Wn.2d 477 (2012), the State may not eliminate an offering from the basic education program for reasons unrelated to educational policy. The proposed permanent rule would offend this constitutional proscription and exceed the SBE's rulemaking authority. More importantly, it would deprive many children of the 1,000 hours of instruction they need during the 2020-21 school year for a basic education.

Distance Learning is Not "Accessible to All"

On July 21, 2020, SBE adopted an emergency rule to count use of remote modalities as "instructional hours" for purposes of the minimum 1,000-hour requirement. Under that emergency rule which is now proposed for permanent adoption, instructional hours in 2020-21 are defined as "those hours of educational activity planned by and under the direction of school district staff that are delivered through learning modalities which may include, but are not limited to, distance learning, hybrid classrooms, rotating schedules, or other methods that allow for delivery of basic education services during the COVID-19 epidemic." This conflicts with RCW 28A.150.205, which defines "instructional hours" as "those hours students are provided the opportunity to engage in educational activity planned by and under the direction of school district staff," including class changes and recess but not lunch. Whereas the statute counts only the "opportunity to engage in" educational activity, the proposed permanent rule counts services "delivered through distance learning" (or other COVID-adjusted methods) regardless of whether some students lack the opportunity to engage in them. In fact, many students are unable to engage in distance learning due to disabilities, lack of technology, inability of family members to assist with learning at home, and other inequities. SBE would wipe "opportunity to engage" out of the law and focus instead on what is "delivered" online – whether accessible or not.

[1] See *Federal Way School Dist. v. State*, 167 Wn.2d 514, citing *School Dist. No. 20 v. Bryan*, 51 Wn. 498 (1909).

The emergency rule proposed for permanent adoption also redefines "school days," stating: "Days in which instructional hours are offered shall count as school days for the purpose of meeting the minimum one hundred eighty-day school year requirement." This diverges significantly from the definition in RCW 28A.150.203(10), which says: "'School day' means each day of the school year on which pupils enrolled in the common schools of a school district are engaged in academic and career and technical instruction planned by and under the direction of the school." There is a big difference between being *engaged in instruction* 180 days a year, as the statute requires, and merely being "offered" instructional hours online. For the many students who cannot access distance learning, it is the difference between having a basic education and having an unfulfilled promise of one.

According to an SBE policy memo, the emergency rule is "designed to allow districts the maximum latitude to respond to public health needs and still count their delivery of basic education as instructional hours" for purposes of receiving full funding from the State. The memo said: "This rule change allows districts that are utilizing modalities other than traditional seat time to count as instructional hours for delivery of basic education."

There is no provision for (or even recognition of) the painfully disparate impact this rule is having on students which schools struggle the most to engage, including students with disabilities, students with technology barriers, students who are highly mobile, homeless or in foster care, students of color, and students whose parents are unable to help them during the school day. The SBE rule is solely concerned with ensuring that school districts get their full funding. While the commenters certainly support State funding that is fully sufficient to meet the needs of students, they cannot support a funding scheme that rewards districts for neglecting vulnerable students. They cannot support anything less than a "uniform" basic education that is "accessible to all." Nor can the commenters abandon the constitutional promise that "every child shall have the same advantages." Yet that is what this rule does.

It does so, in part, by incorporating the recent OSPI emergency rule loosening how attendance is counted in the 2020-21 school year. SBE's proposed permanent rule says: "Local education agencies must implement a system consistent with OSPI attendance rules." Effective on August 13, 2020, OSPI revised its attendance rules to count any minimal participation in "remote learning" as a day of attendance. For example, "daily logins" or emails to a teacher are sufficient "evidence of student participation in remote learning" to avoid being "absent" on a given day. "Remote learning" can be "asynchronous," meaning self-study. So a year of attendance under the SBE and OSPI emergency rules may consist of logging in once a day to a school portal to receive assignments for tackling independently at home. This is a far cry from being engaged in instruction for 180 days a year. Moreover, under OSPI's emergency attendance rule, students will be excused from remote learning due to "lack of internet access" and "absences due to a parent's work schedule" during school hours. This is overtly discriminatory. Instead of requiring schools to ensure internet access

for all students, and requiring schools to provide adult instruction or support when parents are unable to help, OSPI simply counts the lack of learning opportunity as an excused absence. The SBE rule, which incorporates the OSPI attendance rule, unacceptably allows the most vulnerable students to miss out on the instructional hours and school days required by statute and the State Constitution.

SBE Can, and Must, Do Better

First, the SBE rulemaking process has been anything but transparent. The proposed permanent rule was initially adopted on an emergency basis without any public notice or comment process. This is an affront to the parent community, which is severely affected by SBE's rulemaking and is the most important stakeholder in education decision-making. Even after adopting the emergency rule on July 21, 2020, SBE did not post it on the "rulemaking" page of its web site, which is where concerned parents and citizens would look for such rulemaking activities. The CR 102 for the permanent rule was filed with the Code Reviser's Office on September 4, 2020, but it is nowhere to be found on the SBE web site (last checked at 1 p.m. today) and was not provided to the *Wilkes* petitioners despite repeated requests for good-faith communication about any attempt to make the challenged emergency rule permanent. The undersigned attorney had to ask the Code Reviser's Office to provide a copy of the CR 102 (which was readily provided). SBE's insular process and lack of proactive outreach sends a message of indifference to the needs of students and families.

Second, SBE has had six months since the pandemic began to devise a thoughtful plan for keeping students and staff safe without diminishing a basic education. Instead of doing the hard work to ensure that a basic education remains accessible to all students amid historically challenging conditions, SBE waited until July to quietly relax requirements for instructional hours and days and then offered no innovations or improvements whatsoever in the September proposal. Of critical importance, there is no requirement to ensure *all students* can access distance learning or in-person learning and engage in instruction for 180 school days. The new school year has started with entirely predictable hardship, as families struggle to take over educational duties unlawfully shifted to them by the State, and as the most vulnerable students fall further behind academically, socially and emotionally due to reduced or inaccessible services. The attached exhibits illustrate the concerns about disparate impact.

Thank you for considering these comments.

/s/ Katherine A. George
Attorney for *Wilkes* Petitioners

/s/ Reid Wilkes
Parent and Petitioner

/s/ Adrienne Stuart
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/s/ Carolina Landa
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/s/ Charlotte Cassady
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EXHIBITS

September 10, 2020 Comment Letter

EXHIBIT 1

The Importance of Reopening America's Schools this Fall Importance of Reopening Schools

Updated July 23, 2020 Print

As families and policymakers make decisions about their children returning to school, it is important to consider the full spectrum of benefits and risks of both in-person and virtual learning options. Parents are understandably concerned about the safety of their children at school in the wake of COVID-19. The best available evidence indicates if children become infected, they are far less likely to suffer severe symptoms.[1],[2],[3] Death rates among school-aged children are much lower than among adults. At the same time, the harms attributed to closed schools on the social, emotional, and behavioral health, economic well-being, and academic achievement of children, in both the short- and long-term, are well-known and significant. Further, the lack of in-person educational options disproportionately harms low-income and minority children and those living with disabilities. These students are far less likely to have access to private instruction and care and far more likely to rely on key school-supported resources like food programs, special education services, counseling, and after-school programs to meet basic developmental needs.[4]

Aside from a child's home, no other setting has more influence on a child's health and well-being than their school. The in-person school environment does the following:

- provides educational instruction;
- supports the development of social and emotional skills;
- creates a safe environment for learning;
- addresses nutritional needs; and
- facilitates physical activity.

This paper discusses each of these critical functions, following a brief summary of current studies regarding COVID-19 and children.

COVID-19 and Children

The best available evidence indicates that COVID-19 poses relatively low risks to school-aged children. Children appear to be at lower risk for contracting COVID-19 compared to adults. To put this in perspective, according to the Centers for Disease Control and Prevention (CDC), as of July 17, 2020, the United States reported that children and adolescents under 18 years old account for under 7 percent of COVID-19 cases and less than 0.1 percent of COVID-19-related deaths.[5] Although relatively rare, flu-related deaths in children occur every year. From 2004-2005 to 2018-2019, flu-related deaths in children reported to CDC during regular flu seasons ranged from 37 to 187 deaths. During the H1N1pandemic (April 15, 2009 to October 2, 2010), 358 pediatric deaths were reported to CDC. So far in this pandemic, deaths of children are less than in each of the last five flu seasons, with only 64.† Additionally, some children with certain underlying medical conditions, however, are at increased risk of severe illness from COVID-19.*

Scientific studies suggest that COVID-19 transmission among children in schools may be low. International studies that have assessed how readily COVID-19 spreads in schools also reveal low rates of transmission when community transmission is low. Based on current data, the rate of infection among younger school children, and from students to teachers, has been low, especially if proper precautions are followed. There have also been few reports of children being the primary source of COVID-19 transmission among family members.[6],[7],[8] This is consistent with data from both virus and antibody testing, suggesting that children are not the primary drivers of COVID-19 spread in schools or in the community.[9],[10],[11] No studies are conclusive, but the available evidence provides reason to believe that in-person schooling is in the best interest of students, particularly in the context of appropriate mitigation measures similar to those implemented at essential workplaces.

Educational Instruction

Extended school closure is harmful to children. It can lead to severe learning loss, and the need for in-person instruction is particularly important for students with heightened behavioral needs.[12],[13] Following the wave of school closures in March 2020 due to COVID-19, academic learning slowed for most children and stopped for some. A survey of 477 school districts by the University of Washington's Center on Reinventing Public Education found that, "far too many schools are leaving learning to chance."[13] Just one in three school districts expected teachers to provide instruction, track student engagement, or monitor academic progress for all students, and wealthy school districts were twice as likely to have such expectations compared to low-income districts.[13]

We also know that, for many students, long breaks from in-person education are harmful to student learning. For example, the effects of summer breaks from in-person schooling on academic progress, known as "summer slide," are also well-documented in the literature. According to the Northwest Evaluation Association, in the summer following third grade, students lose nearly 20 percent of their school-year gains in reading and 27 percent of their school-year gains in math.[14] By the summer after seventh grade, students lose on average 39 percent of their school-year gains in reading and 50 percent of their school-year gains in math.[14] This indicates that learning losses are large and become even more severe as a student progresses through school. The prospect of losing several months of schooling, compared to the few weeks of summer vacation, due to school closure likely only makes the learning loss even more severe.

Disparities in educational outcomes caused by school closures are a particular concern for low-income and minority students and students with disabilities. Many low-income families do not have the capacity to facilitate distance learning (e.g. limited or no computer access, limited or no internet access), and may have to rely on school-based services that support their child's academic success. A study by researchers at Brown and Harvard Universities assessed how 800,000 students used Zearn, an online math program, both before and after schools closed in March 2020.[15] Data showed that through late April, student progress in math decreased by about half, with the negative impact more pronounced in low-income zip codes.[15] Persistent achievement gaps that already existed before COVID-19, such as disparities across income levels and races, can worsen and cause serious, hard-to-repair damage to children's education outcomes.[15],[16] Finally, remote learning makes absorbing information more difficult for students with disabilities, developmental delays, or other cognitive disabilities. In particular, students who are deaf, hard of hearing, have low vision, are blind, or have other learning disorders (e.g., attention deficit hyperactivity disorder (ADHD)) and other physical and mental disabilities have had significant difficulties with remote learning.[17]

Social and Emotional Skill Development

Schools play a critical role in supporting the whole child, not just their academic achievement. In addition to a structure for learning, schools provide a stable and secure environment for developing social skills and peer relationships. Social interaction at school among children in grades PK-12 is particularly important for the development of language, communication, social, emotional, and interpersonal skills.[18]

Extended school closures are harmful to children's development of social and emotional skills. Important social interactions that facilitate the development of critical social and emotional skills are greatly curtailed or limited when students are not physically in school. In an in-person school environment, children more easily learn how to develop and maintain friendships, how to behave in groups, and how to interact and form relationships with people outside of their family. In school, students are also able to access support systems needed to recognize and manage emotions, set and achieve positive goals, appreciate others' perspectives, and make responsible decisions. This helps reinforce children's feelings of school connectedness, or their belief that teachers and other adults at school care about them and their well-being. Such routine in-person contacts provide opportunities to facilitate social-emotional development that are difficult, if not impossible, to replicate through distance learning.[18],[19],[20]

Additionally, extended closures can be harmful to children's mental health and can increase the likelihood that children engage in unhealthy behaviors. An environment where students feel safe and connected, such as a school, is associated with lower levels of depression, thoughts about suicide, social anxiety, and sexual activity, as well as higher levels of self-esteem and more adaptive use of free time [19],[20] A longitudinal study of 476 adolescents over 3 years starting in the 6th grade found school connectedness to be especially protective for those who had lower connectedness in other areas of their lives, such as home, and to reduce their likelihood of substance use.[20]

Further, a review of studies conducted on pandemics found a strong association between length of quarantine and Post Traumatic Stress Disorder symptoms, avoidance behavior, and anger. Another review published this year found that post-traumatic stress scores of children and parents in quarantine were four times higher than those not quarantined.[21],[22]

In-person schooling provides children with access to a variety of mental health and social services, including speech language therapy, and physical or occupational therapy to help the physical, psychological, and academic well-being of the child.[23], [24], [25],[26] Further, school counselors are trained in the mental health needs of children and youth and can recognize signs of trauma that primary caregivers are less able to see because they themselves are experiencing the same family stresses. School counselors can then coordinate with teachers to implement interventions to offer children a reassuring environment for regaining the sense of order, security, and normalcy.

Without in-person schooling, many children can lose access to these important services. For example, we know that, even outside the context of school closures, children often do not receive the mental health treatment they need. Among children ages 9-17, it is estimated that 21 percent, or more than 14 million children, experience some type of mental health condition.[27] Yet only 16 percent of those with a condition receive any treatment.[23] Of those, 70-80 percent received such care in a school setting.[23] School closures can be particularly damaging for the 7.4 million American children suffering from a serious emotional disturbance. For those individuals who have a diagnosable mental, behavioral or emotional condition that substantially interferes with or limits their social functioning, schools play an integral role in linking them to care and necessary support services.

For children with intellectual or physical disabilities, nearly all therapies and services are received through schools. These vital services are difficult to provide through distance learning models. As a result, more children with disabilities have received few to no services while schools have been closed.

Safety

Extended school closures deprive children who live in unsafe homes and neighborhoods of an important layer of protection from neglect as well as physical, sexual, and emotional maltreatment and abuse. A 2018 Department of Health and Human Services report found that teachers and other educational staff were responsible for more than one-fifth of all reported child abuse cases—more than any other category of reporter.[28] During the COVID-19 school closures, however, there has been a sharp decline in reports of suspected maltreatment, but tragically a notable increase in evidence of abuse when children are seen for services. For example, the Washington, D.C. Child and Family Services Agency recorded a 62 percent decrease in child abuse reporting calls between mid-March and April 2020 compared to the same time period in 2019, but saw more severe presentation of child abuse cases in emergency rooms.[29] Children who live in a home or neighborhood where neglect, violence, or abuse occur, but who are not physically in school, are deprived of access to trained school professionals who can readily identify the signs of trauma and provide needed support and guidance.[30],[31],[32],[33],[34]

Nutrition

Extended school closures can be harmful to the nutritional health of children. Schools are essential to meeting the nutritional needs of children with many consuming up to half their daily calories at school. Nationwide more than 30 million children participate in the National School Lunch Program and nearly 15 million participate in the School Breakfast Program.[35],[36] For children from low-income families, school meals are an especially critical source of affordable, healthy foods. While schools have implemented strategies to continue meal services throughout periods of school closures, it is difficult to maintain this type of school nutrition program over the long-term. This is a particularly severe problem for the estimated 11 million food-insecure children, living in the United States.

Physical Activity

When schools are closed, children lose access to important opportunities for physical activity. Many children may not be sufficiently physically active outside of the context of in-school physical education (PE) and other school-based activities. Beyond PE, with schools closed, children may not have sufficient opportunities to participate in organized and safe physical activity. They also lose access to other school-based physical activities, including recess, classroom engagements, and after school programs.

The loss of opportunities for physical activity from school closures, especially when coupled with potentially diminished nutrition, can be particularly harmful to children. Physical inactivity and poor nutrition among children are major risk factors

for childhood obesity and other chronic health conditions. Over 75 percent of children and adolescents in the United States do not meet the daily physical activity level recommendations (60 minutes or more), and nearly half exceed 2 hours per day in sedentary behavior. Current models estimate that childhood obesity rate may increase by 2.4 percent if school closures continue to December 2020.[37],[38],[39]

Conclusion

Schools are an important part of the infrastructure of our communities, as they provide safe, supportive learning environments for students, employ teachers and other staff, and enable parents, guardians, and caregivers to work. Schools also provide critical services that help meet the needs of children and families, especially those who are disadvantaged, through supporting the development of social and emotional skills, creating a safe environment for learning, identifying and addressing neglect and abuse, fulfilling nutritional needs, and facilitating physical activity. School closure disrupts the delivery of in-person instruction and critical services to children and families, which has negative individual and societal ramifications. The best available evidence from countries that have opened schools indicates that COVID-19 poses low risks to school-aged children, at least in areas with low community transmission, and suggests that children are unlikely to be major drivers of the spread of the virus. Reopening schools creates opportunity to invest in the education, well-being, and future of one of America's greatest assets—our children—while taking every precaution to protect students, teachers, staff and all their families.

*Some children have developed multisystem inflammatory syndrome (MIS-C) after exposure to SARS-CoV-2 (the virus that causes COVID-19). (https://www.cdc.gov/mis-c/cases/index.html) In one targeted surveillance study for MIS-C associated with SARS-CoV-2, however, the majority of children who were hospitalized with COVID-related MIS-C (70 percent) had recovered by the end date of the study period. (Feldstein LR et al.. Multisystem Inflammatory Syndrome in US Children and Adolescents. N Engl J Med. 2020;10.1056/NEJMoa2021680)

†CDC COVID Data Tracker. Available at https://www.cdc.gov/covid-data-tracker/. Accessed on July 21, 2020.

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Last Updated July 23, 2020

EXHIBIT 2

The Seattle Times

More than 94% of public school students in Washington state learning remotely this fall, new data shows

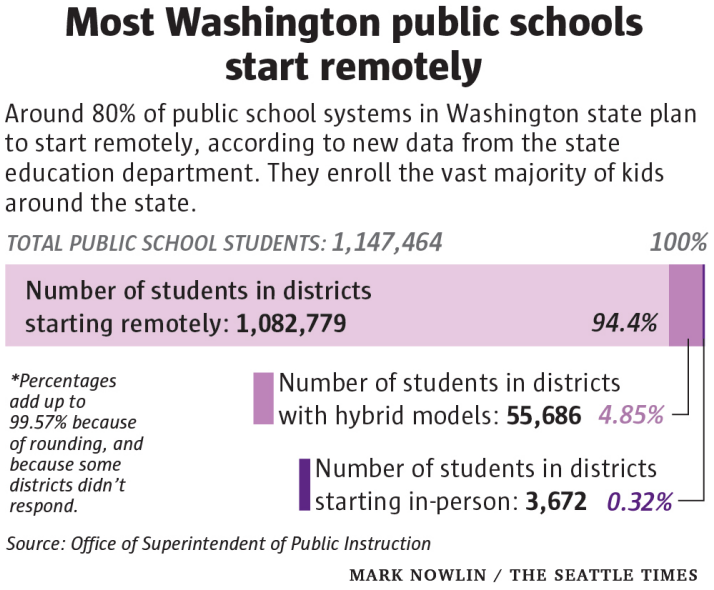
Sep. 1, 2020 at 5:00 am

By Dahlia Bazzaz

Seattle Times staff reporter

More than 94% of Washington state public school kids beginning classes this month are doing so almost entirely remotely, according to new data from the state education department.

The numbers, which the state said were current as of last Friday, are the first official account of how the state's 300-plus school districts, charter schools and tribal compact schools planned to resume teaching after a summer of constant tinkering with reopening plans.



It comes about a month after Gov. Jay Inslee and other state officials declared it was unsafe for the vast majority of schools to reopen their buildings given the coronavirus case counts in their communities. At the time of announcement, the state Department of

Health (DOH) unveiled a long-awaited guide to help districts decide what approach to take based on their county's case numbers.

Though Inslee's call was not a mandate, and the DOH's guidance was not legally binding, about 82% of districts deemed high-risk by this guide — those located in areas that had more than 75 cases per 100,000 residents over a two-week period — followed health officials' advice to conduct most learning remotely, with some exceptions for small groups of students with special needs.

A recent national estimate found that about half of all U.S. children were learning virtually only this fall — significantly lower than Washington.

Even districts in counties considered lower-risk planned to start remotely, including school systems in the San Juan Islands. The dataset shows 219 districts as being in high-risk areas, but nearly 250 districts still planned a remote-only start, suggesting some places are taking more a more conservative approach than health officials are advising.

Though the number of students they serve is small in comparison, there were also many districts that planned to reopen buildings despite high case counts. That could be for a number of reasons, including political views about schools reopening, a very small enrollment or even a lack of broadband access in families' homes. Of the 58 school systems teaching in-person completely or partially, more than half were considered high-risk by the state.

The Mead School District, in Spokane County, is the largest school district to begin in a hybrid mode of online and in-person schooling, with 10,771 students. The Toledo School District, about an hour drive north of Vancouver, Washington, is the largest district to start completely in-person. It has 864 students. Both districts are in higher-risk counties.

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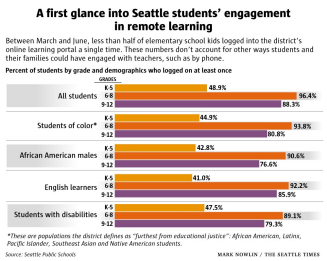
EXHIBIT 3

Education Lab
The Seattle Times

Under half of Seattle's elementary school kids logged in to online learning portal last spring, data shows

Aug. 14, 2020 at 7:08 pm | *Updated Aug. 15, 2020 at 4:37 pm*



By Dahlia Bazzaz
Seattle Times staff reporter

According to the only metric available for student engagement in Seattle last spring, less than half of elementary school kids logged into the district's learning portal after Seattle Public Schools shut down for the coronavirus.

Between March and June, only 48% of kindergarten through fifth graders logged on to Schoology, the district's learning management system where teachers post assignments and announcements. For student populations the district has sworn to serve better, the rates are lower.

Only 41% of English learners in kindergarten through fifth grade logged in at least once, the lowest rate of any population group measured. In those early grades, the numbers were at 42.8% for Black male students, and nearly 45% for the students of color the district calls "the furthest from educational justice" — African American, Latinx, Native American, Southeast Asian and Pacific Islander students. Kids with disabilities from all racial groups were at 47.5%.

The data, provided to Seattle School Board members this month before they approved the district's plan to start remotely in the fall doesn't capture all student engagement. To be counted, all you had to do was sign on once.

But ahead of a new school year that will at least start remotely, the numbers shed light on the challenges of online learning — particularly when it comes to serving young and vulnerable students at a critical point in their education.

Why are the numbers low for young kids?

For one, it's hard for small kids to navigate a learning management system website independently. Before the closures, very few elementary school teachers had ever used the portal or adapted their lessons for digital use. The data also don't capture whether parents could have accessed the portal from their own accounts as a way to get students their lessons. And since the district did not release information by grade level, it is unclear whether kids in very early grades, such as kindergarten, might be driving down the averages.

Teachers may have used other apps and ways to communicate with parents and kids. And a lack of reliable access to technology or the internet could be another factor, with the district prioritizing distribution of devices to older kids first.

But even among older kids, whose engagement rates were significantly higher, there were still inequities, particularly for Black male students, whom Superintendent Denise Juneau sought to prioritize in her five-year strategic plan. A spokesperson for the district said he could not set up an interview with district leadership before press time.

"The very set of students we are focused on are the ones we are failing in terms of inspiring engagement," said Brandon Hersey, a Seattle School Board member.

Both the district and the teachers union vowed to improve what families experienced in the spring, which Juneau recently called, "an emergency response." Some things on the horizon: more device distribution to families —

with more user-friendly iPads going to younger kids — expanded tech support and scheduled, daily times for teachers to check in with students.

Negotiations between management and labor, still ongoing, could lead to the creation of more supports for bilingual families, too. But until those negotiations end, it's hard to know much that is concrete about the fall, especially for students receiving special education services.

Hersey, the only Black member of the Board and a second grade teacher in Federal Way, wasn't surprised to see the numbers. School systems have long struggled to make Black students and their families feel valued and seen, he said, and a remote model only exacerbates the problem.

Through an amendment tacked on to the remote learning plan passed this week, he and other Board members advocated for the recreation of different virtual affinity groups — places for Black students to gather online with Black teachers. They wrote in a section reinforcing the teaching of Black studies, tribally-developed curricula and ethnic studies.

A portion of the amendment also directs the superintendent to expand relationships with community organizations and create outdoor class options so that teachers and school employees can still interact with kids.

Districts can turn a new page in the fall by using data like this to quickly pivot, said Bernadette Merikle, executive director of the Community Center for Education Results, a nonprofit with an anti-racist focus that works to improve educational outcomes in South King County and guides school districts on community engagement.

Seeing low engagement on a certain platform? Ask where families and students would prefer to get access, said Merikle. The trick will be pivoting quickly, Merikle said, and being able to weigh efficiency — streamlining communication all in one website or app — with the reality of needing to reaching everyone. Multiple ways of touching base, they said, might turn out to be more equitable.

The past few months illuminated districts' pre-pandemic troubles communicating with families Merikle said, including poorly translated or

nonexistent materials for recent immigrant communities. But the current environment will force districts to confront the issues in a new, possibly better way. They can also support the community alliances that have sprouted up in the absence of much engagement from the school system.

Said Merikle, “For our Black students, while it’s really easy to tell the story of disconnect — there are pockets of glimmer and hope out there, of families banding together.”

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EXHIBIT 4

ANNENBERG
BROWN UNIVERSITY

EdWorkingPaper No. 20-226

Projecting the potential impacts of COVID-19 school closures on academic achievement

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With 55 million students in the United States out of school due to the COVID-19 pandemic, education systems are scrambling to meet the needs of schools and families, including planning how best to approach instruction in the fall given students may be farther behind than in a typical year. Yet, education leaders have little data on how much learning has been impacted by school closures. While the COVID-19 learning interruptions are unprecedented in modern times, existing research on the impacts of missing school (due to absenteeism, regular summer breaks, and school closures) on learning can nonetheless inform projections of potential learning loss due to the pandemic. In this study, we produce a series of projections of COVID-19-related learning loss and its potential effect on test scores in the 2020-21 school year based on (a) estimates from prior literature and (b) analyses of typical summer learning patterns of five million students. Under these projections, students are likely to return in fall 2020 with approximately 63-68% of the learning gains in reading relative to a typical school year and with 37-50% of the learning gains in math. However, we estimate that losing ground during the COVID-19 school closures would not be universal, with the top third of students potentially making gains in reading. Thus, in preparing for fall 2020, educators will likely need to consider ways to support students who are academically behind and further differentiate instruction.

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Projecting the potential impacts of COVID-19 school closures on academic achievement

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Projecting the potential impact of COVID-19 school closures on academic achievement

Abstract

With 55 million students in the United States out of school due to the COVID-19 pandemic, education systems are scrambling to meet the needs of schools and families, including planning how best to approach instruction in the fall given students may be farther behind than in a typical year. Yet, education leaders have little data on how much learning has been impacted by school closures. While the COVID-19 learning interruptions are unprecedented in modern times, existing research on the impacts of missing school (due to absenteeism, regular summer breaks, and school closures) on learning can nonetheless inform projections of potential learning loss due to the pandemic. In this study, we produce a series of projections of COVID-19-related learning loss and its potential effect on test scores in the 2020-21 school year based on (a) estimates from prior literature and (b) analyses of typical summer learning patterns of five million students. Under these projections, students are likely to return in fall 2020 with approximately 63-68% of the learning gains in reading relative to a typical school year and with 37-50% of the learning gains in math. However, we estimate that losing ground during the COVID-19 school closures would not be universal, with the top third of students potentially making gains in reading. Thus, in preparing for fall 2020, educators will likely need to consider ways to support students who are academically behind and further differentiate instruction.

Introduction

Virtually all K-12 students in the United States had face-to-face instruction interrupted during the 2019-20 school year due to the SARS-CoV-2 (COVID-19) pandemic. The majority of school districts are providing some virtual instruction during the last months of the school year (Lake & Dusseault, 2020a). But it remains unclear how effective virtual learning will be, given that most K-12 students and teachers have little experience with online instruction and that large gaps in technology access exist in many parts of the country. Additionally, during the extended school closure, many working parents struggle to educate and care for their children. These unique educational challenges are accompanied by broader shocks to society, including a major economic downturn, job losses, and the tangible health threat that is COVID-19. In short, extended time out of school will almost certainly affect student achievement (likely in a negative way for many), and that impact is hard to estimate given all the unique aspects of COVID-19 on schooling and society.

While many aspects of the pandemic make anticipating its impact on achievement difficult, there are parallels between the current situation and other planned and unplanned reasons for which students miss school that can help us quantify the potential scale of the COVID-19 impact. Specifically, existing research on the effects on learning of (a) summer vacation, (b) weather-related school closures (e.g., Hurricane Katrina in New Orleans), and (c) out-of-school time due to absenteeism can provide a rough sense of how additional time out of school due to COVID-19 will affect achievement in the coming fall and longer term. The intent of our study is to better understand and project how COVID-19-based school closures might affect achievement and growth during the current school year (2019-20) and the next (2020-21). Given that our projections, while based on existing literature, are unable to account for the

impact of virtual instruction, access to supplemental curriculum, or the availability of additional educational resources, among other important factors, we present these results as preliminary estimates of the potential negative impacts expected due to extended school closures.

Prior research on time students spend out of school is useful given the importance of forecasting the impact of COVID-19 on short- and long-term achievement. Teachers and schools can benefit from knowing not only how much lower achievement might be but also how much more variable it could be in the fall. If students begin school in the fall of 2020 (or whenever regular schooling resumes) with bigger gaps in content knowledge between low- and high-performing students, then strategies like expanding instructional differentiation may be warranted. Further, projections of how potential learning loss due to out-of-school time might affect growth in the coming school year may also help educators identify students who are not on track academically when school resumes and give them needed supports.

In this study,[1] we made projections about the effects of COVID-19 on student achievement trends from the spring of 2020, when schools were first shut down across the United States (U.S.), through to the start of the 2020-21 school year. To provide preliminary estimates of the potential impacts of the extended pause on face-to-face academic instruction during the pandemic, we used a national sample of five million students in Grades 3-8 who took MAP® Growth™ assessments in the 2017-18 and 2018-19 school years (e.g., about 22% of the approximately 22 million U.S. public school students in Grades 3-8 according to NCES [2018]). Specifically, we compared typical growth trajectories across a standard-length school year to

[1] This paper has its origins in a NWEA brief (Kuhfeld & Tarasawa, 2020), which presents some preliminary learning projections. The current paper is distinct from the brief in terms of the volume of analyses and theoretical grounding.

learning projections that assume students are out of school for the last three months of the 2019-20 school year. In so doing, we investigated three research questions:

(1) What are possible scenarios (based on prior literature and recent MAP Growth data) for student learning patterns during the 2019-20 school year as a result of the school closures?

(2) How much variability do we expect in (a) students' learning rates during the extended school closure period and (b) students' fall 2020 scores assuming a normal 2019-20 school year versus one disrupted by COVID-19?

(3) What is the association between out-of-school time due to COVID-19 and projected subsequent learning rates over the course of the 2020-21 school year?

Background

While the COVID-19 school closures are unprecedented in the U.S., there are multiple bodies of research on which we can draw to anticipate the impacts[2] of extended closures on student learning. These include (a) seasonal learning studies that compare learning that occurs during the school year to learning that occurs during summer breaks, (b) studies on weather-related school closures, and (c) studies on student absenteeism. Table 1 provides a summary of the effect sizes (reported in standard deviation [SD] units for each day out of school) from key studies in each body of literature that are discussed below (further details on the studies are provided in Appendix A of the supplemental materials). We then discuss the degrees to which

[2] Studies from these three lines of research provide descriptive as well as credibly causal evidence. For the purpose of this study, we consider the research evidence collectively without distinguishing causal estimates from associations and refer to all estimated relations between out-of-school time and achievement as effects or impacts.

each of these bodies of work is likely to reflect the conditions observed during the COVID-19 school closures.

Seasonal Learning Studies

Seasonal learning research (including studies to understand the effects of summer learning loss) makes comparisons of student learning patterns when school is in versus out of session. Thus, one way to think about COVID-19 school closures is to consider them extensions of summer break for most students. Research has consistently shown that achievement typically slows or declines over the summer months (on average) and that the declines tend to be steeper for math than for reading (Quinn & Polikoff, 2017). However, there is much debate about the magnitude of summer loss and the degree to which summer vacation contributes to socioeconomic achievement gaps (von Hippel, 2019).

Prominent early work on summer learning loss found that students lost about a month of learning over the summer, with lower-income students falling behind middle- and high-income students in reading (Cooper, Nye, Charlton, Lindsay, & Greathouse, 1996; Alexander, Entwisle, & Olson 2001). Recent summer loss research using the Early Childhood Longitudinal Study, Kindergarten Cohort (ECLS-K) has indicated minimal loss on average during the summer, while studies using NWEA's MAP Growth assessment showed fairly sizable drops (Atteberry & McEachin; 2020; Kuhfeld, Condron, & Downey, 2019). This variability in estimates can be seen in Table 1, where summer drop estimates range from 0.001 to 0.010 SDs per day of school missed across grades/subjects. However, research using both recent data sources agree that summer does not appear to be a time in which socioeconomic and racial/ethnic inequalities widen (e.g., von Hippel & Hamrock, 2019; Kuhfeld, 2019; von Hippel, 2019).

School Closures due to Inclement Weather and Natural Disasters

The literature on school closures also provides some insight into the potential effect of COVID-19 school closures, especially given such closures occur unexpectedly and disrupt scheduled instruction. Although they occur over a shorter duration, school closures resulting from inclement weather or natural disasters provide an analog to school closures due to COVID-19. Absent the weather event or natural disaster, schools would be in session and learning for most students would occur as normal. Hansen (2011) found that each day of school cancellation due to snow in Colorado reduced 8th grade math achievement by magnitudes ranging from 0.013 to 0.039 SDs, and the impact effects of snow days in Maryland ranged from 0.013 to 0.016 SDs. Goodman (2014) studied snow day closures in Massachusetts and found that each day of school closure had null effects on math and reading achievement overall, but that students attending poor schools experienced a decline of 0.014 SDs in math and 0.016 SDs in reading for every day of school closure. A related line of research found that the displacement effect of Hurricane Katrina led to drops in achievement at a magnitude of approximately 0.10 SDs in the year after, though these studies did not investigate effect heterogeneity by student demographics or school poverty (e.g., Sacerdote, 2012). However, these estimates are not comparable to those provided by the snow day literature due to differences in research design and recorded units of time.

Absenteeism

In contrast to the seasonal learning and school closure studies discussed above, an emerging literature on school absenteeism focuses on the impact of instructional time loss due to absences while schools are in session. Unlike the school closure due to the COVID-19 that forces every student to be out of school, not all students are absent during a normal school year. There are numerous reasons for which a student might miss school, including lack of access to reliable transportation and need to care for family members. Minority and low-income students tend to

have more absences and are more likely to be chronically absent (i.e., missing at least 10% of school days), compared with their more affluent peers (Whitney & Liu, 2016).

Research consistently found that absences had negative effects on end-of-year test scores. Several studies that used a value-added model found similar effect sizes in both elementary and secondary schools. Specifically, missing ten school days can decrease student math test scores by 0.06 to 0.08 SDs; the effect sizes for ELA scores were slightly smaller (Aucejo & Romano, 2016; Gershenson, Jacknowitz, & Brannegan, 2017; Liu, Lee, & Gershenson, 2019). Studies that used either flu or snow days as an instrumental variable for absences tended to yield much larger estimates (Aucejo & Romano, 2016; Goodman, 2014) largely due to the specific variation used in estimating the impact of absences. For example, Goodman (2014) found that one moderate snow day-induced absence reduced student math scores by 0.05 SDs. Another takeaway from the absenteeism literature is that the negative effects of absences were linear, meaning that each additional absence caused similar learning loss no matter how many absences a student had already accrued (Gershenson et al., 2017; Liu et al., 2019).

Similarities/Differences Between Out-of-School Time Studies and COVID-19 School Closures

The literatures on summer vacation, school closures due to weather and natural disasters, and absenteeism indicate that student learning is likely to be negatively impacted by being out of school. While there is a fair amount of variability in the effect size estimates by grade and study (Table 1), some clear trends emerge. Students showed bigger losses in math than reading while out of school. Being absent from school is generally associated with larger impacts on learning than being out of school due to summer vacation, particularly in middle school. Finally, our review suggests that studies on summer loss and absenteeism may provide better (if imperfect)

models for the impact of COVID-19 than the literature on weather-related school closures, which was sparse (only two studies with effect size estimates), generated inconsistent findings, and tended to rely on small sample sizes from specific geographical settings. Accordingly, we draw on the absenteeism effect sizes reported in Table 1, as well as new summer loss analyses, to produce the projections reported in this study.

Before describing our approach, we consider how current and past school closures and their impact on achievement may differ. First, relying on past precedent may overstate the effect of COVID-19 school closures. Specifically, the biggest difference between school closures examined by previous studies and those of COVID-19 is that most school districts are now providing online instruction. Many districts have offered remote learning plans, which may include formal curriculum, assignments, and/or progress-monitoring as well as access to general educational resources. By April 3rd - 4th, 83 percent of parents in a Gallup poll indicated their child was involved in an online learning program from their school (Brenan, 2020). Further, one could imagine that parents of high socioeconomic status (SES) might leverage their cultural capital such that their children actually make larger academic gains than in typical school days, and these gains could further contribute to educational disparities.

Second, there is also evidence suggesting that measures taken by schools may not be as effective as hoped. There are concerning signs that many teachers have had no contact at all with a significant portion of students (Lieberman, 2020). According to national survey of teachers conducted by EdWeek (Kurtz, 2020), as of April 8th only 39% of teachers reported interacting with their students at least once a day, and most teacher-student communication occurred over email. There is also evidence that, even when teachers are making themselves and their instructional materials available virtually, many students lack the means to access online

materials from home. Nearly 50% of low-income families and 42% of families of color lack sufficient devices at home to access distance learning, according to an Education Trust (2020b) poll. Moreover, few school systems provide plans to support students who need accommodations or other special populations (Lake & Dusseault, 2020b). Thus, despite many administrative leaders' and educators' best efforts, students and their families may bear the brunt of the responsibility for ensuring learning continues during the closures.

There is also uncertainty about whether virtual instruction, even when well-implemented, is likely to be as effective as traditional face-to-face instruction. Prior comparisons of online and traditional public schools show that students in online schools lose between 0.1 and 0.4 SDs on standardized tests compared to students in traditional schools (Gill et al. 2015; CREDO, 2015; Ahn & McEachin, 2017). The COVID-19 virtual instruction is somewhat different because students already know their teachers and are potentially doing review rather than being taught new material. However, many public teachers have not been trained on how to provide effective virtual instruction.

Finally, past precedent on out-of-school time may understate the impact of COVID-19 on student learning, especially compared to summer break, which is a wholly anticipated event. The same Education Trust (2020b) poll of California and New York parents found that elevated stress levels for families (parents and children) continue due to economic uncertainty and job loss, fears about catching a life-threatening virus, and the psychological impact of social isolation and disruptions to everyday life. The (almost certainly adverse) effect of these economic and psychological factors on the learning occurring in homes is difficult to anticipate. However, extended school closures due to natural disasters such as Hurricane Katrina and the Christchurch, New Zealand earthquakes may provide some clues. Research suggests the impact of school

disruptions following natural disasters on student development was long lasting, with some students continuing to show psychological distress and trouble concentrating for several years afterwards (Picou & Marshall, 2007; Duncan, 2016).

Given unique elements of the current situation, we are not positioned in this study to speculate about whether current research and historical trends in achievement will likely understate or overstate the effects of COVID-19 school closures on achievement. However, given the scale of our data and what we know from past research, we can make forecasts about potential impacts of COVID-19 based on multiple scenarios and assumptions about how learning might have changed this past school year (2019-20) and will change over the next (2020-21). Even if forecasts can only provide a range of potential impacts based on different assumptions made about the current situation, forecasts are nonetheless invaluable in helping educators and policymakers understand what to expect when students return in the fall, including how learning might progress differently over the course of the 2020-21 school year.

To that end, our study includes several analyses that can prepare educators and policymakers for what they may face next year. First, we produce two sets of possible scenarios for COVID-19 learning loss while students would have otherwise been in school in 2019-20. One set of projections is based on empirical analyses examining summer loss using MAP Growth data. We then compare those projections to a second set of projections for learning loss based on the absenteeism literature, obtained by multiplying the daily learning loss rate from that literature by the days of school missed during the pandemic. Second, we provide estimates of (a) predicted variability in learning rates and (b) predicted variability in student scores at the beginning of the 2020-21 school year that account for the extended time out of school. Third, we go beyond prior school closure research to look not only at the potential effect of school closure

on current achievement, but also the relationship between out-of-school time achievement declines and growth during the following year (i.e., how strongly associated is the magnitude of learning loss with the gains made in the next year?).

Methods

Analytic Sample

The data for this study are from NWEA's anonymized longitudinal student achievement database. School districts use NWEA's MAP Growth assessments to monitor elementary and secondary students' reading and math growth throughout the school year, with assessments typically administered in the fall, winter, and spring. We use the test scores of approximately five million third- to seventh-grade students[3] in 18,958 schools across the United States. In this study, we follow students across two school years (2017-18 and 2018-19) and one summer break (summer of 2018). The NWEA data also include demographic information, including student race/ethnicity, gender, and age at assessment, though student-level SES is not available. Table 2 provides descriptive statistics for the sample by subject and grade. Overall, the sample is 51% male, 47% White, 17% Black, 4% Asian, and 18% Hispanic. School-level free or reduced priced lunch (FRPL) eligibility was obtained from the 2017-18 Common Core of Data (CCD) file from the National Center of Education Statistics (NCES). The average student in our sample attends a school that is 51% FRPL-eligible. A comparison of the 18,972 schools in our sample relative to U.S. population of public elementary and middle schools (72,075 schools serving Grades 3-8) is provided in Appendix B of the supplemental materials. Overall, the sample closely aligns to the

[3] Due to limited MAP Growth testing in high schools, we did not follow the cohort of 8th graders in 2017-18 into 9th grade in 2018-19.

characteristics of U.S. public schools, with a slight overrepresentation of Black students and underrepresentation of Hispanic students.

Measures of Achievement

Student test scores from NWEA's MAP Growth reading and math assessments are used in this study. MAP Growth is a computer adaptive test that precisely measures achievement even for students above or below grade level and is vertically scaled to allow for the estimation of gains across time. The MAP Growth assessments are typically administered three times a year (fall, winter, and spring) and are aligned to state content standards. Test scores are reported on the RIT (Rasch unIT) scale, which is a linear transformation of the logit scale units from the Rasch item response theory model.

Projecting COVID-19 School Closure Impacts on Learning Trajectories

In this study, we present two sets of estimates of the potential impacts of COVID-19 school closures on student learning: (a) empirical estimates calculated using MAP Growth data based on summer loss patterns during the summer of 2018, and (b) estimates calculated based on prior absenteeism literature. We begin by describing our empirical approach to estimating students' academic growth during the school year and learning loss during summer break under normal (pre-COVID-19) conditions. Subsequently, we discuss how we use the absenteeism and summer loss estimates to produce COVID-19 projections.

We first estimated typical growth rates across two school years (2017-18 and 2018-19) and the summer break in between using a series of multilevel growth models (longitudinal test scores nested within students within schools). Following other seasonal learning research studies (e.g., von Hippel et al., 2018; Kuhfeld et al., 2019), we estimated student learning rates as a function of the months that elapsed during the two school years and the summer between. Given

that prior research using MAP Growth data found evidence of non-linearity in students' within-school growth trajectories (Kuhfeld & Soland, 2020), particularly in reading, we modeled student learning rates across the school year using a quadratic function (though a set of models assuming linear growth are also reported in Appendix Tables C3 and C4). Under this model, the test score y_{tij} for student *i* in school *j* at timepoint *t* was modeled as a quadratic function of the months that a student had been exposed to the 2017-18 school year (MonY1_{ij}), the summer of 2018 (Sum_{ij}), and the 2018-19 school year (MonY2_{ij}). At level 1, the growth model can be expressed as:

$$\begin{aligned} y_{tij} = {} & \pi_{0ij} + \pi_{1ij}\text{MonY1}_{tij} + \pi_{2ij}\text{MonY1}_{tij}^2 + \pi_{3ij}\text{Sum}_{tij} \\ & + \pi_{4ij}\text{MonY2}_{tij} + \pi_{5ij}\text{MonY2}_{tij}^2 + e_{tij}. \end{aligned} \quad (1)$$

The intercept (π_{0ij}) is the predicted score for student *i* in school *j* tested on the first day of the 2017-18 school year, π_{1ij} is the average instantaneous rate of change at the start of the 2017-18 school year, and π_{2ij} is the average rate of change of the linear growth term in 2017-18 for a one-month change in time (e.g., the acceleration or deceleration in growth), π_{3ij} is the monthly summer linear loss rate, and π_{4ij} and π_{5ij} are the linear and quadratic terms in the 2018-19 school year, respectively. At level 2 and 3 of the model, the intercept and growth parameters were allowed to vary among students within schools and between schools:

Level-2 Model (student (i) within school (j)): (2)

$$\begin{aligned} \pi_{0ij} &= \beta_{00j} + r_{0ij} \\ \pi_{1ij} &= \beta_{10j} + r_{1ij} \\ \pi_{2ij} &= \beta_{20j} \\ \pi_{3ij} &= \beta_{30j} + r_{3ij} \\ \pi_{4ij} &= \beta_{40j} + r_{4ij} \\ \pi_{5ij} &= \beta_{50j} \end{aligned}$$

Level-3 Model (school (j)):

$$\beta_{00j} = \gamma_{000} + u_{00j}$$
$$\beta_{10j} = \gamma_{100} + u_{10j}$$
$$\beta_{20j} = \gamma_{200}$$
$$\beta_{30j} = \gamma_{300} + u_{30j}$$
$$\beta_{40j} = \gamma_{400} + u_{40j}$$
$$\beta_{50j} = \gamma_{500}$$

Variance component specification:

$$e_{tis} \sim \mathrm{N}(0, \sigma^2_{tis}),\ \boldsymbol{r_{is}} \sim \mathrm{MVN}(\mathbf{0}, \boldsymbol{T}_{St}),\ \boldsymbol{u_s} \sim \mathrm{MVN}(\mathbf{0}, \boldsymbol{T}_{Sch}).$$

This model was estimated separately by subject (math and reading) and grade (3-7) using HLM Version 7 (Raudenbush, Bryk, & Congdon, 2013). Estimated parameters from these models are reported in Appendix Tables C1 and C2.

We began by calculating "typical" growth rates across a standard 9.5-month school year (assuming students start school on September 1st and end on June 15th). To estimate typical growth, we used the estimated parameter estimates from the 2017-18 school year for each grade *g* and subject separately:

$$\widehat{\mathrm{RIT}}_{tg} = \hat{\gamma}_{000} + (\hat{\gamma}_{100}) * \mathrm{Mon}_t + (\hat{\gamma}_{200}) * \mathrm{Mon}_t^2, \quad (3)$$

where Mon_t takes values from 0 to 9.5. We then calculated "typical" summer loss across a 2.5-month summer:

$$\widehat{\mathrm{SumLoss}}_{tg} = (\hat{\gamma}_{300}) * \mathrm{SumMon}_t, \quad (4)$$

where SumMon_t takes values from 0 to 2.5 months. Under the standard-length school year, students end the year at their 9.5-month achievement level ($\widehat{\mathrm{RIT}}_{9.5g}$) and then were assumed to

lose ground linearly across a 2.5-month summer. We provided the "typical" school year growth rates and summer loss as a reference for the COVID-19 projections described below.

The first scenario, which we refer to as "COVID Loss Summer Slide", assumes that assumes that typical summer loss patterns would extend through the prolonged school closure. Linear projections were made based on the same $\widehat{\text{SumLoss}}_{tg}$ calculation described above, but starting from the projected achievement level at 6.5 months ($\widehat{\text{RIT}}_{6.5g}$) and extending to the presumed start of the next school year (12 months, September 1st). During the "normal" summer period (9.5 to 12 months), the typical summer loss and COVID Loss Summer Slide rates were the same, and so these lines were parallel during the summer months (June 15th to September 1st).

The second scenario for our COVID-19 projections, which we refer to as "COVID Loss Absenteeism", draws on existing absenteeism literature. We first calculated an average effect size (in SD units) for each day missed of school by subject based on the effect sizes reported in Table 1 (e.g., an average -0.007 SDs per day in math and -0.004 SDs per day in reading). Next we converted these estimates into monthly losses on the RIT scale using NWEA's subject- and grade-specific achievement norms (Thum & Kuhfeld, 2020), assuming there are approximately 20 potential instructional days in a typical month and that students are absent during the entire school closure period. Given the majority of schools in the U.S. shut down around the week of March 15th (6.5 months into the school year), we used students' projected achievement level at 6.5 months ($\widehat{\text{RIT}}_{6.5g}$) as the starting point for the projection and then assumed students lose ground from that point at that monthly rate calculated for each subject/grade. Given that students can only be absent while schools are still in session, we produced absenteeism projections only to the end of the school year (9.5 months).

RQ1. Possible Scenarios for Learning Gains during the 2019-20 School Year

To display the possible scenarios for learning as a result of the school closures during the 2019-20 school year, we produced a set of plots to compare these empirical- and literature-based projections to typical learning rates. The plots display students' estimated learning rates across the 2019-20 school year and summer of 2020 based on the absenteeism and summer loss projections. In addition to the plots, we also reported the impact of school closures as a percentage of learning gains that students were expected to make relative to a typical school year. These percentages were calculated by estimating the total gains during the school year (subtracting the initial score on September 1st, 2019 from the projected score on June 15th, 2020) under the two different COVID Loss assumptions and dividing those estimates by the total gains expected under typical growth.

RQ2. Quantifying Variability in COVID-19 Impacts

We do not expect that all students will be impacted by COVID-19 school closures equally. Prior summer learning loss research indicated that there is a considerable variability in students' learning patterns over the summer (e.g., Atteberry & McEachin, 2019; Kuhfeld et al., 2019), most of which cannot be explained by observed student and family characteristics (von Hippel et al., 2019; Kuhfeld, 2019; Borman, Benson, Overman, 2005). In addition to producing average estimates of learning rates during time out of school, we estimated variation in these learning rates across students. Specifically, we used the variance term of the within-school summer loss random effect (r_{3ij}) to examine the potential variability in COVID-19 impacts based on learning patterns during the summer of 2018. Based on the average monthly summer loss rate ($\hat{\gamma}_{300}$) and the standard deviation of the learning loss across students within the same school ($T_{St(3,3)}$), we calculated the monthly learning rates for students at the 25th, 50th, and 75th

percentiles of the summer learning distribution. These estimates were then plotted to allow for an examination of the potential spread in fall 2020 RIT scores by grade/subject assuming students maintained the same rate of growth from school closure (March 15th) to the start of the 2020-21 school year.

There are two potential limitations to this approach. First, while this approach allowed us to quantify variability in potential growth rates while students are out of school, it did not provide a direct estimate of the possible variability in test scores when students return to school following the COVID-19 school closures. Second, it ignored the correlation between gains made while in school and losses that occur out of school. Prior research has indicated school-year and summer learning are negatively correlated, with students who made the largest gains during the school year showing the biggest drops in the summer (e.g., Kuhfeld, 2019; von Hippel et al., 2018).

Therefore, we also used the empirical Bayes (EB) estimates of students' learning rates from our models to project students' achievement in fall 2020 under two scenarios. Under the first scenario, we used the EB estimates from the 2017-18 school year and the summer of 2018 to produce projected scores at the start of the 2018-19 school year. These projected fall scores were treated as what would be expected in fall 2020 under "business as usual", had students completed the full 2019-20 school year and a typical summer break. The fall RIT scores are predicted using the following equation, in which $\hat{\gamma}$ are parameter estimates from the model and $\hat{r}$ are EB estimates of the random intercepts and slopes:

$$\widehat{\mathrm{RIT}}_{Typical_{Fall},gij} = \hat{\gamma}_{000} + \hat{r}_{0ij} + \left(\hat{\gamma}_{100} + \hat{r}_{1ij}\right) * 9.5 + (\hat{\gamma}_{200}) * 9.5^2 \quad (5)$$

$$+ \left(\hat{\gamma}_{300} + \hat{r}_{3ij}\right) * 2.5.$$

In the second scenario, we assumed that COVID-19 increased the effects of summer loss by extending out of school time. In this case, projected fall scores were calculated for each student assuming a 6.5-month school year followed by a 5.5-month summer break, using the following equation:

$$\widehat{\mathrm{RIT}}_{COVID_{Fall},gij} = \hat{\gamma}_{000} + \hat{r}_{0ij} + \left(\hat{\gamma}_{100} + \hat{r}_{1ij}\right) * 6.5 + (\hat{\gamma}_{200}) * 6.5^2 + \left(\hat{\gamma}_{300} + \hat{r}_{3ij}\right) * 5.5 \quad (6)$$

Further details on the calculation of the projected scores under each scenario are provided in Appendix D. We then compared the distribution of scores under each condition to understand how much more variable the fall scores were under the COVID-19 Summer Slide assumption relative to a normal fall.

RQ3. Estimating the Relationship Between Summer Loss and Next School Year's Growth

To guide planning to support student learning during this pandemic and school closures, it is important to understand not only the possible impact of school closures on student learning, but also whether students with large losses recover at similar or different rates than other students. To investigate this question, we examined the correlation among the learning rates during the summer of 2018 and in the 2018-19 school year. Specifically, we examined the level-2 random effect correlation matrix to understand the association between out of school learning rates and growth in the following school year. Though the empirical data are from a typical school year and summer, the results from this analysis can inform decision-making by serving as a proxy for student learning recovery post-COVID-19.

Results

RQ1. Possible Scenarios for Learning Gains during the 2019-20 School Year

Projected COVID-19 impacts on average academic growth trajectories are presented in Figure 1 for mathematics (Panel A) and reading (Panel B). In a typical year (shown as solid lines), average academic growth is not constant across the academic year (shown as the curved lines seen in some grades) and generally declines from the last day of school through the summer, with steeper declines in mathematics than in reading. The dashed line shows projected trajectories based on prior absenteeism literature (from COVID-19 school closure to the end of the 2019-20 school year), and dotted lines show projected trajectories under summer learning loss patterns (from COVID-19 school closure to start of the 2020-21 school year). Since the absenteeism estimates pertain to missing school while schools are still open, we did not extend the COVID Loss Absenteeism projections past June 15th.

Under both sets of projections, students' learning gains are projected to be substantially lower at the end of the school year than under typical conditions. The COVID Loss Absenteeism projections for losses in learning are more dire than the COVID Loss Summer Slide projections, implying steeper drops while students are out of school across all grades and subjects. We also calculated the percentage of learning gains that students would be expected to have made relative to a normal year under each condition. Our results suggest that under the COVID Loss Summer Slide projections, students end the abbreviated 2019-20 school year with roughly 63-68% of the learning gains in reading relative to a typical school year (see Table D1 in the supplemental materials). However, in mathematics, students are likely to show much smaller gains, ending the school year with 37-50% of the average gains in a normal school year. For students moving from fifth to sixth grade, we expect under COVID Loss Summer Slide projections that students end the school year with only 19% of total mathematics gains. Under the COVID Loss Absenteeism projections, the story is even more dire, with students in sixth and seventh grade projected to end the school year with less than 30% of their typical learning gains in both math and reading.

RQ2. Quantifying Variability in COVID-19 Impacts

Beyond average achievement, educators may be equally concerned about whether COVID-19 will result in greater variability in the academic skills that students bring with them when school resumes. In Figure 2, we display the variability in learning expected under the COVID Loss Summer Slide model from March 15th (when schools shut down) to September 1st (when schools are expected to reopen). These estimates are based on variability seen during a typical summer, but with the duration of that summer extended. For parsimony, we only display Grades 4 and 6, but the model-based variability estimates for all grades/subjects are presented in Table D3 of the supplemental materials. The shaded areas display the spread in potential outcomes between students who were in the 25th percentile of summer learning loss (who showed steep declines) and those in the 75th percentile (who showed flat scores or even small gains during the summer). In mathematics, we see a fair amount of variability in learning rates, though the majority of students show losses over the extended closure and summer period. However, in reading, there is an even wider spread of potential outcomes, with students who are in the 75th percentile and above showing sizable learning gains during the summer. As seen in Table D3, approximately the upper half of the distribution (39-46% of students) are projected to show monthly gains in reading during the summer. Altogether, these plots show that extended time out of school may lead to more variability in achievement when students return in the fall.

One limitation of the plots in Figure 2 is that they do not provide concrete evidence on the variability in fall achievement under COVID-19 *relative* to variability under a typical school year. Thus, in Figure 3 we display the spread of the projected fall 2020 test scores under "typical" conditions as well as the COVID Loss Summer Slide projections. The box plot shows the interquartile range (e.g., the 25th, 50th, and 75th percentiles) and the vertical lines extending

above and below the box stretch one and half times the interquartile range, with scores outside that range displayed as outliers (circles in the figure). The estimated means, SDs, and percentiles scores for each condition and grade/subject are reported in Table D3 in the supplemental materials. Across the board, students are projected to return in the fall with lower scores and more variability relative to a typical fall. In reading, the SDs of expected scores are expected to be up to 1.2 times the SDs expected in a typical fall. Thus, students will likely return not only with lower achievement (on average), but with a wider range of academic skills that may require teachers to further differentiate instruction.

RQ3. Estimating the Relationship Between Summer Loss and Next School Year's Growth

Finally, to project whether larger COVID-19 learning losses would be associated with faster growth rates during the 2020-21 school year, we examined whether students who lost more ground during a typical summer showed slower rates of recovery during the subsequent typical school year. Correlations between students' summer loss and linear growth during the 2018-19 school year are presented in Tables C1 and C2 in the supplemental materials. In mathematics, student-level correlations ranged from -0.41 to -0.43, and in reading the correlations ranged from -0.45 to -0.46. These correlations imply that students who lost more ground during the summer of 2018 showed steeper growth during the following school year (2018-19) than students with less summer loss. Accordingly, this suggests that a student who lost ground during the summer does not necessarily continue to lose ground during the next school year; rather, they are likely to gain ground.

Discussion

Educators, policymakers, families, and students find themselves in uncharted territory during the COVID-19 crisis. School districts in particular are on the front lines to help ensure all

students have access to academic materials, instruction, and digital resources, among other basic needs such as food for students from low income backgrounds and support for students with disabilities, English learners, and students in temporary housing (Education Trust, 2020a). Despite these efforts, a majority of parents with children in K-12 schools are concerned that their children will fall behind academically due to the disruptions of COVID-19 school closures (Horowitz, 2020). In this study, we produced a set of possible scenarios for learning loss rates during the extended period when schools are physically closed and students are not receiving normal face-to-face instruction. These projections can help prepare educators and parents for the degree of variability in student achievement to expect when school resumes, including over the course of the upcoming school year.

First, we show that students will likely (a) not have grown as much during the truncated 2019-2020 academic year and (b) will likely lose more of those gains due to extended time out of school. Based on our projections, students will return in fall 2020 with approximately 63-68% of the learning gains in reading relative to a typical school year and with 37-50% of the learning gains in math. In some grades, students may come back close to a full year behind in math. While such projections may reinforce the worst fears of educators and parents, we should note that they do not factor in the home schooling and online instruction that students may currently be receiving. Therefore, they should be viewed as a likely upper bound for the potential negative effects on students' learning.

Second, we also examined variability in possible learning outcomes during the school closures and in the fall of 2020. We found that losing ground over the summer was not universal, with the top third of students in reading making gains during a typical summer. As a result of this variability, we project that the range of students' academic achievement will be more spread out

in the fall of 2020 relative to a normal fall term, particularly in reading. In presenting these projections, we assume that the variability in typical summer loss can act as a proxy for the large variability in learning that is expected due to the widely differing home and school district conditions impacti learning during the school closure period. In all likelihood, differential access to parent and teacher supports for learning during the school closure months will produce variation larger than what typical summer break variability would imply.

Finally, we show that, although our projections are dire, our models also suggest that students who lose the most while out of school tend to gain the most the following year (at least under typical summer loss conditions). Thus, there is hope that students most impacted by the additional average achievement losses under COVID-19 may also be the ones who rebound the most by the end of the 2020-21 academic school year. At the same time, one cannot be sure how financial uncertainty, health issues related to the virus, and psychological stresses may affect the association between summer loss and subsequent academic growth.

Limitations of Our Projections

While we provide two sets of projections in this study—one based on growth rates calculated from MAP Growth data and the other based on prior literature on student absenteeism—we acknowledge that it is impossible to accurately weigh the complex range of supports and challenges that students are facing during this period. The school closures caused by COVID-19 have additional aspects of trauma to students, loss of resources, and loss of opportunity to learn that go well beyond a traditional summer break for many families. In other words, families with financial resources, stable employment, and flexible work-from-home and childcare arrangements will likely weather this storm more easily than families who are renting their housing, working in low-paying fields that are hardest hit by the economic impacts, and

experiencing higher rates of food insecurity, family instability, and other shocks from this disruption.

Given the uncertain impact of COVID-19, we have chosen not to make projections specific to inequalities by race/ethnicity, biological sex, and SES. Recent analyses of both ECLS-K and MAP Growth data have found little evidence that achievement gaps by race/ethnicity and SES widen during summer months (von Hippel & Hamrock, 2019; Kuhfeld, 2019). This is likely due to the fact that families of all income levels typically treat summer break as a vacation from math and reading, a time when "kids can be kids" (von Hippel, 2020). Were we to base estimates of COVID-19 impacts on racial/ethnic disparities in achievement and growth on these historical summer learning loss patterns, we would likely conclude that the COVID-19 pandemic is going to minimally impact long-standing inequalities in this country.

However, there are many reasons to believe the COVID-19 impacts might be larger for children in poverty and children of color. There are higher rates of COVID-19 infections and deaths in the African American community (Bouie, 2020), and the economic downturn has been particularly damaging for African American and Hispanic parents, who are less likely to be able to work from home during the pandemic (Krogstad, Gonzalez-Barrera, & Noe-Bustamente 2020; Cerullo, 2020). Furthermore, the so-called "digital divide" in technology and internet access by race/ethnicity and socioeconomic status (Musu, 2018) likely contributes to greater inequalities during the COVID-19 pandemic than a typical summer. Given this evidence that the impacts of the COVID-19 school closures will have disproportionate impacts on our country's most underserved communities in ways that historic summer data fails to capture, we chose not to produce projections based on pre-COVID-19 MAP Growth summer learning data for individual

subgroups. However, we believe it will be of great importance to study how existing inequalities have widened or been reshaped once schools have reopened.

Furthermore, in calculating the projected impact of out-of-school time on learning in this study, we assumed that it is appropriate to linearly extrapolate learning loss from research on absenteeism and summer loss across the three months of school closure. Liu and colleagues (2019) found that additional absences had an approximately linear impact on student learning, though the number of absences assumed in this study (approximately 60 school days) far exceeds the average number of absences observed in their study. Furthermore, we have very little data about whether the summer months have a linear impact on students' reading and mathematics skills. Campbell and Frey (1970) hypothesize that forgetting learned material may occur non-linearly, with rapid initial deceleration of knowledge followed by slower drop offs as time passes. However, we are unaware of any studies that have examined this phenomenon in the context of summer break. If the true effect of being out of school accelerates the longer students are out of school, we could be underestimating the impact on learning. But if summer loss simply reflects a process of forgetting and re-remembering that is not directly linked to the amount of time out of school, we could be greatly over-estimating the potential impacts on learning.

Where Do We Go From Here?

While we are not well-positioned to make recommendations for ways to remedy the learning loss that is likely occurring due to COVID-19, our results do provide takeaways that can inform how educators and leaders can prepare to support students upon return. First, we show that students may be substantially behind, especially in mathematics. Thus, teachers of different grade levels may wish to coordinate in order to determine where to start instruction. Educators

will also need to find ways to assess students early, either formally or informally, to understand exactly where students are academically.

Second, students are likely to enter school with more variability in their academic skills than under normal circumstances. Prior research suggests greater heterogeneity in student achievement affects a classroom teacher's ability to adapt instruction to meet the instructional needs of all students (Connor, Piasta, Fishman, Glasney, Schatschneider, Crowe, & Morrison, 2009; Evertson, Sanford, & Emmer, 1981).Therefore, educators may need to consider ways to further differentiate instruction or provide opportunities for individualized learning. For a summary of related literature, one could turn to Peters, Rambo-Hernandez, Makel, Matthews, and Plucker (2017).

Third, under typical schooling conditions, the students who lose the most during the summer tend to gain the most when back in school. Nonetheless, the ground that students have to make up during the 2020-21 academic year will probably be greater due to COVID-19. Therefore, educators may want to work with students to determine growth rates needed to catch up and set learning goals for the year that are ambitious but obtainable. These strategies might include establishing out-of-school learning supports during the 2020-21 school year for the students most affected by school closures.

Finally, the effects of COVID-19 to which our study cannot speak may be ones most worthy of addressing. Districts are rushing to support educators who are attempting to teach academic content remotely while also caring for their students' social emotional well-being. Prior research on students displaced by Hurricane Katrina indicated that students had difficulty concentrating and often manifested symptoms of depression in the months following the hurricane (Picou & Marshall, 2007). Understanding these impacts and how to best support

students' social and emotional needs after this huge disruption of COVID-19 will be essential. Many students may face greater food insecurity, loss of family income, loss of family members to the coronavirus, and fear of catching the virus themselves (NAACP, 2020). While the scale of the COVID-19 school closures is novel, the inequalities in our school systems are unfortunately anything but new. Our models cannot account for the reality that the crisis is having an unequal impact on our most underserved communities. Nonetheless, we hope these analyses, which synthesize what we know from existing bodies of research, will inform tomorrow's decision making.

Conclusions

These preliminary forecasts parallel many education leaders' fears: missing school for a prolonged period will likely have major impacts on student achievement. Further, students will likely return in the fall of 2020 with greater variability in their academic skills. While we are unable to account for students' exposure to virtual instruction while schools are closed, our learning loss projections imply that educators and policymakers will need to prepare for many students to be substantially behind academically when they return.

Similar to the research that found students took nearly two full years to make up lost ground for the loss in instructional time due to Hurricane Katrina (Harris & Larsen, 2019), our COVID Loss projections provide new evidence on the scope of the long-term educational recovery efforts that will be required. We believe this study is one in a growing body of important work that leverages prior research to empower school leaders, policy makers, and researchers to make urgent evidence-informed post-COVID-19 recovery decisions.

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Table 1

Estimates of the Impact of Out-of-School Days on Standardized Test Scores Across Summer Loss, School Closure, and Absenteeism Literature

Citation	Location	Grade level	Math Effect	ELA Effect
		Summer Loss		
Atteberry & McEachin (2019)	National (NWEA)	1st grade	-0.009	-0.010
		2nd grade	-0.006	-0.006
		3rd grade	-0.006	-0.005
		4th grade	-0.005	-0.003
		5th grade	-0.005	-0.003
		6th grade	-0.003	-0.002
		7th grade	-0.002	-0.001
von Hippel, Workman, & Downey (2018)	National (ECLS-K:2011)	Kindergarten	0.002	-0.001
		1st grade	-0.001	-0.001
Kuhfeld, Condron, & Downey (2019)	National (NWEA)	Kindergarten	-0.005	-0.004
		1st grade	-0.007	-0.004
		3rd grade	-0.006	-0.004
		4th grade	-0.005	-0.003
		6th grade	-0.004	-0.002
		7th grade	-0.002	-0.001
		Absenteeism		
Liu, Lee, & Gershenson (2020)	large urban CA school district	6th-8th grade	-0.008	-0.006
Gershenson, Jacknowitz, & Brannegan (2017)	ECLS-K + NC	K-1st grade	−0.002	−0.002
	NC public schools	3rd-5th grade	-0.007	-0.004
Aucejo & Romano (2016)	NC public schools	3rd-5th grade	-0.006	-0.003
		School Closures due to Inclement Weather		
Hansen (2011)	CO and MD public schools	8th grade (CO)	-0.013 to -0.039	N/A
		3rd grade (MD)	-0.003 to -0.011 (NS)	
		5th grade (MD)	-0.015 to -0.016	
		8th grade (MD)	-0.009 to -0.013	
Goodman (2014)	MA public schools	3rd-8th + 10th grade	-0.000 (NS)	0.003 (NS)

Note. ECLS-K=Early Childhood Longitudinal Study, Kindergarten Cohort, CA=California, NC=North Carolina, CO=Colorado, MD=Maryland, MA=Massachusetts, NS=Not significant. All coefficients are reported as drops in standard deviation units on math and reading/English Language Arts assessments for each day of school missed. More details on each study are presented in Appendix Table A1.

Table 2

Descriptive Statistics for the Sample

			Race/ethnicity						
Grade	N. Schools	N. Students	White	Black	Asian	Hispanic	Other race	Male	% FRPL
				Mathematics					
3	12,816	986,862	0.45	0.18	0.04	0.18	0.14	0.51	0.51
4	13,071	999,788	0.46	0.17	0.04	0.18	0.14	0.51	0.50
5	14,146	1,029,363	0.47	0.17	0.05	0.18	0.13	0.51	0.50
6	8,952	976,105	0.47	0.17	0.04	0.18	0.14	0.51	0.50
7	7,040	937,054	0.47	0.16	0.04	0.18	0.13	0.51	0.50
Full Sample	18,972	4,929,172	0.47	0.17	0.04	0.18	0.14	0.51	0.50
				Reading					
3	12,874	988,644	0.45	0.18	0.04	0.18	0.14	0.51	0.51
4	13,066	997,088	0.47	0.18	0.04	0.18	0.14	0.51	0.51
5	14,129	1,026,057	0.47	0.17	0.04	0.18	0.13	0.51	0.50
6	8,943	970,524	0.47	0.17	0.04	0.18	0.14	0.51	0.50
7	6,995	934,960	0.48	0.17	0.04	0.18	0.13	0.51	0.50
Full Sample	18,958	4,917,273	0.47	0.17	0.04	0.18	0.14	0.51	0.50

Note. N=Number, %FRPL=percentage of free or reduced priced lunch. Grade is the grade level students were in during the 2017-18 school year.

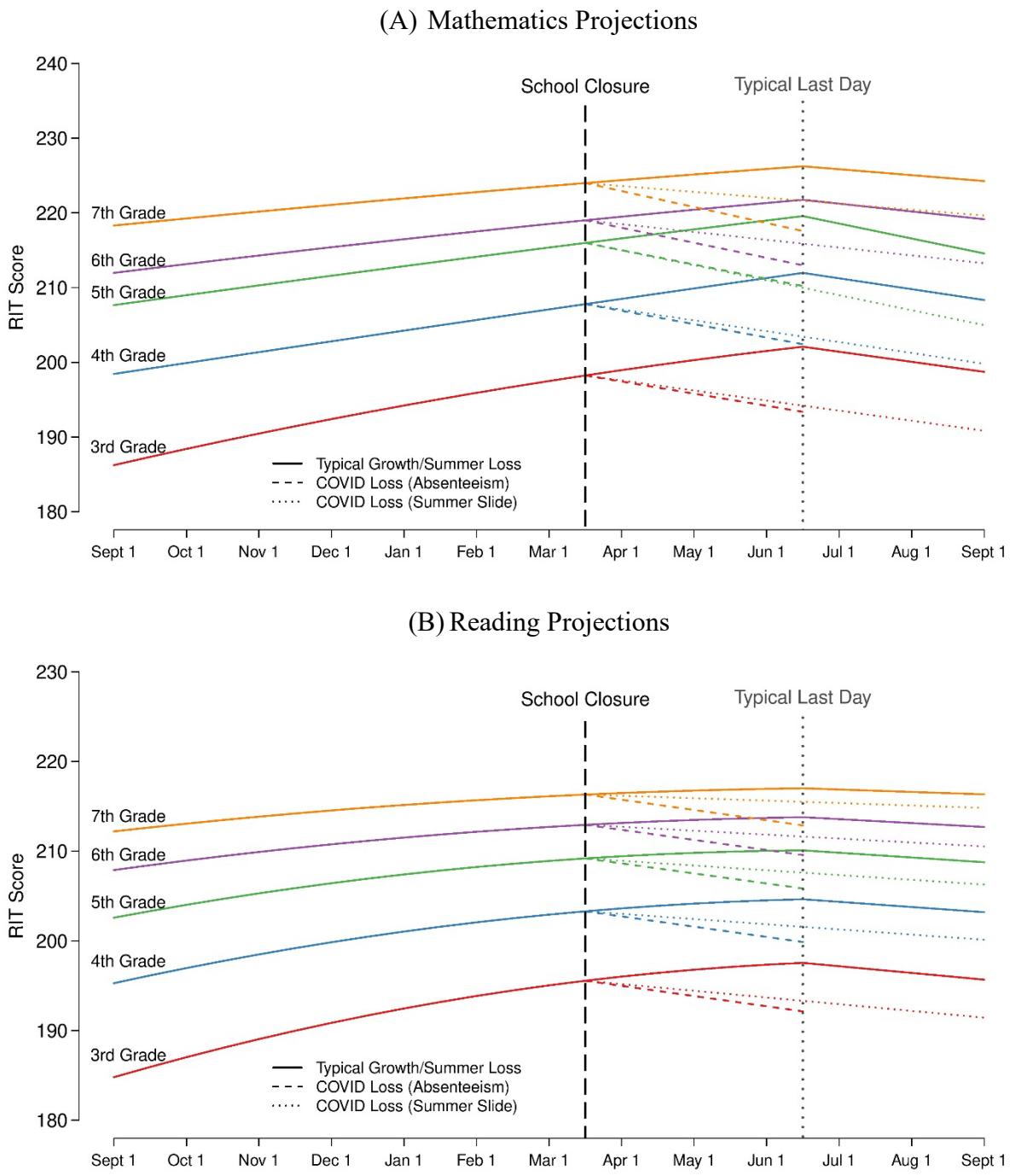
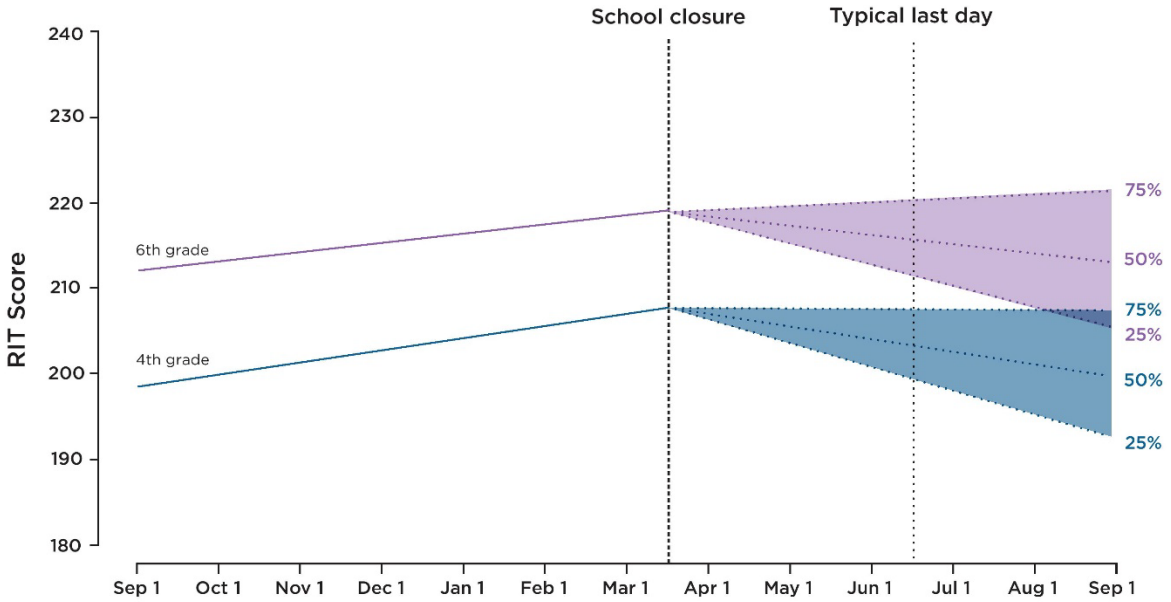


Figure 1. Mathematics and reading forecasts based on summer loss estimates and absenteeism literature.

(A) Mathematics Projections



(B) Reading Projections

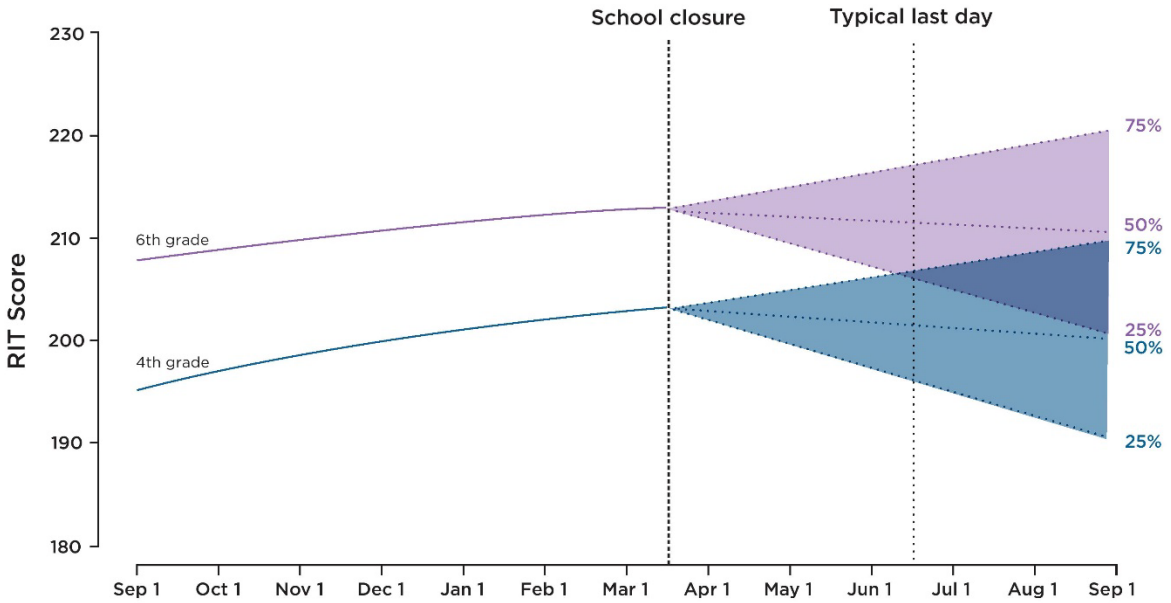


Figure 2. Mathematics and reading forecasts for the 2019-20 school year accounting for the variability observed in typical summer loss patterns.

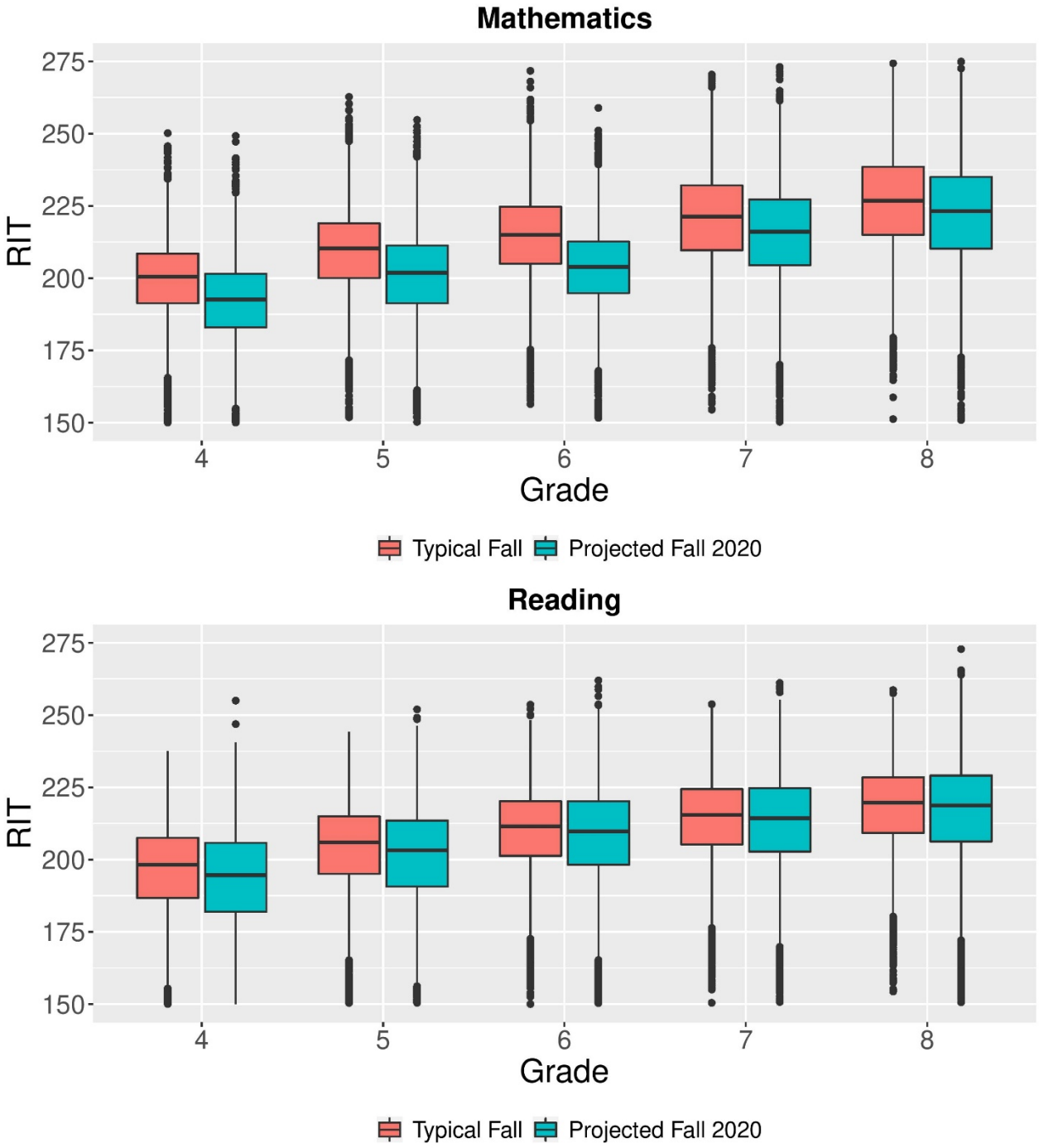


Figure 3. Projected fall 2020 score distributions under a typical fall (fall 2018) and COVID Loss Summer Slide conditions

EXHIBIT 5

FACTTANK
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MARCH 16, 2020

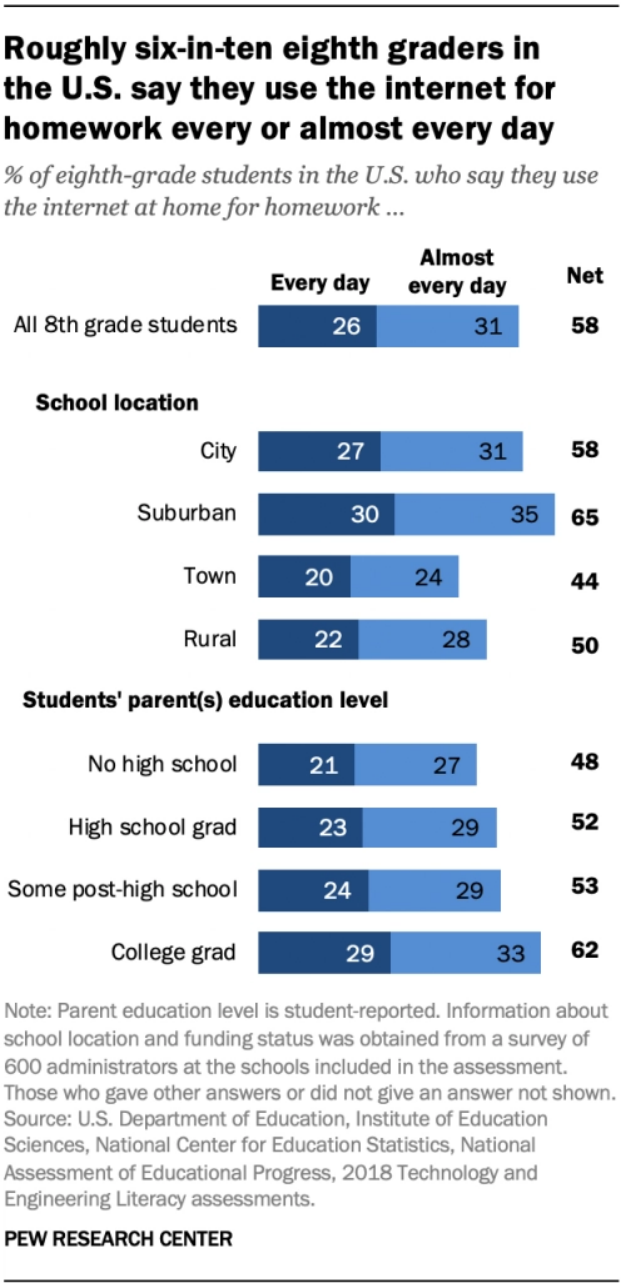
As schools close due to the coronavirus, some U.S. students face a digital 'homework gap'

BY BROOKE AUXIER AND MONICA ANDERSON

A high school sophomore in Brooklyn, New York, checks into a class from home after her school announced it would be closed due to concerns about the new coronavirus. (Andrew Lichtenstein/Corbis via Getty Images)

As K-12 officials in many states close schools and shift classes and assignments online due to the spread of the new coronavirus, they confront the reality that some students do not have reliable access to the internet at home – particularly those who are from lower-income households.

Here are key findings about the internet, homework and how the digital divide impacts American youth.



1 The majority of eighth-grade students in the United States rely on the internet at home to get their homework done. Roughly six-in-ten students (58%) say they use the internet at their home to do homework every day or almost every day, according to a new Pew Research Center analysis of data from the 2018 National Assessment of Educational Progress (NAEP). Just 6% of students say they never use the internet at home for this purpose.

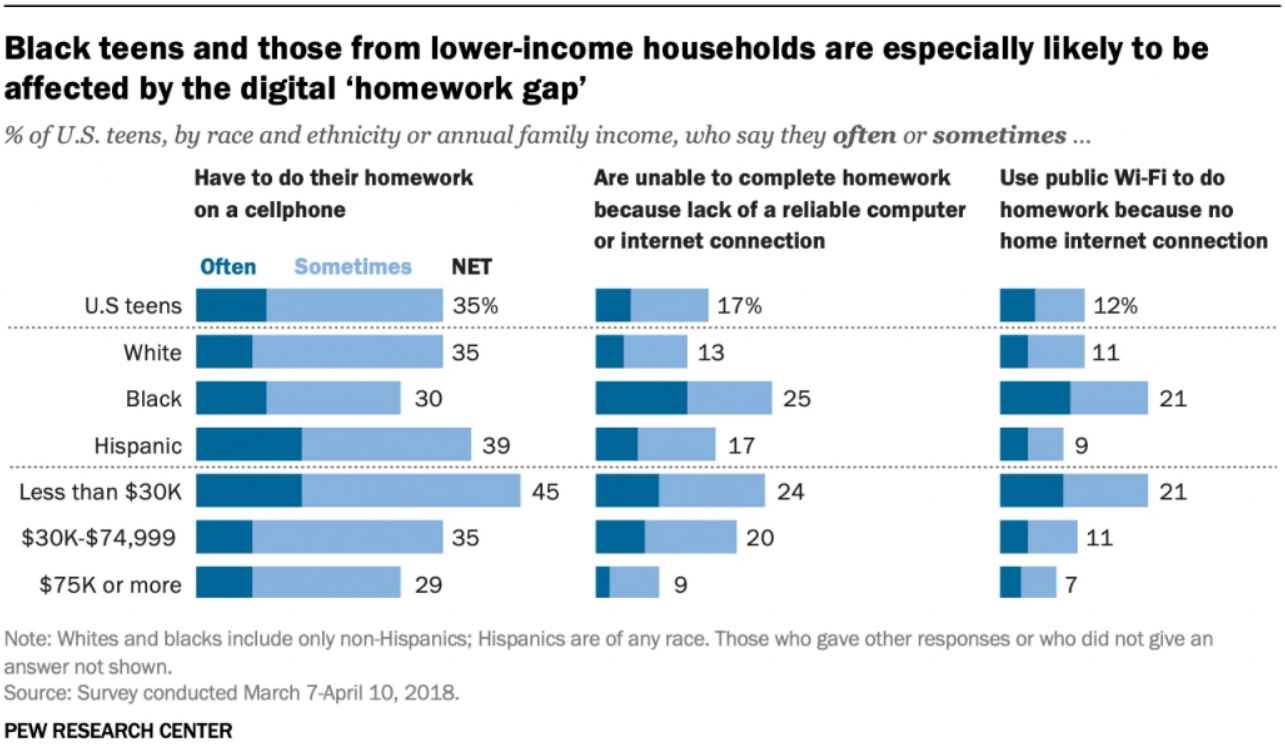
There are differences in these patterns by community type and parents' education level. Roughly two-thirds of students attending suburban schools (65%) say they use the internet for homework every day or almost every day, compared with 58% who attend schools in cities, 50% of those who attend in rural areas and 44% of those attending schools in towns. Students whose parents graduated from college are more likely to use the internet for homework at home. Some 62% of these students use the internet at home for homework,

compared with smaller shares of students whose parents have some post-high school education (53%), have only a high school education (52%) or have no high school education (48%).

How we did this ⊕

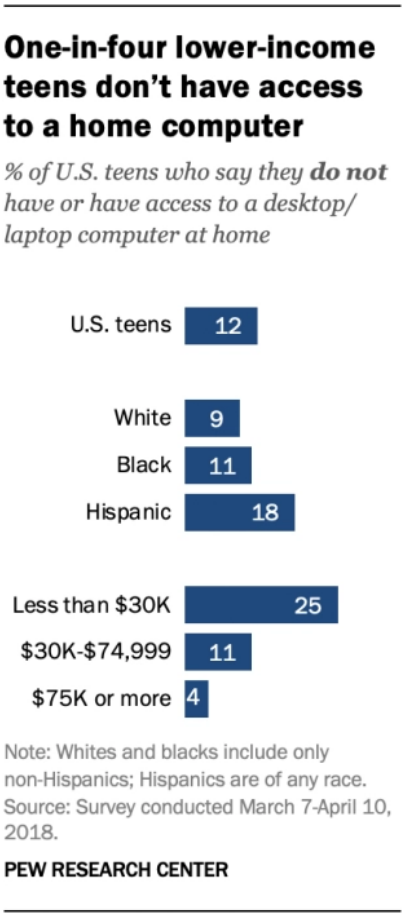
2 The "homework gap" – which refers to school-age children lacking the connectivity they need to complete schoolwork at home – is more pronounced for black, Hispanic and lower-income households. Some 15% of U.S. households with school-age children do not have a high-speed internet connection at home, according to a previously published Pew Research Center analysis of 2015 U.S. Census Bureau data. School-age children in lower-income households are especially likely to lack broadband access. Roughly one-third (35%) of households with children ages 6 to 17 and an annual income below $30,000 a year do not have a high-speed internet connection at home, compared with just 6% of such households earning $75,000 or more a year. These broadband gaps are particularly pronounced in black and Hispanic households with school-age children – especially those with low incomes.

3 Some lower-income teens say they lack resources to complete schoolwork at home. In a 2018 Center survey, about one-in-five teens ages 13 to 17 (17%) said they are often or sometimes unable to complete homework assignments because they do not have reliable access to a computer or internet connection. Black teens and those living in lower-income households were more likely to say they cannot complete homework assignments for this reason.



For example, one-quarter of black teens said they often or sometimes cannot do homework assignments due to lack of reliable access to a computer or internet connectivity, compared with 13% of white teens and 17% of Hispanic teens. Teens with an annual family income below $30,000 were also more likely to say this than teens with a family income of at least $75,000 a year (24% vs. 9%).

In the same survey, around one-in-ten teens (12%) said they often or sometimes use public Wi-Fi to do schoolwork because they lack a home internet connection. Again, black and lower-income teens were more likely to do this.



Roughly one-in-five black teens (21%) said they use public Wi-Fi to do schoolwork due to a lack of home internet connection, compared with 11% of white teens and 9% of Hispanic teens. And around a fifth (21%) of teens with an annual family income under $30,000 reported having to use public Wi-Fi to do homework, compared with 11% of teens in families with a household income of $30,000-$74,999 and just 7% of those living in households earning at least $75,000.

4 **A quarter of lower-income teens do not have access to a home computer.** One-in-four teens in households with an annual income under $30,000 lack access to a computer at home, compared with just 4% of those in households earning over $75,000, according to the 2018 survey. There are also differences by race and ethnicity. Hispanic teens were especially likely to say they do not have access to a home computer: 18% said this, compared with 9% of white teens and 11% of black teens.

Topics Teens and Technology, Coronavirus Disease (COVID-19), Internet Activities, Socioeconomic Class, Education

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POSTS | BIO | EMAIL

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EXHIBIT 6

United Nations

SECRETARY-GENERAL
PRESS RELEASE

SG/SM/20197
4 AUGUST 2020

World at 'Defining Moment' for Children, Secretary-General Stresses in Message to Launch Policy Brief on Education and COVID-19

Following is the text of UN Secretary-General António Guterres' video message for the launch of the policy brief on education and COVID-19, in New York today:

Education is the key to personal development and the future of societies. It unlocks opportunities and narrows inequalities. It is the bedrock of informed, tolerant societies, and a primary driver of sustainable development.

The COVID-19 pandemic has led to the largest disruption of education ever. In mid-July, schools were closed in more than 160 countries, affecting over 1 billion students. At least 40 million children worldwide have missed out on education in their critical pre-school year. And parents, especially women, have been forced to assume heavy care burdens in the home.

Despite the delivery of lessons by radio, television and online, and the best efforts of teachers and parents, many students remain out of reach. Learners with disabilities, those in minority or disadvantaged communities, displaced and refugee students and those in remote areas are at highest risk of being left behind. And even for those who can access distance learning, success depends on their living conditions, including the fair distribution of domestic duties.

We already faced a learning crisis before the pandemic. More than 250 million school-age children were out of school. And only a quarter of secondary school children in developing countries were leaving school with basic skills.

Now we face a generational catastrophe that could waste untold human potential, undermine decades of progress, and exacerbate entrenched inequalities. The knock-on effects on child nutrition, child marriage and gender equality, among others, are deeply concerning.

This is the backdrop to the policy brief I am launching today, together with a new campaign with education partners and United Nations agencies called "Save our Future". We are at a defining moment for the world's children and young people.

The decisions that Governments and partners take now will have lasting impact on hundreds of millions of young people, and on the development prospects of countries for decades to come.

This policy brief calls for action in four key areas: First, reopening schools. Once local transmission of COVID-19 is under control, getting students back into schools and learning institutions as safely as possible must be a top priority.

We have issued guidance to help Governments in this complex endeavour. It will be essential to balance health risks against risks to children's education and protection, and to factor in the impact on women's labour force participation. Consultation with parents, carers, teachers and young people is fundamental.

Second, prioritizing education in financing decisions. Before the crisis hit, low- and middle-income countries already faced an education funding gap of $1.5 trillion a year. This gap has now grown. Education budgets need to be protected and increased. And it is critical that education is at the heart of international solidarity efforts, from debt management and stimulus packages to global humanitarian appeals and official development assistance (ODA).

Third, targeting the hardest to reach. Education initiatives must seek to reach those at greatest risk of being left behind — people in emergencies and crises, minority groups of all kinds, displaced people and those with disabilities. They should be sensitive to the specific challenges faced by girls, boys, women and men, and should urgently seek to bridge the digital divide.

Fourth, the future of education is here. We have a generational opportunity to reimagine education. We can take a leap towards forward-looking systems that deliver quality education for all as a springboard for the Sustainable Development Goals.

To achieve this, we need investment in digital literacy and infrastructure, an evolution towards learning how to learn, a rejuvenation of life-long learning and strengthened links between formal and non-formal education. And we need to draw on flexible delivery methods, digital technologies and modernized curricula while ensuring sustained support for teachers and communities.

As the world faces unsustainable levels of inequality, we need education — the great equalizer — more than ever. We must take bold steps now, to create inclusive, resilient, quality education systems fit for the future.

EXHIBIT 7

VIEWPOINT

Reopening K-12 Schools During the COVID-19 Pandemic
A Report From the National Academies of Sciences, Engineering, and Medicine

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National Academies of Sciences, Engineering, and Medicine, Washington, DC.

Heidi A. Schweingruber, PhD
National Academies of Sciences, Engineering, and Medicine, Washington, DC.

Dimitri A. Christakis, MD, MPH
Department of Pediatrics, School of Medicine, University of Washington, Seattle; Center for Child Health, Behavior and Development, Seattle Children's Research Institute, Seattle Children's Hospital, Seattle, Washington; and Editor, *JAMA Pediatrics*.

Editorial page 845

Related article page 859

Corresponding Author: Kenne A. Dibner, PhD, National Academies of Sciences, Engineering, and Medicine, 500 Fifth St NW, Washington, DC 20001 (kdibner@nas.edu).

The coronavirus disease 2019 (COVID-19) pandemic has presented unprecedented challenges to the nation's kindergarten-grade 12 education system.[1] The rush to respond to the pandemic led to closures of school buildings across the country, with little time to ensure continuity of instruction or to create a framework for deciding when and how to reopen schools. States and school districts are now grappling with the complex questions of whether and how to reopen school buildings in the context of rapidly changing patterns of community spread.

In response to the need for evidence-based guidance to support education decision makers, the National Academies of Sciences, Engineering, and Medicine convened an expert committee to provide guidance on the reopening and safe operation of elementary and secondary schools for the 2020-2021 school year. The committee was asked to integrate the most up-to-date evidence from medicine and public health with evidence about what is best for children and youth in view of the political and practical realities in schools and communities. The committee's report, *Reopening K-12 Schools During the COVID-19 Pandemic: Prioritizing Health, Equity, and Communities*, provides a series of recommendations aimed at helping states and school districts determine both whether to open school buildings for in-person learning and, if so, how to reduce risk in the process of reopening.[2] It also identifies areas of research that are urgently needed to allow educators and policy makers to make evidence-based decisions about reopening and about operating schools during a pandemic.

The committee recognized the decision to reopen school buildings entails weighing the public health risks of opening against the educational and other risks of keeping buildings closed. As school districts weigh these risks, the committee recommended that the school districts make every effort to prioritize reopening with an emphasis on providing in-person instruction for students in kindergarten-grade 5 as well as those students with special needs who might be best served by in-person instruction.

The committee emphasized providing in-person instruction for children in the younger grades for several reasons. First, the committee made the assumption that even if school buildings remain closed, instruction will continue through distance learning. Elementary school–aged children as well as those with special health care needs, in particular, may struggle with distance learning, especially if an adult is not readily available to supervise the experience. Children in kindergarten-grade 3 are still developing the skills needed to regulate their own behavior and emotions, maintain attention, and monitor their own learning.[3] In addition, research has demonstrated long-term, adverse consequences for children who are not reading at grade level by the third grade, particularly for those in low-income families. This suggests it is critically important to ensure quality educational experiences for children in the lower grades.[4]

There are also potential benefits to families and communities of reopening school buildings, including access to meal programs, some health care services, and mental health services. Although childcare is not the primary function of schools, the experiences of families and communities during school closures during the spring of 2020 make clear that schools serve an important role in providing a safe and nurturing space for children while their caregivers work.

Even though the benefits of reopening schools for students, families, and communities are clear, education leaders must also consider the health risks to school personnel and students' families, as well as the practicality and cost of the mitigation strategies necessary to operate safely. Variation across schools in the condition of buildings is an additional complication for ensuring the health of students and staff at schools. To reopen safely, school districts are encouraged to ensure ventilation and air filtration, clean surfaces frequently, provide facilities for regular handwashing, and provide space for physical distancing. Implementing this full suite of strategies will be costly and will require addressing many practical challenges. In school districts with aging school buildings and limited budgets, it will be especially difficult to implement all of the recommended strategies. Funding for these mitigation strategies should come from federal or state sources.

Recognizing the complexity of the decisions that school districts need to make, the committee outlined several recommendations aimed at ensuring a balance of public health and educational expertise is brought to bear in decisions, and the decision-making process considers the values and needs of the community the school district serves.

The committee called for partnerships between school districts and public health officials so that reopening decisions, plans for mitigating spread of the virus when buildings open, and decisions about future closures are all informed by the best available epidemiological and public health data and evidence. This should include a plan to monitor and evaluate epidemiological data to iteratively assess disease activity in the community. Indicators of particular interest include the number of new cases of COVID-19 diagnosed, the number of new hospitalizations and deaths, and the percentage of positive diagnostic tests for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).

School districts also will need to monitor absenteeism and alert public health officials to any large increases.[5] The committee recognized that in some communities, in rural areas, for example, public health offices are short-staffed or lack personnel with extensive expertise in infectious disease. With this in mind, the committee recommended that states take a leadership role in ensuring school districts have access to the public health expertise necessary to make these critical decisions.

As the intense national focus on the reopening question reveals, school closures have implications beyond the consequences for students, teachers, and families. With this in mind, the committee recommended that school districts develop a mechanism, such as a local task force, that allows for input from representatives of school staff, families, local health officials, and other community interests to inform decisions related to reopening schools. This cross-sector task force should build out a local framework for decision-making that brings multiple voices to the table to: (1) establish the community's values, goals, and priorities for reopening schools, (2) review mitigation strategies and policy options for schools, and (3) establish protocols for collecting and monitoring data related to the COVID-19 context in the community such that necessary decisions can be made to change course or reclose buildings if necessary. During this process, relevant decision makers need to establish clear thresholds for what those data mean; for example, once a school sees a specific number of cases, it will enact specific policies in response.

These task forces also need to consider transparent communication of the reality that while measures can be implemented to lower the risk of transmitting COVID-19 when schools reopen, there is no way to eliminate that risk entirely. It is critical to share both the risks and benefits of different scenarios, and to consider interventions that can be implemented and communicate to families that every effort is being made to keep their children safe in schools. Although all parties will not necessarily agree with the final decisions about when and how to reopen schools, an inclusive process will likely help build trust in school leadership so that decisions can be implemented quickly should conditions change.

These myriad decisions facing education leaders and state and local policy makers are made more difficult by gaps in the evidence base related to COVID-19. The committee identified a number of important research questions. Currently there is no scientific consensus on the role of children in transmitting COVID-19 either to one another or to adults. Better evidence on this point would offer much-needed guidance for decision makers. Similarly, research is needed on the role of reopening schools in contributing to community spread of SARS-CoV-2, the potential risk of airborne transmission of SARS-CoV-2, and the relative effectiveness of strategies for mitigating the spread of SARS-CoV-2. These research questions should be addressed concomitantly with the process of reopening schools.

The report recognized the importance of acknowledging that decisions to reopen schools are occurring against the backdrop of a long history of inequity in education, as well as deeply troubling inequities in COVID-19–related outcomes. Just as the ability of public schools to meet the needs of their communities is contingent on available resources, so too is a community's ability to respond to the COVID-19 crisis contingent on health care infrastructure and access. These challenges have the potential to compound each other in ways that could be catastrophic for the most vulnerable communities. Within any answer to the question of reopening, decision makers will need to position equity at the center of their response by ensuring traditionally marginalized voices are engaged in the decision-making process, necessary services are accessible, and resources are equitably distributed. This moment is an opportunity to reopen schools in ways that enable them to better serve the students, families, and communities that rely on them.

ARTICLE INFORMATION

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Additional Information: The report *Reopening K-12 Schools During the COVID-19 Pandemic: Prioritizing Health, Equity, and Communities* was produced by the National Academies of Sciences, Engineering, and Medicine. The authors of this Viewpoint were the study director (Dr Dibner), director of the Board on Science Education (Dr Schweingruber), and a member of the study committee (Dr Christakis).

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EXHIBIT 8

VIEWPOINT

School Closure During the Coronavirus Disease 2019 (COVID-19) Pandemic

An Effective Intervention at the Global Level?

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Nicola Principi, MD
Università degli Studi di Milano, Milan, Italy.

Viewpoint and Editorial

In most countries, attempts to reduce severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) circulation and new coronavirus disease 2019 (COVID-19) development have been mainly based on restrictive measures, including the avoidance of social interactions, the prohibition of movements within the national territory, and the closure of all nonessential activities, including schools. While the closure of factories and the avoidance of other social interaction together with proper hand washing remain the best measures to reduce the total burden of COVID-19, the usefulness of school closure can be debated.

It is highly likely that the most important reason leading governments to close schools was the evidence that the early introduction of this restrictive measure had been effective in reducing influenza incidence rates and related clinical, social, and economic problems during both seasonal and pandemic influenza outbreaks.[1] However, it is not at all certain that the same advantages can be expected in the case of the COVID-19 pandemic. It is even possible that school closure may have negative effects and lead to greater medical, economic, and social problems. Modeling studies seem to indicate that school closure can be significantly effective for infection control only when the outbreaks are due to viruses with low transmissibility and attack rates are higher in children than in adults. This applies to influenza viruses and influenza infection but does not seem valid for coronaviruses, including SARS-CoV-2, which have different transmission dynamics, or for COVID-19, which affects mainly adults and elderly individuals. It has been calculated that the expected number of cases directly generated by 1 case of SARS-CoV-2 infection (R_O) is high and not lower than 2.5.[2] Moreover, children younger than 10 years account for only 1% of COVID-19 cases,[3] and although a certain number of them can experience an asymptomatic infection, the total number of children with SARS-CoV-2 infection seems lower than expected. Although no official data are available, to our knowledge, on the effectiveness of school closure during the COVID-19 epidemic, the poor relevance of this restrictive measure seems confirmed by the evidence that in Taiwan, the spread of COVID-19 was minimized without widespread planned school closures.[4] On the other hand, using UK population and school data together with data on SARS-CoV-2 transmission dynamics calculated in the early COVID-19 pandemic in China, it was predicted that school closure would be insufficient to mitigate the pandemic. Finally, the poor effect of school closure during coronavirus epidemics has already been evidenced in some studies carried out during the SARS epidemic. In China, it was found that school closure for 2 months was not significantly effective for disease prevention mainly because of the very low incidence of symptomatic disease among school-aged children.[5] Moreover, in Taiwan, it was evidenced that the risk of transmission of infection among children in a classroom was very low, with an R_O less than 1, clearly highlighting that school closure could be only marginally effective.[4] In a 2020 systematic review, Viner et al[6] showed that there are no data on the relative contribution of school closures to SARS-CoV-2 transmission control. Data from the SARS outbreak in mainland China, Hong Kong, and Singapore suggest that school closures did not contribute to the control of the epidemic. Recent modeling studies of COVID-19 from the United Kingdom using data from the Wuhan province, China, outbreak predicted that school closures alone would prevent only 2% to 4% of deaths, much less than other social distancing interventions.[7]

While the efficacy of school closure is debatable, the potential negative consequences of this measure cannot be ignored. Some consequences regard the family. To take care of the youngest children when daycares and schools are closed, parents must remain at home, with inevitable economic consequences. In addition, when parents are health care workers, this can have relevant medical effects. In the US, it has been calculated that the absence from work of 15% of health care workers may be associated with a significant increase in COVID-19 mortality.[8] If parents must work and grandparents must become the primary caretakers of children, the risk significantly increases that these persons, who are per se at the greatest risk of serious illness, may become infected, and this is what happened in Italy in the first 2 weeks when school closure was decided but other work activities were not stopped. Moreover, school closure can cause risks of deepening social, economic, and health inequities, particularly in limited-income countries. In the countries where the Ebola epidemic took place in 2014 to 2016, school closure was associated with increased child labor, violence, and socioeconomic problems.[8] Finally, the distance learning through digital technologies that has been planned by several countries to replace traditional school can be difficult to implement even in some industrialized countries. In Italy, a 2015 survey carried out by the National Institute of Statistics[9] showed that in the poorest areas of the country, 41% of the households did not have a tablet or a personal computer and that among families with at least 1 child, only 14.3% could guarantee distance learning. This means that a relevant group of children may remain substantially excluded not only from learning but also from any form of socialization with peers and with the surrounding world.

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All these limitations explain why some experts suggest that the potential advantages of school closure, if any, have to be balanced against the secondary adverse effects. Instead of total school closure, alternative strategies to contain transmission, such as reducing class size, physical distancing, and hygiene promotion, could be implemented.

Another important but unsolved problem strictly related to school closure is how and when school can be reopened. During influenza outbreaks, reopening has been associated with the risk of epidemic resurgence. The best solution for the COVID-19 pandemic is not known. It has been suggested that children who test positive on serologic tests that identify IgG against SARS-CoV-2 could be admitted to school. It is supposed that positivity could allow the identification of children who have already been infected, can be considered protected, and can attend school without posing risks per se to other children. However, the use of this procedure can be strongly criticized. The sensitivity of the presently available antibody tests is suboptimal. Most children have an asymptomatic infection, and as the immune response to SARS-CoV-2 infection has been found to be greater the more serious the disease is, it seems likely that most children will have a low antibody titer that is inadequate for obtaining positivity on tests with relatively low sensitivity.[10] Moreover, even when IgG levels are measured, it is not possible to state whether children are protected or how long the protection may last. The antibody protective level and secondary immune response to SARS-CoV-2 are not known. Taken together, these factors seem to indicate that most children with IgG positivity cannot be identified and, even if identified, cannot be considered protected for the long term. Other criteria, such as a systematic adoption of face masks with some lessons on this issue and on all hygiene measures for COVID-19 prevention, screening with temperature measurements, or closing classrooms with infected students, must be followed when school is resumed.

ARTICLE INFORMATION

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EXHIBIT 9

Summary of School Re-Opening Models and Implementation Approaches During the COVID 19 Pandemic

July 6, 2020

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Schools closed in many countries for some period of time during the COVID-19 pandemic as part of mitigation efforts to reduce transmission of SARS-CoV-2. Currently, a number of countries have fully or partially re-opened schools or are in the process of doing so.

This document is a brief summary of the models and implementation approaches to re-opening schools that focuses on the approaches used in 15 countries for which we were able to identify data. This is not a comprehensive survey of the models used in all countries that have re-opened schools. Our systematic search of the published and pre-print literature yielded very few articles that address this topic and so this summary relies heavily on news articles and "grey literature" sources. **It includes news articles, manuscripts published in peer-reviewed journals or on pre-print servers, and other resources identified through July 6, 2020. References that appeared in the daily COVID-19 Literature Report (Lit Rep) are marked with an asterisk***, and the summary is shown in the annotated bibliography below.

Executive Summary of Models of School Re-Opening Globally

- There is a lack of scientific consensus about the impact of school closures and re-openings on community transmission of SARS-CoV-2. There is considerable concern about the indirect effect of school closures on students and parents.
- Most models of school re-opening involve reductions of class size, increasing physical distance between students, and keeping students in defined groups with limited interaction between groups to reduce the potential for wide-scale transmission within schools.
- Most countries that have re-opened schools have instituted some degree of staggering the start, stop, and break times within the school. A number of countries are using alternate shifts (morning, afternoon) or alternate days, while a smaller number of countries have maintained relatively normal school schedules.
- A number of countries have re-opened schools only for younger or older students in order to accommodate the increase in resources (classroom space, teachers, etc.) required for smaller class sizes. More countries have re-opened only for younger students than have re-opened only for older students.
- In a number of countries, face masks are required for students and/or staff in schools, with variability of the lower age limit for face mask requirements. However, some countries are not using facemasks as a part of their re-opening model.
- Systematic school-based testing for SARS-CoV-2 virus or antibodies is being done on a small scale in a limited number of settings, but this approach is not widely implemented at this time.

Summary of School Re-opening Models by Country

Country	Current Status	Date of closing	Date of re-opening	Younger students only	Older students only	All Ages	Max class size	Alternate shifts	Alternate days	Facemasks required	Reduced class size	Physical distancing	Increased handwashing	Temperature checks	Viral or antibody testing	Contact tracing	Impact on transmission
Belgium	Open (localized)	3/13/2020	5/18/2020	Y	•	•	10	N	Y	Teachers	Y	Y	?	?	?	?	
Denmark	Open	3/16/2020	4/15/2020	Y	•	•	12	N	N	N	Y	Y	Y	N	?	?	No significant increase in the growth rate of COVID-19 cases [1]
France	Open	3/3/2020 – 3/16/2020	5/11/2020	Y/N	•	Y/N	?	N	N	Secondary schools	Y	?	?	N	?	?	Unknown
Germany	Open (localized)	3/3/2020 – 3/18/2020	5/4/2020	•	Y	•	10	Y	N	Y/N (SARS-CoV-2-negative students allowed to not wear masks)	Y	Y	?	N	Y	?	Increased transmission among students, but not school staff [1]
Greece	Open (localized)	3/11/2020	6/1/2020	Y	•	•	15	?	?	?	Y	Y	?	?	?	?	Unknown
Israel	Open	3/12/2020	5/3/2020	•	•	Y	NA	N	N	Y (>7 years old)	N	N	?	N	?	Y	Outbreaks observed in multiple schools
Japan	Open	3/2/2020	4/24/2020	may vary	may vary	may vary	may vary	may vary	may vary	Y	may vary	Y	?	Y	?	?	Unknown
South Korea	Open	3/2/2020	6/8/2020	•	•	Y	33% – 67%	Y/N	N	Y	Y	Y	Y	Y	?	Y	Unknown
New Zealand	Open	3/24/2020	5/14/2020	•	•	Y	NA	N	N	N	N	Y				Y	Unknown
Norway	Open	3/11/2020	4/20/2020	Y	•	•	15	N	N	N	Y	Y	Y	N	?	?	No significant increase in the growth rate of COVID-19 cases [1]
Scotland	Closed	3/23/2020	8/11/2020	•	•	Y	?	maybe	maybe	?	Y	Y	Y	?	?	?	NA
Sweden	Open	never closed	never closed	Y/N	•	Y/N	NA	N	N	N	N	N	?	N	N	?	Relatively high rate in children suggests there may have been significant spread in schools.[2]
Switzerland	Open	3/16/2020	5/11/2020	Y	•	•	50%	N	Y	N	Y	Y	Y	N	?	?	Unknown
Taiwan	Open	winter break extended 2 weeks	2/25/2020	•	•	Y	NA	N	N	Y	N	Y/N	Y	Y	?	?	Unknown
Vietnam	Open	2/28/2020 – 3/31/2020	5/18/2020	•	•	Y	NA	N	N	Y	N	Y	?	Y	N	?	Unknown

Y/N indicates variability in implementation within the country; Current status based on UNESCO COVID-19 Impact on Education tracker (https://en.unesco.org/covid19/educationresponse)

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Updated 7/6/2020

Considerations for Closing Schools

- There is active discussion and lack of scientific consensus about the susceptibility of school-age children to SARS-CoV-2 infection, their infectiousness, their role in community transmission, and the impact of school closures and re-openings on transmission.[1,3–5]* There is also vigorous debate about how best to balance the potential benefit to reducing SARS-CoV-2 transmission by closing schools or significantly modifying the schedule of in-person learning against the very real consequences of such measures on student learning, indirect harms to students (e.g., lack of access to school-based feeding programs), and the considerable burden this places on parents and caregivers, particularly those who need to simultaneously work. The burden of these indirect effects is likely to fall disproportionally on lower income families and people of color. This summary report does not systematically review these issues, but a sample of commentaries related to this topic is included.

- Most countries word-wide have implemented localized or national school closures in response to the COVID-19 pandemic, with estimates of >65% of enrolled children globally affected by school closures.[6] A small number of countries in regions with community transmission of SARS-CoV-2 never imposed school closures. Sweden is most notable among countries that did not close all schools, although Sweden did close schools for secondary grade students between March 18 and June 4, 2020.[2]

Summary of Approaches to Re-Opening Schools and Subsequent Transmission

Since the initial round of school closures, many countries have re-opened schools using a wide range of models**. Characteristics of these models that vary between countries** include the **affected grades** *(younger students only, older students only, or all students)*, **schedules** *(reduced in-person time, alternating shifts, alternating days)*, and implementation of **transmission control measures** *(class size reductions, physical distancing, face masks, hand washing, temperature checks, and viral or antibody testing)*.

- **Affected grades:** Many, but not all, countries that have re-opened schools have done is for only a subset of grades. In most examples, this appears to be an effort to make available more classrooms to accommodate smaller class sizes. Many countries have **re-opened schools only for younger children** *(Belgium, Denmark, France, Greece, Norway, Sweden initially)* while others have **re-opened only for older students**, based on the belief that older students would be more able to comply with physical distancing and transmission control measures *(Germany)*. A smaller number of countries have **re-opened schools for all grades** *(France in "green zones", Israel, Scotland proposed for 8/11/2020 re-opening, Sweden currently, Taiwan, and Vietnam)*.

- **Schedules:** Many countries have **staggered start times, break times, and dismissal times** to increase physical distancing. Some countries have adopted alternative school schedules to accommodate smaller class sizes and to ensure greater social distancing. Approaches include having students attending **alternate shifts** (morning and afternoon) *(Germany, South Korea, and Scotland potentially)* or **attending alternate days** *(Belgium, Switzerland)*.

- **Transmission control measures:** Most countries have instituted some combination of school-based measures intended to reduce transmission of SARS-CoV-2 among students and staff. These include the use of **face masks** *(with some variability in age requirements: Belgium, France, Germany, Israel, Japan, South Korea, Taiwan, and Vietnam)*, **reduced class size** *(typically 10-15 students or approximately 50% capacity: Belgium, Denmark, France, Germany, Greece, South Korea, Norway, Scotland proposed, Switzerland)*. Some countries have not reduced class size, many of which are relying on other measures to reduce transmission such as closing schools with confirmed cases and using desktop dividers to increase physical separation between classroom desks and cafeteria seating without increasing physical distance between students *(Israel, Sweden, Taiwan, and Vietnam)*. Required temperature checks at school entries have been instituted in some countries *(Japan, South Korea, Taiwan, Vietnam)*. **Routine screening for SARS-CoV-2** virus or antibodies is reported on a small scale in Germany. Systematic **contact tracing** in the event that a student or staff tests positive for SARS-CoV-2 or has confirmed COVID-19 is reported in some countries *(Israel, South Korea, New Zealand, and Germany)*.

There is **limited evidence regarding the impact of school-reopening on SARS-CoV-2 transmission** in the community. Based on the experience of four European countries (Denmark, Norway, Sweden, and Germany), there is some evidence that school closures led to declines in the epidemic growth rates of COVID-19.[1] Reopening of schools for all students in countries with low community transmission (Denmark and Norway) has not resulted in a significant increase in the growth rate of COVID-19 cases. Return of most students to school in countries with higher levels of community transmission (Germany) has been accompanied by increased transmission among students, but not school staff. After re-opening schools in Israel there have been a number of outbreaks of SARS-CoV-2 in schools that have resulted in those schools being closed. In South Korea, schools in some areas were closed again after re-opening in response to surges in the number of COVID-19 cases in the community.

Country-Specific Experience with School Re-Opening

Sweden

Sweden did not close schools for students in kindergarten through grade 9 in response to the COVID-19 pandemic. Schools were closed for students in upper secondary grades from around March 18, 2020 through June 14, after which schools were reopened for all students. No major adjustments to class size, lunch policies, or recess rules were instituted.[2]

Seroprevalence surveys conducted by the Swedish Public Health Agency found that the antibody prevalence in children/teenagers was 4.7% compared with 6.7% in adults age 20-64 and 2.7% in adults age 65-70. The relatively high rate in children suggests there may have been significant spread in schools.[2]

Denmark

After a closure of schools that started around March 16, 2020, Denmark re-opened schools for children under 11 years of age on April 15, 2020 in response to early evidence that very few children get severely ill from COVID-19. Primary school children were the first to return to school, and students are kept in

small groups with minimal contact with others outside their group. “Micro-groups” of students arrive at a separate time, eat lunch separately, stay in their own zones in the playground and are taught by one teacher.[7] These groups consist of approximately 12 students, which was determined based on the maximum number of students that could occupy a room while maintaining sufficient physical distance between students and teachers. This has required dividing classes and teaching staff. Because many schools are designed to include both primary and secondary school children, limiting re-opening of schools to primary grade students has allowed for sufficient physical classroom space to accommodate the small class sizes. Without this approach, schools would need to have morning and afternoon shifts.

Students are assigned their own desks, which are spaced 6 feet apart from each other. During recess, children are allowed to play only in small groups.

Handwashing and sanitization are an additional component to school re-opening. Students are asked to wash their hands hourly. Students and staff are not asked to wear face masks.

In the context of low community transmission, school re-opening in Denmark has not resulted in a significant increase in the growth rate of COVID-19 cases.[1]

Germany

Schools in Germany were closed starting around March 3, 2020 and began reopened around May 4 for older age students. Students are assigned their own fixed desks that are spaced at least 6 feet way from other desks. The fixed location of desks combined with student seating charts can be used by contact tracers if necessary.[7] School days have been shortened and are supplemented with online lessons. This allows multiple groups of students to share classrooms, which are allowed to hold no more than 10 students. In at least some schools, students are being tested for SARS-CoV infection every 4 days, with a negative test allowing students to attend school without a face mask.[8]

In the context of moderate community transmission, school re-opening in Germany has been accompanied by increased transmission among students, but not school staff.[1]

Norway

In response to the COVID-19 pandemic, schools in Norway were closed on March 11, 2020.[9] Re-opening of schools started on April 20 for kindergarten students followed on April 27 by students in grades 1 through 4.[10] The government recommended that classes be limited to no more than 15 students. Special precautions include having children wash their desks daily. Some schools have divided their playgrounds.[11] School for students in grades 5 and above and universities remain closed.

In the context of low community transmission, school re-opening in Norway has not resulted in a significant increase in the growth rate of COVID-19 cases. [1]

France

Starting on May 11, 2020, nursery and primary schools were re-opened across much of France.[11] On May 18, schools were re-opened for students age 11 to 15 years old only in “green zones” where community transmission was limited. The president of France announced that schools for students 15 to

18 years old would re-opened on June 22. Class sizes have been reduced and face masks are mandatory in secondary schools.

Belgium
Schools in Belgium were re-opened starting on May 18, 2020, with all nursery schools open by June 2, followed by all primary school grades by June 8.[12] Classroom size is limited to no more than 10 students.[11] Schools are using split schedules with students attending on alternate days. Teachers are encouraged to wear a face mask if social distancing is not guaranteed.[12] Children are grouped by class throughout the school day, including on the playground.

Switzerland
Schools reopened in Switzerland on May 11, 2020 with strict social distancing measures in place.[11] Many schools have reduced class sizes in half and students attend in-person classes only 2 days per week to allow for space for the smaller class sizes.[13] Desks have been moved further apart and tape marks have been placed on the floor to aid students in maintaining appropriate physical distance. Hand sanitizing stations have been added throughout schools. School re-opening for students in grade 10 and above and for university students was delayed until June 8.

Greece
Kindergarten and primary school students in Greece returned to school starting on June 1, 2020. Class sizes are limited to 15 students and desks are spaced 1.5 meters apart.[14] Breaks are staggered to allow for physical distancing on playgrounds.

Israel
As of early May, Israel had experienced fewer than 300 deaths from COVID-19 and the government re-opened schools, along with restaurants and other public settings. Starting in early May, school re-opening was initially implemented by opening classes in smaller groups or "capsules." By May 17, limitations on class size were lifted.[15] Two weeks after school re-opening, COVID-19 outbreaks were observed in classrooms, including 130 cases in one school alone. By June 3, there were 200 confirmed COVID-19 cases and over 244 positive SARS-CoV-2 tests among students and staff across multiple schools. In response, the government ordered the closer of any school with a cases of SARS-CoV-2 infection. By June 8, 139 educational institutions had been indefinite closed out of 5,200 schools and 200,000 kindergartens.[16]

Since the initial opening, the school system has remained open. Due to the crowded nature of the schools system, physical distancing of students within schools has not been widely adopted and control measures have focused on closing schools with reported cases, extensive testing, and quarantine of students and staff with a potential SARS-CoV-2 exposure.[17] Teachers and students older than 7 years are required to wear masks. As of June 24, 2020, isolation and quarantine has affected approximately 1% of Israeli students.

Taiwan
While schools were never officially closed in Taiwan, the winter break was extended by two weeks and students returned to school on February 25, 2020.[10] Schools conduct temperature checks and some

schools use plastic tabletop desk partitions. Face masks are required at all times and masks have reduced the need to space desks further apart. Tents have been used to expand eating areas to increase physical distancing between students.[18] Student-athletes are allowed to practice with their teams, but competitions have been canceled.

Japan
Schools in Japan were closed on March 2, 2020. The Prime Minister announced on March 24 that the order closing schools would not be extended, leaving decisions about re-opening schools up to local municipalities.[10] The Ministry of Health issued guidelines for school reopening that includes measures such as opening windows to ventilate classrooms, maintaining physical distance, checking temperatures daily, and wearing face masks.

New Zealand
Schools re-opened in New Zealand on May 14, 2020 following closures that started on March 24. Parents who are not comfortable sending their children back to school are allowed to make "transition arrangement" with their school.[19] Early childhood centers record information about students that would be needed for contact tracing.[11]

South Korea
Schools in South Korea began re-opening in late May, 2020. In the Seoul metropolitan area, limits have been placed on the proportion of the student populations allowed to be present at one time, with high schools limited to two-thirds of their student population and kindergartens, elementary, middle, and special education schools limited to one-third of their students at a time.[20] Physical distancing measures have been put in place, including the use of plastic desktop dividers in classrooms and lunchrooms in many schools. The Korean CDC asked all school staff and students to wear face masks in school and to follow hygiene measures like coughing into their arms and washing hands.[21] Temperature checks are required upon entering school buildings.

In the event that someone inside a school is confirmed to have SARS-CoV-2 infection, all staff and students are sent home wearing masks and an epidemiological investigation and disinfection is initiated.[21]

Soon after the start of re-opening, a number of schools closed again and others postponed re-opening in response to a surge in new COVID-19 cases.

Vietnam
Starting on May 18, 2020, schools in Vietnam were reopened and students without a fever were allowed to return to class. Mandatory temperature check are conducted at the entrance to the school. Facemasks are required throughout the school day.[19] Attempts are made to maintain physical distancing.

Scotland
Scotland has announced that schools will restart on August 11, 2020 using a "blended model" involving a combination of part-time in-person study in school facilities and learning at home, with a focus on

maintaining physical distance.[11] Class sizes will be significantly reduced and students will initially spend approximately half of the time in the classroom and half of the time learning from home. In-person instruction will be staggered, with possible models including morning and afternoon sessions, alternate days, and alternate weeks. Classrooms will include seating that is spaced at least 6 feet apart and arrival, departure, and break times will be staggered to maintain adequate physical distancing between students. Innovative changes to staffing are being considered, including using former teachers to support classroom or online teaching. Physical space for teaching will be expanded by using libraries, community halls, leisure centers, conference venues, and taking short-term leases of vacant business spaces. Money has been allocated to provide laptops to students without access to technology to enable online learning.

Guidelines for School Reopening

- The CDC has issued guidance on school re-opening that includes a decision tree with starting points of "no community spread," "minimal to moderate community spread," or "substantial community spread." Guidance is also provided about what to do when a confirmed case has entered a school.[22]

  Interim Guidance for Child Care Programs and K-12 Schools | CDC – https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/guidance-for-schools.html

- The WHO has published considerations for school-related public health measures in the context of COVID-19.[23]

  Considerations for School-Related Public Health Measures in the Context of COVID-19 – https://www.who.int/publications/i/item/considerations-for-school-related-public-health-measures-in-the-context-of-covid-19

- The Washington State Superintendent of Public Instruction has published a planning guide for districts to re-open schools.[24]

  Reopening Washington Schools 2020 District Planning Guide – https://www.k12.wa.us/about-ospi/workgroups-committees/currently-meeting-workgroups/reopening-washington-schools-2020-21-workgroup

- King County has published resources for schools and child care facilities.[25]

  COVID-19 Resources for Schools and Child Care Facilities - King County – https://www.kingcounty.gov/depts/health/covid-19/schools-childcare.aspx

Relevant Commentaries

- **Transition to Virtual Learning During the Coronavirus Disease-2019 Crisis in Iran: Opportunity Or Challenge?**[26] – Disaster Medicine and Public Health Preparedness (May) https://doi.org/10.1017/dmp.2020.142
- **Protecting Children in Low-Income and Middle-Income Countries from COVID-19** [27] – BMJ Global Health (May) https://doi.org/10.1136/bmjgh-2020-002844

- **When Life Is Put on Hold, How Do We Hold on to Life? - Challenges and Opportunities in Developmental and Behavioral Pediatrics during COVID-19** [28] – Journal of Developmental and Behavioral Pediatrics : JDBP (May) https://doi.org/10.1097/DBP.0000000000000830
- **Pandemic Stricken Cities on Lockdown. Where Are Our Planning and Design Professionals [Now, Then and into the Future]?**[29] – Land Use Policy (Sept 1) https://doi.org/10.1016/j.landusepol.2020.104805
- **Developing a Sustainable Exit Strategy for COVID-19: Health, Economic and Public Policy Implications** [30] – Journal of the Royal Society of Medicine (May 14) https://doi.org/10.1177/0141076820925229
- **COVID-19 Pandemic: Impact Caused by School Closure and National Lockdown on Pediatric Visits and Admissions for Viral and Non-Viral Infections, a Time Series Analysis** [31] – Clinical Infectious Diseases (June) https://doi.org/10.1093/cid/ciaa710
- **Considering Inequalities in the School Closure Response to COVID-19** [32] – The Lancet. Global Health (May) https://doi.org/10.1016/S2214-109X(20)30116-9
- **Information Sharing in the School Setting During a Public Health Emergency** [33] – NASN School Nurse (Print) (May 15) https://doi.org/10.1177/1942602X20925031
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- **Understanding COVID-19 in Children May Provide Clues to Protect at-Risk Populations** [41] – BMJ Paediatrics Open (May) https://doi.org/10.1136/bmjpo-2020-000702
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- **Children Returning to Schools Following COVID-19: A Balance of Probabilities** [47] – International Journal of Surgery (June) https://doi.org/10.1016/j.ijsu.2020.05.084
- **Children of COVID-19: Pawns, Pathfinders or Partners?** [48] – Journal of Medical Ethics (June 5) https://doi.org/10.1136/medethics-2020-106465
- **Advocating for Children During the COVID-19 School Closures** [49] – Pediatrics (June) https://doi.org/10.1542/peds.2020-1440
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- **Screen Time for Children and Adolescents during the COVID-19 Pandemic** [52] – Obesity (May 28) https://doi.org/10.1002/oby.22917
- **Covid-19: Papers Justifying Government's Plans to Reopen Schools Are "Inconclusive," Say Union Bosses** [53] – BMJ (Clinical Research Ed.) (May 27) https://doi.org/10.1136/bmj.m2108
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- **COVID-19, School Closures, and Child Poverty: A Social Crisis in the Making** [58] – The Lancet Public Health (May) https://doi.org/10.1016/S2468-2667(20)30084-0
- **How Sweden Wasted a 'Rare Opportunity' to Study Coronavirus in Schools** [2] – Science (May 22) https://doi.org/10.1126/science.abc9565
- **Covid-19: Delaying School Reopening by Two Weeks Would Halve Risks to Children, Says ISAGE** [59] – BMJ (May 22) https://doi.org/10.1136/bmj.m2079
- **Covid-19: Push to Reopen Schools Risks New Wave of Infections, Says Independent SAGE** [60] – BMJ (Clinical Research Ed.) (May 28) https://doi.org/10.1136/bmj.m2161
- **They Stumble That Run Fast the Economic and COVID-19 Transmission Impacts of Reopening Industries in the US** [61] – Medrxiv (June 12) https://doi.org/10.1101/2020.06.11.20128918

Recommended Resources

- **School Closures Caused by Coronavirus (Covid-19)** [6] – UNESCO https://en.unesco.org/covid19/educationresponse
- **Effects of School Closure on Incidence of Pandemic Influenza in Alberta, Canada** [62] – Annals of Internal Medicine (Feb 7) https://doi.org/10.7326/0003-4819-156-3-201202070-00005

- **Contact Tracing Evaluation for COVID-19 Transmission during the Reopening Phase in a Rural College Town** [63]* – Medrxiv (June) https://doi.org/10.1101/2020.06.24.20139204
- **The Effect of State-Level Stay-at-Home Orders on COVID-19 Infection Rates** [64] – American Journal of Infection Control (May) https://doi.org/10.1016/j.ajic.2020.05.017
- **Returning Chinese School-Aged Children and Adolescents to Physical Activity in the Wake of COVID-19: Actions and Precautions** [65]– Journal of Sport and Health Science (Apr) https://doi.org/10.1016/j.jshs.2020.04.003
- **Hand Hygiene, Mask-Wearing Behaviors and Its Associated Factors during the COVID-19 Epidemic: A Cross-Sectional Study among Primary School Students in Wuhan, China** [66] – International Journal of Environmental Research and Public Health (Apr) https://doi.org/10.3390/ijerph17082893
- **Impact of School Closures for COVID-19 on the US Health-Care Workforce and Net Mortality: A Modelling Study** [67] – The Lancet Public Health (May) https://doi.org/10.1016/S2468-2667(20)30082-7
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- **Socially Distanced School-Based Nutrition Program Feeding under COVID 19 in the Rural Niger Delta** [69] – The Extractive Industries and Society (Apr) https://doi.org/10.1016/j.exis.2020.04.007
- **No Evidence of Secondary Transmission of COVID-19 from Children Attending School in Ireland, 2020** [5] – Euro Surveillance (May 28) https://doi.org/10.2807/1560-7917.ES.2020.25.21.2000903
- **Epidemiological Features and Viral Shedding in Children with SARS-CoV-2 Infection** [3] – Journal of Medical Virology (June) https://doi.org/10.1002/jmv.26180
- **School Opening Delay Effect on Transmission Dynamics of Coronavirus Disease 2019 in Korea: Based on Mathematical Modeling and Simulation Study** [70] – Journal of Korean Medical Science (Apr) https://doi.org/10.3346/jkms.2020.35.e143
- **Impact of Public Health Interventions on Seasonal Influenza Activity During the SARS-CoV-2 Outbreak in Korea** [71] – Clinical Infectious Diseases (May) https://doi.org/10.1093/cid/ciaa672
- **The Severity of COVID-19 in Children on Immunosuppressive Medication** [72] – The Lancet Child & Adolescent Health (May) https://doi.org/10.1016/S2352-4642(20)30145-0
- **The Role of Children in the Dynamics of Intra Family Coronavirus 2019 Spread in Densely Populated Area** [4] – Pediatric Infectious Disease Journal (June 1) https://doi.org/10.1097/INF.0000000000002783
- **Shut and Re-Open the Role of Schools in the Spread of COVID-19 in Europe** [1] – Medrxiv (June 26) https://doi.org/10.1101/2020.06.24.20139634
- **De-Escalation by Reversing the Escalation with a Stronger Synergistic Package of Contact Tracing, Quarantine, Isolation and Personal Protection: Feasibility of Preventing a COVID-19 Rebound in Ontario, Canada, as a Case Study** [73] – Biology (May 16) https://doi.org/10.3390/biology9050100
- **School Closure and Management Practices during Coronavirus Outbreaks Including COVID-19: A Rapid Systematic Review** [74] – The Lancet Child & Adolescent Health (May) https://doi.org/10.1016/S2352-4642(20)30095-X
- **Mental Health Status Among Children in Home Confinement During the Coronavirus Disease 2019 Outbreak in Hubei Province, China** [75] – JAMA Pediatrics (Apr) https://doi.org/10.1001/jamapediatrics.2020.1619

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    - Stage et al. compared daily hospitalization trends in northern European countries (Denmark, Norway, Sweden, and Germany), and found that the growth rate of COVID-19 cases declined approximately 9 days after implementation of school closures.
    - Limited school attendance did not appear to significantly affect transmission.
    - Reopening of schools for all students in countries with low community transmission (Denmark and Norway) has not resulted in a significant increase in the growth rate of COVID-19 cases. Return of most students to school in countries with higher levels of community transmission (Germany) has been accompanied by increased transmission among students, but not school staff.
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    - An analysis of all children (n=314) from families with SARS-CoV-2 infected members in Zhejiang Province, China found incidence in children who were close contacts was significantly lower than in adults who were close contacts (13% vs 21%). Among 43 pediatric cases, the mean age was 8.2 years and mean incubation was 9.1 days, 77% had mild pneumonia and the remainder were asymptomatic. While SARS-CoV-2 RNA could be detected in stool samples in 91% of cases and for over 70 days in some children, no family contacts of these children were subsequently infected.
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    - Among 13 family clusters in a city in Israel, after removing the index case, 58% of adults became SARS-CoV-2 positive by PCR compared to 33% of children 5-17 years and 12% of children less than 5 years of age. Children appeared to play a smaller role in transmission of SARS-CoV-2 than adults.
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EXHIBIT 10

U.S. Department of Homeland Security
Cybersecurity & Infrastructure Security Agency
Office of the Director
Washington, DC 20528

August 18, 2020

ADVISORY MEMORANDUM ON ENSURING ESSENTIAL CRITICAL INFRASTRUCTURE WORKERS ABILITY TO WORK DURING THE COVID-19 RESPONSE

FROM: Christopher C. Krebs
Director
Cybersecurity and Infrastructure Security Agency (CISA)

As the Nation continues to come together to respond to COVID-19, the March 16th updated Coronavirus Guidance for America that highlighted the significance of the critical infrastructure workforce remains important.

The Cybersecurity and Infrastructure Security Agency (CISA) executes the Secretary of Homeland Security's authorities to secure critical infrastructure. Consistent with these authorities, CISA has developed, in collaboration with other federal agencies, State and local governments, and the private sector, an "Essential Critical Infrastructure Workforce" advisory list.

This list is intended to help State, local, tribal, territorial officials and organizations endeavor to protect their workers and communities as they continue to reopen in a phased approach, coupled with the need to ensure continuity of functions critical to public health and safety, as well as economic and national security. Decisions informed by this list should also take into consideration worker safety, workplace settings, as well as additional public health considerations based on the specific COVID-19-related concerns of particular jurisdictions.

This list is advisory in nature. It is not, nor should it be considered, a federal directive or standard. Additionally, this advisory list is not intended to be the exclusive list of critical infrastructure sectors, workers, and functions that should continue to work safely during the COVID-19 response across all jurisdictions.

The advisory list identifies workers who conduct a range of operations and services that are typically essential to continued critical infrastructure viability, including staffing operations centers, maintaining and repairing critical infrastructure, operating call centers, working construction, and performing operational functions, among others. It also includes workers who support crucial supply chains and enable functions for critical infrastructure. The industries they support represent, but are not limited to, medical and healthcare, telecommunications, information technology systems, defense, food and agriculture, transportation and logistics, energy, water and wastewater, and law enforcement.

The earlier versions of the list were meant to assist officials and organizations identify essential work functions and to allow essential workers access to their workplaces during times of community restrictions. Now, several months into the pandemic, it is commonly acknowledged that essential workers have access to their workplaces. The list can now be most useful in identifying the universe of essential workers that may require specialized risk management strategies to ensure that they can work safely. Furthermore, the list can be used to begin planning and preparing for the allocation of scare resources used to protect essential workers against COVID-19.

State, local, tribal, and territorial governments are responsible for implementing and executing response activities in their communities, while the Federal Government is in a supporting role. Officials should use their own judgment in issuing implementation re-opening directives and guidance. Similarly, while adhering to relevant public health guidance, critical infrastructure owners and operators are expected to use their own judgement on issues of the prioritization of business processes and workforce allocation to best ensure worker safety and the continuity of the essential goods and services they support. All decisions should appropriately balance public safety, the health and safety of the workforce, and the continued delivery of essential critical infrastructure services and functions.

CISA will continue to work with our partners in the critical infrastructure community to update this advisory list, if necessary, as the Nation's response to COVID-19 evolves.

Should you have questions about this list, please contact CISA at CISA.CAT@CISA.DHS.GOV.

Attachment: "Guidance on the Essential Critical Infrastructure Workforce: Ensuring Community and National Resilience in COVID-19 Response Version 4.0"

Guidance on the Essential Critical Infrastructure Workforce: Ensuring Community and National Resilience in COVID-19 Response

Version 4.0 (August 18, 2020)

ENSURING ESSENTIAL CRITICAL INFRASTRUCTURE WORKERS HAVE THE ABILITY TO WORK SAFELY

Functioning critical infrastructure is imperative during the response to the COVID-19 emergency for both public health and security as well as community well-being. While stopping the spread of the virus and protecting the most vulnerable among us rightfully remain national priorities, a degradation of infrastructure operations and resilience only makes achieving those missions more difficult. Recognizing this, CISA published guidance identifying Essential Critical Infrastructure Workers at the outset of the COVID-19 pandemic. This guidance was adopted broadly across the country and was subsequently updated as the response evolved. This update, Version 4.0, continues to advance the guidance considering developments in pandemic response to support a risk-based approach towards worker safety to ensure the continuity of critical functions.

CISA appreciates the partnership with the critical infrastructure community in developing the guidance. The Nation's infrastructure resilience was undoubtedly enhanced by a common approach to, and prioritization of, essential critical infrastructure workers being able to work during periods of community restrictions. As with previous guidance, this list is advisory in nature. It is not, nor should it be considered, a federal directive or standard. Additionally, this advisory list is not intended to be the exclusive list of critical infrastructure sectors, workers, and functions that should continue during the COVID-19 response across all jurisdictions. Individual jurisdictions and critical infrastructure owners and operators should add or subtract essential workforce categories based on their own requirements and discretion.

Central to the value of the guidance in the early months of the pandemic was the discrete problem it was intended to support solutions for – enabling essential workers to work during community restrictions. While CISA continues to engage with stakeholders to identify workforce limitations that may impact infrastructure resilience, it is our assessment that, for the most part, essential workers are able to work – what is now most important is that essential workers are able to work in a safe environment.

Recognizing this, the Essential Critical Infrastructure Workers guidance can add the most value going forward by illuminating the universe of workers that require particularly thoughtful and deliberate risk management strategies so that they can continue to *work safely*.

CISA recognizes that states and localities across the country have undergone a phased re-opening of businesses, public lands, and other places of community and civic importance. Previous versions of the list did not include essential workers in critical infrastructure work settings, such as schools, that were presumed to be closed at the time of publication. Reflecting ongoing national discussions around reopening, this version includes these workers, in addition to other adjustments. As we enter the next stage in the pandemic response and schools and additional businesses reopen, CISA encourages jurisdictions and critical infrastructure owners to use the list to assist in prioritizing the ability of essential workers to work safely to ensure ongoing infrastructure operations and resilience.

Doing so will require looking at the universe of workers on the Essential Critical Infrastructure Workforce list and identifying tailored risk mitigation strategies for specific workplace settings. These could include:

Creating a Risk Categorization Methodology for Worker Safety. We recommend that organizations continue to categorize their employees against a risk factor matrix so that mitigation strategies can be implemented to enhance safety. The risk categorization factors that should be considered include:

Setting: Are workers indoors or outdoors?
Proximity: How physically close are workers (and customers) to each other?
Type of contact: Do workers touch shared surfaces, common items, and other workers or customers?
Duration: How long does an average interaction last?

Number of different contacts: How many interactions occur daily?
Employee risk factors: Which workers face heightened risk due to their age or underlying medical conditions?
Capability to assess possible infection: Are there screening protocols that protect workers (and customers) from interactions with contagious people?
Cleaning: How frequently can the facility be sanitized and cleaned?

Based on the responses to these risks, organizations can categorize the conditions that their workers face and continue to implement measures to increase worker well-being. In other words, increased protective measures should be based on those with high risk factors. Risk categorization guidance assistance can be found at OSHA.

Identifying those workers that can potentially transition to working from home based on the lessons learned over the past few months from the unprecedented number of teleworkers. We encourage employers to take a fresh look at the job functions of their workforce to determine if it is necessary for workers to be in the office given the technology breakthroughs that have eased some of the roadblocks to working remotely.

Determining the criticality, uniqueness, or specialty of a worker's role to reduce the need to be at the workplace or working together in close proximity. There are some functions that are either so essential to supporting the national critical functions and other lifeline support, such as first responders or utility workers, or that are unique or require a special skill set, that these workers must often be at the same workplace or together out in the field. We recommend that organizations re-examine whether these job functions can be conducted from home and if not, if shift work or remaining with a cohort can be conducted to allow for more social distancing.

Determining the allocation of scarce resources for workers, such as personal protective equipment (PPE), other protection, access to medical evaluation, testing, and vaccines. We recommend that jurisdictions and organizations use the essential critical infrastructure worker list as a tool to begin engaging with the essential worker community in the planning for the allocation of potential scarce resources should COVID-19 cases continue to increase or enter a second wave. Planning is critical to ensuring that workers are able to continue performing essential tasks supporting critical infrastructure. Furthermore, it will be critical that workers who perform essential tasks and/or have consistent interactions with at-risk populations (e.g., the elderly or those with pre-existing conditions) obtain the necessary resources to reduce the transmission of the virus.

In addition to the aforementioned characteristics of the worker and workplace, there may be local factors that influence COVID-19 risk mitigation plans including, infection rate and trends, the availability and timeliness of testing, the criticality of the business and worker to the local or state economy, and the need to prepare and respond to other localized events such as hurricanes, wildfires, or tornadoes.

The following links can provide additional guidance on health, workplace, and worker safety issues related to the pandemic:

CDC Safety Practices for Critical Infrastructure Workers: Implementing Safety Practices for Critical Infrastructure Workers Who May Have Had Exposure to a Person with Suspected or Confirmed COVID-19

OSHA/HHS Workplace Guidance: Guidance for Preparing Workplaces for COVID-19

CISA Telework Guidance: Telework Guidance and Resources

CISA General Guidance: CISA Information & Updates on COVID-19

CISA will continually solicit and accept feedback on the list and will evolve the list in response to stakeholder feedback. We will also use our various stakeholder engagement mechanisms to work with partners on how they are using this list and share those lessons learned and best practices broadly. Feedback can be sent to CISA.CAT@CISA.DHS.GOV.

CONSIDERATIONS FOR GOVERNMENT AND BUSINESS

This list was developed in consultation with federal agency partners, industry experts, and State and local officials, and is based on several key principles:

1. Response efforts to the COVID-19 pandemic are locally executed, state managed, and federally supported.
2. Critical infrastructure workers and employers should follow Businesses and Workplace guidance from the Centers for Disease Control and Prevention (CDC), as well as state and local government officials, regarding strategies to limit disease spread.
3. Employers must comply with applicable Occupational Safety and Health Administration (OSHA) requirements and guidance for protecting critical infrastructure workers who remain on or return to the job during the COVID-19 pandemic. As the nation relies on these workers to protect public health, safety, and community well-being, they must be protected from exposure to and infection from the virus so that they can continue to carry out their responsibilities. OSHA has guidance and enforcement information for workplaces at www.osha.gov/coronavirus.
4. Businesses and government agencies may continue to implement organization-specific measures as appropriate and consistent with applicable Federal, state, local, or other requirements, which protect the workforce while meeting mission needs.
5. Workers should be encouraged to work remotely when possible and, organizations are encouraged to identify alternative methods for safely engaging in activities that typically required in-person, non-mandatory interactions.
6. When continuous remote work is not possible, businesses should enlist strategies to reduce the likelihood of spreading the disease. This includes, but is not limited to, physically separating staff, staggering work shift hours or days, and other social distancing measures. While the CDC recommends that everyone wear a mask to contain respiratory droplets when around others, critical infrastructure employers must consider how best to implement this public health recommendation for source control in the workplace. For example, employers may provide disposable facemasks (e.g., surgical masks) instead of cloth face coverings when workers would need to wear masks for extended periods of time (e.g., the duration of a work shift) or while performing tasks in which the face covering could become contaminated.
7. Consider the impact of workplace sick leave policies that may contribute to an employee decision to delay reporting medical symptoms. Sick employees should not return to the workplace until they meet the criteria to stop home isolation. CDC has the following guidance on when it is safe to stop home isolation at https://www.cdc.gov/coronavirus/2019-ncov/if-you-are-sick/end-home-isolation.html.
8. Critical infrastructure employers have an obligation to limit to the extent possible the reintegration of in- person workers who have experienced an exposure to COVID-19 but remain asymptomatic in ways that best protect the health of the worker, their co-workers, and the general public. An analysis of core job tasks and workforce availability at worksites can allow the employer to match core activities to other equally skilled and available in-person workers who have not experienced an exposure. CDC guidance on safety practices for critical infrastructure workers is maintained at https://www.cdc.gov/coronavirus/2019-ncov/community/critical- workers/implementing-safety-practices.html.
9. All organizations should implement their business continuity and pandemic plans or put plans in place if they do not exist. Delaying implementation is not advised and puts at risk the viability of the business and the health and safety of workers. The CDC and OSHA have guidance for workplaces and businesses to assist them plan, prepare, and respond to the pandemic at https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/businesses-employers.html and https://www.osha.gov/SLTC/covid-19.
10. Ensure that certain workers have consistent access to specific sites, facilities, and assets to ensure continuity of functions. Most of our economy relies on technology and therefore information technology (IT) and operational technology (OT) workers for critical infrastructure operations are essential. This includes workers in many roles, including workers focusing on management systems, control systems, and Supervisory Control and Data Acquisition (SCADA) systems, and data centers; cybersecurity engineering; and cybersecurity risk management.

11. Government workers, such as emergency managers, and the business community need to establish and maintain the practice of openly communicating with one another on such issues as workforce needs and safety as well as the continuity of critical functions.

12. Ensure that essential critical infrastructure workers have continued and unimpeded access to sites, facilities, and equipment within quarantine zones, containment areas, areas under curfew restrictions, or other areas where access or movement is limited, in order to perform functions for community relief and stability; for public safety, security and health; for maintaining essential supply chains for maintaining critical information technology services, and preserving local, regional, and national economic well-being.

13. Whenever possible, local governments should consider adopting specific provisions of state orders or guidance on sustained access and mobility of essential workers to reduce potential complications of workers crossing jurisdictional boundaries to perform critical functions, including during times of quarantine. When this is not possible, local jurisdictions should consider aligning access and movement control policies with neighboring jurisdictions to reduce the burden of cross-jurisdictional movement of essential critical infrastructure workers.

IDENTIFYING ESSENTIAL CRITICAL INFRASTRUCTURE WORKERS

The following list of identified essential critical infrastructure workers is intended to be overly inclusive reflecting the diversity of industries across the United States.

HEALTHCARE / PUBLIC HEALTH

- Workers, including laboratory personnel, that perform critical clinical, biomedical and other research, development, and testing needed for COVID-19 or other diseases.
- Healthcare providers including, but not limited to, physicians (MD/DO/DPM); dentists; psychologists; mid-level practitioners; nurses; emergency medical services personnel, assistants and aids; infection control and quality assurance personnel; phlebotomists; pharmacists; physical, respiratory, speech and occupational therapists and assistants; social workers; optometrists; speech pathologists; chiropractors; diagnostic and therapeutic
technicians; and radiology technologists.
- Workers required for effective clinical, command, infrastructure, support service, administrative, security, and intelligence operations across the direct patient care and full healthcare and public health spectrum. Personnel examples may include, but are not limited, to accounting, administrative, admitting and discharge, engineering, accrediting, certification, licensing, credentialing, epidemiological, source plasma and blood donation, food service, environmental services, housekeeping, medical records, information technology and operational technology, nutritionists, sanitarians, etc.
    - Emergency medical services workers including clinical interns.
    - Prehospital workers included but not limited to urgent care workers.
    - Inpatient & hospital workers (e.g. hospitals, critical access hospitals, long-term acute care hospitals, long-term care facilities including skilled nursing facilities, inpatient hospice, ambulatory surgical centers, etc.).
    - Outpatient care workers (e.g. end-stage-renal disease practitioners and staff, Federally Qualified Health Centers, Rural Health Clinics, community mental health clinics, organ transplant/procurement centers, and other ambulatory care settings/providers, comprehensive outpatient rehabilitation facilities, etc.).
    - Home care workers (e.g. home health care, at-home hospice, home dialysis, home infusion, etc.).
    - Workers at Long-term care facilities, residential and community-based providers (e.g. Programs of All-Inclusive Care for the Elderly (PACE), Intermediate Care Facilities for Individuals with Intellectual Disabilities, Psychiatric Residential Treatment Facilities, Religious Nonmedical Health Care Institutions, etc.).
    - Workplace safety workers (i.e., workers who anticipate, recognize, evaluate, and control workplace conditions that may cause workers' illness or injury).

- Workers needed to support transportation to and from healthcare facility and provider appointments.
- Workers needed to provide laundry services, food services, reprocessing of medical equipment, and waste management.
- Workers that manage health plans, billing, and health information and who cannot work remotely.
- Workers performing cybersecurity functions at healthcare and public health facilities and who cannot work remotely.
- Workers performing security, incident management, and emergency operations functions at or on behalf of healthcare entities including healthcare coalitions, who cannot practically work remotely.
- Vendors and suppliers (e.g. imaging, pharmacy, oxygen services, durable medical equipment, etc.).
- Workers at manufacturers (including biotechnology companies and those companies that have shifted production to medical supplies), materials and parts suppliers, technicians, logistics and warehouse operators, printers, packagers, distributors of medical products and equipment (including third party logistics providers, and those who test and repair), personal protective equipment (PPE), isolation barriers, medical gases, pharmaceuticals (including materials used in radioactive drugs), dietary supplements, commercial health products, blood and blood products, vaccines, testing materials, laboratory supplies, cleaning, sanitizing, disinfecting or sterilization supplies (including dispensers), sanitary goods, personal care products, pest control products, and tissue and paper towel products.
- Donors of blood, bone marrow, blood stem cell, or plasma, and the workers of the organizations that operate and manage related activities.
- Pharmacy staff, including workers necessary to maintain uninterrupted prescription, and other workers for pharmacy operations.
- Workers and materials (e.g., laboratory supplies) needed to conduct bloodspot and point of care (i.e., hearing and critical congenital heart disease) newborn screening as well as workers and materials need for confirmatory diagnostic testing and initiation of treatment.
- Home health workers (e.g., nursing, respiratory therapists, health aides) who enter the need to go into the homes of individuals with chronic, complex conditions and/or disabilities to deliver nursing and/or daily living care.
- Workers in retail facilities specializing in medical good and supplies.
- Public health and environmental health workers, such as:
    - Workers specializing in environmental health that focus on implementing environmental controls, sanitary and infection control interventions, healthcare facility safety and emergency preparedness planning, engineered work practices, and developing guidance and protocols for appropriate PPE to prevent COVID-19 disease transmission.
    - Public health/community health workers (including call center workers) who conduct community-based public health functions, conducting epidemiologic surveillance and compiling, analyzing, and communicating public health information, who cannot work remotely.
- Human services providers, especially for at risk populations such as:
    - Home delivered meal providers for older adults, people with disabilities, and others with chronic health conditions.
    - Home-maker services for frail, homebound, older adults.
    - Personal assistance services providers to support activities of daily living for older adults, people with disabilities, and others with chronic health conditions who live independently in the community with supports and services.
    - Home health providers who deliver health care services for older adults, people with disabilities, and others with chronic health conditions who live independently in the community with supports and services.
    - Workers who provide human services, including but not limited to social workers, nutritionists, case managers or case workers, crisis counselors, foster care case managers, adult protective services personnel, child protective personnel, domestic violence counselors, human trafficking prevention and recovery personnel, behavior specialists, substance abuse-related counselors, and peer support counselors.

- Government entities, and contractors that work in support of local, state, federal, tribal, and territorial public health and medical mission sets, including but not limited to supporting access to healthcare and associated payment functions, conducting public health functions, providing medical care, supporting emergency management, or other services necessary for supporting the COVID-19 response.
- Workers for providers and services supporting effective telehealth.
- Mortuary service providers, such as:
    - Workers performing mortuary funeral, cremation, burial, cemetery, and related services, including funeral homes, crematoriums, cemetery workers, and coffin makers.
    - Workers who coordinate with other organizations to ensure the proper recovery, handling, identification, transportation, tracking, storage, and disposal of human remains and personal effects; certify cause of death; and facilitate access to mental and behavioral health services to the family members, responders, and survivors of an incident.

LAW ENFORCEMENT, PUBLIC SAFETY, AND OTHER FIRST RESPONDERS

- Public, private, and voluntary personnel (front-line and management, civilian and sworn) in emergency management, law enforcement, fire and rescue services, emergency medical services (EMS), and security, public and private hazardous material responders, air medical service providers (pilots and supporting technicians), corrections, and search and rescue personnel.
- Personnel involved in provisioning of access to emergency services, including the provisioning of real-time text, text-to-911, and dialing 911 via relay.
- Personnel that are involved in the emergency alert system (EAS) (broadcasters, satellite radio and television, cable, and wireline video) and wireless emergency alerts (WEA).
- Workers at Independent System Operators and Regional Transmission Organizations, and Network Operations staff, engineers and technicians to manage the network or operate facilities.
- Workers at emergency communication center, public safety answering points, public safety communications centers, emergency operation centers, and 911 call centers.
- Fusion Center workers.
- Workers, including contracted vendors, who maintain, manufacture, or supply equipment and services supporting law enforcement, fire, EMS, and response operations (to include electronic security and life safety security personnel).
- Workers and contracted vendors who maintain and provide services and supplies to public safety facilities, including emergency communication center, public safety answering points, public safety communications centers, emergency operation centers, fire and emergency medical services stations, police and law enforcement stations and facilities.
- Workers supporting the manufacturing, distribution, and maintenance of necessary safety equipment and uniforms for law enforcement and all public safety personnel.
- Workers supporting the operation of firearm, or ammunition product manufacturers, retailers, importers, distributors, and shooting ranges.
- Public agency workers responding to abuse and neglect of children, spouses, elders, and dependent adults.
- Workers who support weather disaster and natural hazard mitigation and prevention activities.
- Security staff to maintain building access control and physical security measures.
- Workers who support child care and protective service programs such as child protective service.

EDUCATION

- Workers who support the education of pre-school, K-12, college, university, career and technical education, and adult education students, including professors, teachers, teacher aides, special education and special needs teachers, ESOL teachers, para-educators, apprenticeship supervisors, and specialists.
- Workers who provide services necessary to support educators and students, including but not limited to, administrators, administrative staff, IT specialists, media specialists, librarians, guidance counselors, school psychologists and other mental health professions, school nurses and other health professionals, and school safety personnel.
- Workers who support the transportation and operational needs of schools, including bus drivers, crossing guards, cafeteria workers, cleaning and maintenance workers, bus depot and maintenance workers, and those that deliver food and supplies to school facilities.
- Workers who support the administration of school systems including, school superintendents and their management and operational staff.
- Educators and operational staff facilitating and supporting distance learning.

FOOD AND AGRICULTURE

- Workers enabling the sale of human food, animal food (includes pet food, animal feed, and raw materials and ingredients), pet supply, and beverage products at groceries, pharmacies, convenience stores, and other retail (including unattended and vending), including staff in retail customer support and information technology support necessary for on-line orders, pickup, and delivery.
- Restaurant and quick serve food operations, including dark kitchen and food prep centers, carry-out, and delivery food workers.
- Food manufacturer workers and their supplier workers including those employed at food ingredient production and processing facilities; aquaculture and seafood harvesting facilities; slaughter and processing facilities for livestock, poultry, and seafood; animal food manufacturing and processing facilities; human food facilities producing by-products for animal food; industrial facilities producing co-products for animal food; beverage production facilities; and the production of food packaging.
    - Farmers, farm and ranch workers, and agribusiness support services, including workers involved in auction and sales; in food operations, including animal food, grain and oilseed storage, handling, processing, and distribution; in ingredient production, packaging, and distribution; in manufacturing, packaging, and distribution of veterinary drugs and biologics (e.g., vaccines); and in distribution and transport.
- Farmers, farm and ranch workers, and support service and supplier workers producing food supplies and other agricultural inputs for domestic consumption and export, to include those engaged in raising, cultivating, phytosanitation, harvesting, packing, storing, or distributing to storage or to market or to a transportation mode to market any agricultural or horticultural commodity for human or animal consumption.
- Workers at fuel ethanol facilities, biodiesel and renewable diesel facilities, and storage facilities.
- Workers and firms supporting the distribution of all human and animal food and beverage and ingredients used in these products, including warehouse workers, vendor-managed inventory controllers, and blockchain managers.
- Workers supporting the sanitation and pest control of all human and animal food manufacturing processes and operations from wholesale to retail.
- Workers supporting greenhouses as well as the growth and distribution of plants and associated products for home gardens.
- Workers in cafeterias used to feed workers, particularly worker populations sheltered against COVID-19

EXHIBIT 11

HARVARD GLOBAL HEALTH INSTITUTE

EDMOND J. SAFRA Center for Ethics

The Path to Zero and Schools: Achieving Pandemic Resilient Teaching and Learning Spaces

The single best policy to support school re-opening prior to the development of a vaccine or treatment is suppression of COVID to near zero case incidence via Testing, Tracing and Supported Isolation (TTSI).

Facing the reality, however, that this cannot be achieved before the start of the new school year and that the mounting costs to children of school shutdowns are significant, the second best policy, and path we should pursue, is to re-open in-person Grades K-5 (1st priority) and Grades 6-8 (second priority) in lower risk level jurisdictions, provided there is a sufficient supply of pandemic resilient teaching and learning spaces in the district to do so equitably.

As of mid-July, all countries that have opened schools without further school-based outbreaks had achieved low case incidence levels by the time they opened schools. Since opening, they have maintained focus on infection control and ongoing TTSI programs for disease control. In the U.S., we should differentiate school reopening policy by case incidence levels in the relevant jurisdiction (counties and districts) at the time of reopening. Some states—for instance, Maine, Montana, Alaska, and Hawaii—currently have sufficiently low case incidence levels across counties/districts to plan for full re-openings of the K-12 system, with adaptations to teaching and learning spaces for pandemic resilience. Other states—for instance, Arizona, California, Minnesota, Texas, and Florida—currently have such high case incidence in many counties/districts that those counties/districts should plan to begin the fall semester with online learning. In such contexts, educators and district leaders should focus on preparing for higher caliber online learning opportunities than were achieved in the spring, building on existing research about e-learning.

The most challenging contexts are those with low to moderate case incidence levels. Infection control guidelines co-developed with healthcare practitioners for clinics and hospitals emphasize spatial sequencing, personal hygiene infrastructure, materiality, ventilation and filtration, and legibility of spaces (through signage and other markers) to support appropriate protective practices in each category of space (e.g. always needing to wear a mask in hallways despite being able sometimes to have masking breaks in classrooms during reading time).

In this briefing, we explain how risk incidence levels, the creative adaptation of infection control guidelines for healthy buildings, and national investment in pandemic resilient schools can optimize operations, keep people safe, and restore our schools as trusted sites of learning in a densely populated world in which novel coronavirus and influenza epidemics are becoming increasingly frequent.

WHAT IS A PANDEMIC RESILIENT LEARNING SPACE?

Schools are sites of community building, learning, physical and cultural nourishment, health care, adult education, after-school child care, and, in many places, voting. They are community and civic centers and central nodes in neighborhood networks. They are conventionally sited in “school buildings” but they need not be. Schools have also been held in parks and plazas, and a variety of open air spaces. A pandemic-resilient learning space is one in which the physical space for learning is conducive to health and limits the risk of disease transmission, while nonetheless providing the conditions for social connection and intellectual growth.

A pandemic resilient learning space keeps learners, educators, and other staff all safe and is a trusted space. Pandemic resilient teaching and learning spaces can mean different things for students of different ages. With COVID-19, people 18 and younger have far lower risk of death, hospitalization, and severe outcomes and are also less likely to get infected. Within this group, students in the younger age band of 10 and under also transmit at lower rates. This last point about lower rates of transmission may also pertain to people 15 and younger, a point that research should clarify in coming weeks. Keeping levels of risk low for young children via pandemic resilient teaching and learning spaces is more readily achievable than doing so for high school age students and the adult educators and staff in the school building.

Creating Schools for Health requires healthy classrooms, healthy buildings, healthy policies, healthy schedules, and healthy activities. Leaders need to establish a culture of health, safety, and shared responsibility. A full picture of what requires attention can be found in using the "Schools for Health" guide at https://schools.forhealth.org/.

For all students, a healthy building with enhanced outdoor air ventilation and upgraded filtration is necessary, as are sanitation resources, hygiene practices, pandemic resilient bathrooms, physical and group distancing, and legibility of spaces (through signage and other spatial markers) so that behavior protocols in particular spaces align with the appropriate risk mitigation actions (e.g. always needing to wear a mask in hallways despite being able sometimes to have masking breaks in classrooms during reading time).

Because of the congregate nature of the school context, adults working in the school building in jurisdictions at low, moderate, and high risk levels, should be deemed essential workers, like health care workers. They will also need PPE, spatial sequencing, personal hygiene infrastructure, materiality, appropriate ventilation/filtration, and legibility that helps them understand different risk levels in different parts of their building. These are all elements of a "pandemic resilient teaching and learning space." Depending on the level of community spread in the area surrounding the school, or the "risk incidence level," essential workers in schools should have access to routine testing and may merit hazard pay. Those in high risk groups should also have access to alternate, remote assignments, other reasonable accommodations, or disability benefits, where applicable.

WHAT ARE RISK INCIDENCE LEVELS AND WHAT THEY CAN TELL US ABOUT WHAT IT TAKES TO CREATE A PANDEMIC RESILIENT LEARNING SPACE?

To get to a near zero case incidence level, jurisdictions need to first understand the severity of the outbreak they are responding to. To determine their COVID level, they should assess case incidence levels as follows:

Covid Risk Level	Case Incidence	
Red	**>25**	daily new cases per 100,000 people
Orange	**10<25**	daily new cases per 100,000 people
Yellow	**1<10**	daily new cases per 100,000 people
Green	**<1**	daily new case per 100,000 people

While this guide to risk levels uses daily new confirmed cases, it is important that this metric be triangulated with others for full confidence in its reasonableness as a guide. The most important other measures are: **case trend as an estimate from the new deaths trend, new COVID hospitalizations, in each case with a seven day rolling average, and test positivity (percentages of tests that come back positive)**. Death and hospitalization data points will reveal where case counts are low only because testing is low; where such undercounting is apparent, jurisdictions should not rely on case incidence to assess risk but only on death and hospitalization metrics. Increases in test positivity above 10% are also an indicator of a strong likelihood of undercounting. (For a full picture of how these metrics can be used, please see "Key Metrics for Suppression Framework.")

These COVID levels help decision-makers and community members know where they are in terms of community spread, and therefore underlying population risk. The green level aligns with the CDC's low incidence plateau threshold. The levels also communicate the intensity of effort needed for control of COVID at varying levels of community spread.

To determine the levels, incidence numbers can be used at county, MSA, or other local health district jurisdiction level, and at the state level. Policy decisions about which strategies of disease response are best for a jurisdiction should be made by looking at both the local level and the state picture and considering the dynamic relationship between them. For schools, the first reference point should be district and county, and decision-makers should consider both the rates in their own districts and counties and the rates in the districts and counties with which they share a border.

In addition to paying attention to the incidence levels, decision-makers should pay close attention to direction of trend and rate of change. While jurisdictions may plateau in yellow, in the orange level spread tends to have more velocity—i.e. conditions may shift from orange to the red level more quickly than from yellow to orange.

A rough guide for how these incidence levels can help think about pandemic resilient schools is as follows:

Risk Levels	Strategy for Pandemic Resilient Teaching and Learning
Red	Stay-at-home orders in place; all learning remote for all learners; districts, states, and federal government invests in remote learning.
Orange	**1st priority for re-opening:** Grades preK-5 open if conditions for pandemic resilient teaching and learning spaces can be achieved at scale; districts, states, and federal government invest in healthy buildings and healthy classrooms; in the absence of conditions for pandemic resilient teaching and learning spaces, schools continue with remote learning. In-person opportunities for special needs students at grade-levels preK-8 are also included here. **2nd priority for re-opening:** Grades 6-8 open if conditions for pandemic resilient teaching and learning spaces can be achieved at scale; districts, states, and federal government invest in healthy buildings and healthy classrooms; in the absence of conditions for pandemic resilient teaching and learning spaces, schools continue with remote learning. In-person opportunities for special needs students at grade-levels 9-12 are also included in this planning. **Not a priority for re-opening:** Grades 9-12 maintain remote learning for all learners; districts, states, and federal government invest in remote learning.
Yellow	**1st priority for re-opening:** Grades preK-5 open if conditions for pandemic resilient teaching and learning spaces can be achieved at scale; districts, states, and federal government invest in healthy buildings and healthy classrooms; in the absence of conditions for pandemic resilient teaching and learning spaces, schools continue with remote learning. In-person opportunities for special needs students at grade-levels preK-8 are also included here. **2nd priority for re-opening:** Grades 6-8 open if conditions for pandemic resilient teaching and learning spaces can be achieved at scale; districts, states, and federal government invest in healthy buildings and healthy classrooms; in the absence of conditions for pandemic resilient teaching and learning spaces, schools continue with remote learning. In-person opportunities for special needs students at grade-levels preK-8 are also included. In-person opportunities for special needs students at grade-levels 9-12 are also included in this planning. **3rd priority for re-opening:** If sufficient pandemic resilient learning space is available AFTER allocation to K-8, grades 9-12 open on a hybrid schedule, with only a subset of students on campus at any particular point of time to facilitate de-densification; districts, states, and federal government invest in healthy buildings and healthy classrooms AND in remote learning.
Green	All schools open if conditions for pandemic resilient teaching and learning spaces can be achieved at scale; districts, states, and federal government invest in healthy buildings and healthy classrooms

HOW TO IMPLEMENT PANDEMIC RESILIENT TEACHING AND LEARNING SPACES: DISTRICT LEVEL

Districts should begin by inventorying the stock of pandemic resilient teaching and learning spaces, indoors and outdoors, available to them. Districts will need to map out the increased square footage per learner that they would need to keep an elementary school, a middle school, and a high school open if at a yellow or orange risk incidence level. Such mapping will depend on decisions about how to do group distancing to minimize within-school transmission chains (e.g. creating pods). In other words, decisions about grouping and teaming practices affect calculations of what the necessary increased square footage per learner needs to be.

This mapping also requires an incremental analysis of the stock to identify within each school building what level of risk different spatial components introduce (hallways, classrooms, and convening spaces will bring different levels of risk), what degree of adaptation would be needed to make the space safely usable, and what the maximum learner and educator/staff capacity in the learning space would be. Achieving maximum physical distancing and healthy ventilation and filtration are a top priority.

In addition to inventorying the traditional stock of school buildings, district leaders should identify additional pandemic resilient teaching and learning spaces that might be available for use in their community, conditional on necessary adaptations: e.g. empty or low occupancy college classrooms, office buildings, churches, outdoor spaces, tented spaces, etc. As districts map their space and explore adaptations (using the "Schools for Health" guide), they will discover that they are not able to operationalize all recommended principles. These "adherence gaps" require creative problem solving to create needed social distancing. Adaptations will be local and building specific.

Once the stock of pandemic resilient teaching and learning spaces is inventoried, districts can evaluate whether they can open only grades K-5 or also grades 6 – 8. Districts will recover space for full opening of grades 9-12 as incidence levels fall. Questions of staffing levels will also be pertinent to this inventory. The likelihood of a meaningful percentage of teachers requiring reasonable accommodations suggests that even in yellow and orange contexts, re-opening may well require hybrid in-person and remote practices. Licensure flexibility will be necessary to maximizing available resources.

HOW TO IMPLEMENT PANDEMIC RESILIENT TEACHING AND LEARNING SPACES: STATE LEVEL

Achieving wide-spread transformation of our school spaces into pandemic resilient teaching and learning spaces will require the formation of learning communities linking school leaders to disseminate knowledge emerging from specific case studies. State departments of education should provide technical advice for space planning consultation. State departments of education should also launch and maintain learning communities to support growth of understanding about how to create pandemic resilient teaching and learning spaces and about how to optimize the remote learning experience. Finally, state departments of education should collaborate with state departments of health to ensure that local health officers (whether municipal or county level) are prepared to support routine testing programs for adult educators and staff serving as essential workers in schools that are open in jurisdictions currently at yellow and orange risk levels. State testing plans should incorporate this element of routine testing for adults in schools.

HOW TO IMPLEMENT PANDEMIC RESILIENT TEACHING AND LEARNING SPACES: FEDERAL LEVEL

While state Departments of Education and districts need to deliver a program in support of Pandemic Resilient Teaching and Learning Spaces, they do need support from the federal government along several dimensions: (1) investment in broadband and provision of laptops to support remote learning; (2) hazard pay for educators working as essential workers in yellow and orange zones; (3) access to disability benefits for educators whose jobs are in yellow and orange zones and who are not in a position to relocate to a green zone; (4) investment in routine testing for adults in school buildings in yellow and orange zones; and (5) investment in building upgrades to America's schools in support of both short and long term pandemic resilience.

WHO

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EXHIBIT 12

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN®

COVID-19 Planning Considerations: Guidance for School Re-entry

The purpose of this guidance revision is to continue to support communities, local leadership in education and public health, and pediatricians collaborating with schools in creating policies for school re-entry during the coronavirus disease 2019 (COVID-19) pandemic that foster the overall health of children, adolescents, educators, staff, and communities and are based on available evidence. Along with our colleagues in the field of education, the American Academy of Pediatrics (AAP) strongly advocates for additional federal assistance to schools throughout the United States, with no restrictions regarding their plans for in-person versus virtual learning. Regardless, in places in the United States with high levels of community transmission of severe acute respiratory syndrome-coronavirus 2 (SARS-CoV-2), the virus that causes COVID-19, where in-person learning is not possible, these schools will also need more assistance, not less, to support the additional staffing needs, alternative learning sites, hybrid educational models, and child care.

Schools and school-supported programs are fundamental to child and adolescent development and well-being and provide our children and adolescents with academic instruction, either in person or virtually; social and emotional skills; safety; reliable nutrition; physical/speech therapy and mental health services; and opportunities for physical activity, among other benefits. Schools also serve as critical centers in communities by supporting adult-focused activities (such as job training, neighborhood meetings, and parenting classes) as well as ensuring safe places for children and adolescents to be while parents or guardians are working, which in turn supports the local economy.

Beyond supporting the educational development of children and adolescents, schools play a critical role in addressing racial and social inequity. As such, it is critical to reflect on the differential impact the COVID-19 pandemic and the associated school closures have had on

different racial and ethnic groups and vulnerable populations. The AAP condemns the persistent racial and social inequities that exist within the US educational system. The disparities in school funding, quality of school facilities, educational staffing, and resources for enriching curriculum between schools have been exacerbated by the pandemic. Families rely on schools to provide child care; a safe, stimulating space for children to learn; opportunities for socialization; and access to school-based mental, physical, and nutritional health services. Without adequate support for families to access these services, disparities will likely worsen, especially for children who are English language learners, children with disabilities, children living in poverty, and children of African American/Black, Latinx/Hispanic, and Native American/Alaska Native origin.i,ii

For children and adolescents in virtual learning models, educational disparities may widen further. According to the Pew Research Center, 1 in 5 teenagers are not able to complete schoolwork at home because of lack of a computer or internet connection.iii This technological "homework gap" disproportionately affects Black, Hispanic, and low-income families.3

The AAP strongly recommends that school districts promote racial/ethnic and social justice by promoting the well-being of all children in any school-reopening plan, particularly children living in marginalized communities. To address these disparities, federal, state, and local governments should allocate resources to provide equitable access to educational supports. These recommendations are provided, acknowledging that our understanding of the COVID-19 pandemic is changing rapidly.

Any school re-entry policies should consider the following key principles:

- To be able to open schools safely, it is vitally important that communities take all necessary measures to limit the spread of the SARS-CoV-2.
- School policies must be flexible and nimble in responding to new information, and administrators must be willing to refine approaches when specific policies are not working.
- Schools must take a multi-pronged, layered approach to protect students, teachers, and staff. By using different approaches, these layers of protection will make in-person learning safe and possible.
- It is critically important to develop strategies that can be revised and adapted depending on the level of viral transmission and test positivity rate throughout the community and in the schools, recognizing the differences between school districts, including urban, suburban, and rural districts.

- School districts must be in close communication and coordinate with state and/or local public health authorities, school nurses, local pediatric practitioners, and other medical experts.
- School re-entry policies should be practical, feasible, and appropriate for child and adolescent's developmental stage and address teacher and staff safety.
- Special considerations and accommodations to account for the diversity of youth should be made, especially for vulnerable populations, including those who are medically fragile or complex, live in poverty, have developmental challenges, or have disabilities, with the goal of safe return to school. These youth and their families should work closely with their pediatrician using a shared decision-making approach regarding return to school.
- Pediatricians, families, and schools should partner together to collaboratively identify and develop accommodations when needed for any child or adolescent with unique medical needs.
    - Children and adolescents who need customized considerations should not be automatically excluded from school unless required in order to adhere to local public health mandates or because their unique medical needs would put them at increased risk for contracting COVID-19 during current conditions in their community.

- School policies should be guided by supporting the overall health and well-being of all children, adolescents, their families, and their communities but should also look to create safe working environments for educators and school staff. This focus on overall health and well-being includes addressing the behavioral/mental health needs of students and staff.
- These policies should be consistently communicated in languages other than English, if needed, based on the languages spoken in the community, to avoid marginalization of parents/guardians who are of limited English proficiency or do not speak English at all.
- Federal, state, and local funding should be provided for all schools so they can provide all the safety measures required for students and staff. Funding to support virtual learning and provide needed resources must be available for communities,

schools, and children facing limitations implementing these learning modalities in their home (eg, socioeconomic disadvantages) or in the event of school re-closure because of resurgence of SARS-CoV-2 in the community or a school outbreak.

With the above principles in mind, **the AAP strongly advocates that all policy considerations for the coming school year should start with a goal of having students physically present in school**. *Unfortunately, in many parts of the United States, there is currently uncontrolled spread of SARS-CoV-2. Although the AAP strongly advocates for in-person learning for the coming school year, the current widespread circulation of the virus will not permit in-person learning to be safely accomplished in many jurisdictions.* The importance of in-person learning is well-documented, and there is already evidence of the negative impacts on children because of school closures in the spring of 2020. Lengthy time away from school and associated interruption of supportive services often results in social isolation, making it difficult for schools to identify and address important learning deficits as well as child and adolescent physical or sexual abuse, substance use, depression, and suicidal ideation. This, in turn, places children and adolescents at considerable risk of morbidity and, in some cases, mortality. Beyond the educational impact and social impact of school closures, there has been substantial impact on food security and physical activity for children and families. The disproportionate impact this has had on Black, Latinx, and Native American/Alaskan Native children and adolescents must also be recognized.

Policy makers and school administrators must also consider the mounting evidence regarding COVID-19 in children and adolescents, including the role they may play in transmission of the infection. SARS-CoV-2 appears to behave differently in children and adolescents than other common respiratory viruses, such as influenza, on which much of the current guidance regarding school closures is based. Although children and adolescents play a major role in amplifying influenza outbreaks, to date, this does not appear to be the case with SARS-CoV-2. Although many questions remain, the preponderance of evidence indicates that children and adolescents can become infected and are less likely to be symptomatic and less likely to have severe disease resulting from SARS-CoV-2 infection.iv We continue to learn more about the role children play in transmission of SARS-CoV-2. At present, it appears that children younger than 10 years may be less likely to become infected and less likely to spread infection to others, although further studies are needed.v More recent data suggest children older than 10 years may spread SARS-CoV-2 as efficiently as adults, and this information should be part of the considerations taken in determining how to safely and effectively open schools. Additional in-depth studies are needed to truly understand the infectivity and transmissibility of this virus in

anyone younger than 18 years, including children and adolescents with disabilities and medical complexities. Policies to mitigate the spread of COVID-19 within schools must be balanced with the previously noted known harms to children, adolescents, families, and the community that come with keeping children at home.

Finally, policy makers and school administrators should acknowledge that COVID-19 policies are intended to mitigate, not eliminate, risk. No single action or set of actions will completely eliminate the risk of SARS-CoV-2 transmission, but implementation of several coordinated interventions can greatly reduce that risk. For example, where physical distance cannot be maintained, students (older than 2 years) and staff should wear cloth face coverings (unless medical or developmental conditions prohibit use). In the following sections, some general principles are reviewed that policy makers and school administrators should consider as they safely plan for the coming school year. For all of these, engagement of the entire school community, including teachers and staff, regarding these measures should begin early, ideally at least several weeks before the start of the school year.

Since this guidance was first released, there have been several other documents released by the **Centers for Disease Control and Prevention** (CDC), **National Association of School Nurses**, and the **National Academy of Sciences, Engineering, and Medicine**. All these documents are consistent regarding the importance of considering the degree to which SARS-CoV-2 is circulating in a community in making school re-opening policies. In many places in the United States at the present time, opening schools to in-person learning for all students is likely not feasible because of widespread community transmission and high levels of positivity in testing. Even in these communities, though, in-person learning should still be the goal and may be feasible as the epidemiology improves. Countries that have been able to successfully open schools have had low rates of community SARS-CoV-2 circulation. This guideline is intended to augment, not replace, guidance from the CDC and others and should be used in concert with other guidance. Ultimately, the decision to re-open schools to in-person learning should be based on the guidance of local and state public health authorities and school administrators.

Physical Distancing Measures

Physical distancing, sometimes referred to as social distancing, is simply the act of keeping people separated with the goal of limiting spread of contagion between individuals. It is fundamental to lowering the risk of spread of SARS-CoV-2, as the primary mode of transmission is through respiratory droplets by persons in close proximity. There is a conflict

between optimal academic and social/emotional learning in schools and strict adherence to current physical distancing guidelines. For example, the CDC recommends that schools "space seating/desks at least 6 feet apart when feasible." 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.vi Physical distance between desks should follow current public health guidance. In the absence of specific guidance, desks should be placed at least 3 feet apart, and ideally 6 feet apart. If desks are spaced less than 6 feet apart, face coverings should be strongly encouraged and adhere to public health guidance. In many jurisdictions, face coverings are mandatory for children in public settings, including schools. **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.** Further, while these guidelines support the concept of cohorting, strict adherence to a specific size of student groups (eg, 10 per classroom, 15 per classroom, etc) should be discouraged, because the size of cohorts will vary depending on many factors specific to individual schools and even individual classrooms.

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. For all of the below settings, physical distancing by and among adults is strongly recommended, and meetings and curriculum planning should take place virtually or outside if possible. In addition, other strategies to increase adult-adult physical distance in time and space should be implemented, such as staggered drop-offs and pickups, and drop-offs and pickups outside when weather allows. Parents should, in general, be discouraged from entering the school building. Physical barriers, such as plexiglass, should be considered in reception areas and employee workspaces where the environment does not accommodate physical distancing. Congregating in shared spaces, such as staff lounge areas, should not be allowed given the increasing evidence that these types of spaces have increased rates of transmission because of close proximity and lax adherence to masking recommendations.

The recommendations in each of the age groups below are not instructional strategies but are guidance to optimize the return of students to schools in the context of physical distancing guidelines and the developmentally appropriate implementation of the strategies. Educational experts may have preference for one or another of the guidelines based on the instructional needs of the classes or schools in which they work.

Pre-Kindergarten (Pre-K)

In Pre-K, the relative impact of physical distancing among children is likely small based on current evidence, and it is certainly difficult to implement. Therefore, Pre-K program planning should focus on more effective risk mitigation strategies for this population. These strategies include hand and cough hygiene, infection prevention education for staff and families, adult physical distancing from one another, adults and children wearing face coverings, cohorting, and spending time outdoors.

Higher-priority strategies:

- Cohort classes to minimize crossover among children and adults within the school; the exact size of the cohort may vary, often dependent on local or state health department guidance.
- Utilize outdoor spaces when possible.
- Limit unnecessary visitors into the building.

Lower-priority strategies:

- Cloth face coverings for children in the Pre-K setting
    - Encourage families to practice wearing cloth face coverings with children while at home. Support modeling by teachers and parents.

- Reducing classmate interactions/play in Pre-K–aged children may not provide substantial COVID-19 risk reduction.

Elementary Schools

Higher-priority strategies:

- Children should wear cloth face coverings
    - Practice by children and good modeling by adults will help children be more successful at wearing cloth face coverings at younger ages.

- Desks should be placed at least 3 feet apart, and ideally 6 feet apart when feasible.
    - If this reduces the amount of time children are present in school, harm may outweigh potential benefits.

- Cohort classes to minimize crossover among children and adults within the school.

- Utilize outdoor spaces when possible.

Lower-priority strategies:

- The risk reduction of reducing class sizes in elementary school-aged children may be outweighed by the challenge of doing so.
- Similarly, reducing classmate interactions/play in elementary school-aged children may not provide enough COVID-19 risk reduction to justify potential harms.

Secondary Schools

There is likely a greater impact of physical distancing on risk reduction of COVID-19 in secondary schools than early childhood or elementary education. There are also different barriers to successful implementation of many of these measures in older age groups, as the structure of school is usually based on students changing classrooms. Suggestions for physical distancing risk mitigation strategies when feasible:

- Universal face coverings in middle and high schools, particularly when not able to maintain a 6-foot distance (students and adults).
- Planned avoidance of close physical proximity in cases of increased exhalation (singing, exercise, band); these activities are safest outdoors and spread out.
- Desks should be placed at least 3 feet apart, and ideally 6 feet apart when feasible.
- Cohort classes if possible, limit cross-over of students and teachers to the extent possible.
    - Ideas that may assist with cohorting:
        - Block schedules (with fewer classes in a given day and electives truncated to shortened time periods).
        - Eliminate use of lockers or assign them by cohort to reduce need for hallway use across multiple areas of the building.
            - This strategy would need to be implemented in conjunction with planning to ensure that students are not carrying home an unreasonable number of books on a daily basis and may vary depending on other cohorting and instructional decisions schools are making.

- Have teachers rotate into different classrooms instead of students when feasible.
- Utilize outdoor spaces when possible.
- Teachers and other adult staff should maintain a distance of 6 feet from students when possible and if not disruptive to educational process.
- Restructure elective offerings to allow small groups within one classroom. This may not be possible in a small classroom.

Special Education

Every child and adolescent with a disability is entitled to a free and appropriate education and is entitled to special education services based on their individualized education program (IEP). Students receiving special education services may be more negatively affected by distance-learning and may be disproportionately impacted by interruptions in regular education. It may not be feasible, depending on the needs of the individual child and adolescent, to adhere both to distancing guidelines and the criteria outlined in a specific IEP. Attempts to meet physical distancing guidelines should meet the needs of the individual child and may require creative solutions, often on a case-by-case basis. Additional safety measures for teachers and staff working with students with disabilities may need to be in place to ensure optimal safety for all.

Adult Staff and Educators

- Universal cloth face coverings at all times.
- Particular avoidance of close physical proximity to other adults and children.
- Desks should be placed 6 feet away from students if feasible.
- Cohort teachers with classes if possible, limit cross-over of students and teachers to the extent possible.
    - Recognizing certain teachers must cross-over to multiple classes, such as specials teachers, special educators, and secondary school teachers.

- Use plexiglass in front and around desks particularly if unable to be 6 feet away from students.

Physical Distancing in Specific Enclosed Spaces

Buses

- Encourage alternative modes of transportation for students who have other safe options, including walking or biking.

- Ideally, for students riding the bus, symptom screening would be performed prior to them being dropped off at the bus stop.
    - Having bus drivers or monitors perform these screenings is problematic, as they may face a situation in which a student screens positive yet the parent has left, and the driver would be faced with leaving the student alone or allowing the student on the bus.

- Assigned seating; if possible, assign seats by cohort (same students sit together each day).
- Tape marks showing students where to sit.
- Face coverings should be worn at all times, particularly if 6 feet distance cannot be maintained.
- Driver should be a minimum of 6 feet from students; driver must wear face covering; consider physical barrier for driver (eg, plexiglass).
- Minimize number of people on the bus at one time *within reason*.
    - Consider altering start and end times at different grades to allow fewer students on the bus at a time.

- Adults who do not need to be on the bus should not be on the bus.
- Have windows open if weather allows.
- Ensure adequate cleaning of buses between uses.

Hallways

- Consider creating one-way hallways to reduce close contact.

- Place physical guides, such as tape, on floors or sidewalks to create one-way routes.
- Where feasible, keep students in the classroom and rotate teachers instead.
- Stagger class periods by cohorts for movement between classrooms if students must move between classrooms to limit the number of students in the hallway when changing classrooms.
- Assign lockers by cohort or eliminate lockers altogether.

Playgrounds

Enforcing physical distancing in an outside playground is difficult and may not be the most effective method of risk mitigation. Emphasis should be placed on maintaining classroom cohorts of students and limiting the size of groups participating in playground time (eg, mixing of cohorts). Outdoor transmission of virus is known to be much lower than indoor transmission. If playground equipment is being used, it should be part of cleaning plans implemented by schools.

Meals/Cafeteria

School meals play an important part in addressing food security for children and adolescents and, as was observed in the early stages of the pandemic, were crucial sources of food and nutrition to children, adolescents, and their families. Regardless of whether children are participating in in-person or distance learning, school districts must continue to provide food security to all students. This may require enacting strong policies and procedures to ensure access to all students. Decisions about how to serve meals must take into account the fact that in many communities there may be more students eligible for free and reduced meals than prior to the pandemic.

- Consider having students cohorted, potentially in their classrooms, especially if students remain in their classroom throughout the day.
- Create separate lunch periods to minimize the number of students in the cafeteria at one time.
- Use unused or underutilized spaces for lunch/break times.
- Use outdoor spaces when possible.
- Create an environment that is as safe as possible from exposure to food allergens.

- Encourage children and adults to wash their hands or use hand sanitizer before and after eating.

Face Coverings and Personal Protective Equipment (PPE)

Cloth face coverings protect others if the wearer is infected with SARS-CoV-2 and is not aware. Cloth face coverings may offer some level of protection for the wearer. Evidence continues to mount on the importance of universal face coverings in interrupting the spread of SARS-CoV-2.vii,viii,ix Universal face covering use in schools for children older than 2 years is recommended. **It is important to note many children, even those with medical conditions, are able to safely and effectively wear face coverings with adequate practice and support as well as modeling from adults.** School staff and older students (those who attend middle or high school) should be able to wear cloth face coverings safely and consistently and should be encouraged to do so. Children younger than 2 years and anyone who has trouble breathing or is unconscious, incapacitated, or otherwise unable to remove a face covering without assistance should not wear cloth face coverings.

For certain populations, the use of cloth face coverings by teachers may impede the education process. These include students who are deaf or hard of hearing, students receiving speech/language services, young students in early education programs, and English language learners. Although there are products (eg, face coverings with clear panels in the front) to facilitate their use among these populations, these products may not be available in all settings.

Students and families should be taught how to properly wear (cover nose and mouth) a cloth face covering, to maintain hand hygiene when removing for meals and physical activity, and to replace and maintain (wash daily) a cloth face covering.

School health staff should be provided with appropriate medical PPE to use in health suites. This PPE should include universal N95 masks, surgical masks, gloves, disposable gowns, and face shields or other eye protection. School health staff should be aware of the **CDC guidance on infection control measures**. **Asthma treatments using inhalers with spacers** should be used rather than nebulizer treatments whenever possible, because nebulizer treatments are aerosol-generating procedures, which increase risks to others. The **CDC recommends** that nebulizer treatments at school should be reserved for children who cannot

use or do not have access to an inhaler (with spacer or spacer with mask) for a respiratory emergency. Schools should work with families and health care providers to assist with obtaining an inhaler and spacer for students with limited access. In addition, schools should work to develop and implement asthma action plans, which may include directly observed controller medication administration in schools to promote optimal asthma control. In those rare cases in which a student can only use a nebulizer, school health staff should **wear gloves, an N95 facemask (when available), gown, and eye protection**. Staff should be trained on proper donning and doffing procedures and follow the **CDC guidance** regarding precautions when performing this aerosol-generating procedure. Nebulizer treatments should be performed in a space that limits exposure to others and with minimal staff present. Rooms should be well-ventilated, or treatments should be performed outside. After the use of the nebulizer, the room should undergo routine **cleaning and disinfection**.

School staff working with students who are unable to wear a cloth face covering or who are unable to manage secretions and who must be in close proximity to these students should wear a surgical mask in combination with a face shield.

Cleaning and Disinfection

The main mode of COVID-19 spread is from person to person, primarily via droplet transmission. For this reason, strategies for infection prevention should center around this form of spread, including physical distancing, face coverings, and hand hygiene. Given the challenges that may exist in children and adolescents effectively adhering to recommendations, it is critical that staff consistently set a good example for students by modeling behaviors around physical distancing, face coverings, and hand hygiene. Infection via fomites is less likely. However, because the virus may survive on certain surfaces for some time, it is possible to get infected after touching a virus contaminated surface and then touching the mouth, eyes, or nose. Frequent handwashing as a modality of containment is vital.

The additional cleaning requirements because of the COVID-19 pandemic will require additional resources for schools both in supplies and potential in staffing. Cleaning should be performed per established protocols followed by disinfection when appropriate. Normal cleaning with soap and water decreases the viral load and optimizes the efficacy of disinfectants. When using disinfectants, the manufacturers' instructions must be followed, including duration of dwell time, use of PPE if indicated, and proper ventilation. The use of the Environmental Protection Agency (EPA)-approved disinfectants against COVID-19 is

recommended (**EPA List N**). When possible, only products labeled as **safe for humans and the environment** (eg, Safer or Designed for the Environment), containing active ingredients such as hydrogen peroxide, ethanol, citric acid, should be selected from this list, because they are less toxic, are not strong respiratory irritants or asthma triggers, and have no known carcinogenic, reproductive, or developmental effects.

When EPA-approved disinfectants are not available, alternative disinfectants such as diluted bleach or 70% alcohol solutions can be used. Children should not be present when disinfectants are in use and should not participate in disinfecting activities. Most of these products are not safe for use by children, whose "hand-to-mouth" behaviors and frequent touching of their face and eyes put them at higher risk for toxic exposures. If disinfection is needed while children are in the classroom, adequate ventilation should be in place and nonirritating products should be used. Disinfectants such as bleach and those containing quaternary ammonium compounds or "Quats" should not be used when children and adolescents are present, because these are known respiratory irritants.

In general, elimination of high-touch surfaces is preferable to frequent cleaning. For example, classroom doors can be left open rather than having students open the door when entering and leaving the classroom, or the door can be closed once all students have entered followed by hand sanitizing. As part of increasing social distance between students and surfaces requiring regular cleaning, schools could also consider eliminating the use of lockers, particularly if they are located in shared spaces or hallways, making physical distancing more challenging. If schools decide to use this strategy, it should be done within the context of ensuring that students are not forced to transport unreasonable numbers of books back and forth from school on a regular basis.

When elimination of use of high-touch surfaces is not possible, surfaces that are used frequently, such a drinking fountains, door handles, sinks and faucet handles, etc, should be cleaned and disinfected at least daily and as often as possible. Bathrooms, in particular, should receive frequent cleaning and disinfection. Shared equipment including computer equipment, keyboards, art supplies, and play or gym equipment should also be disinfected frequently. Hand washing should be promoted before and after touching shared equipment. Computer keyboard covers can be used to facilitate cleaning between users. **Routine cleaning practices** should be used for indoor areas that have not been used for 7 or more days or outdoor equipment. Surfaces that are not high-touch, such as bookcases, cabinets, wall boards, or drapes should be cleaned following standard protocol. The same applies to floors or carpeted areas.

Outdoor playgrounds/natural play areas only need routine maintenance, and hand hygiene should be emphasized before and after use of these spaces. Outdoor play equipment with high-touch surfaces, such as railings, handles, etc, should be cleaned and disinfected regularly if used continuously.

Alternative Disinfection Methods

The efficacy of **alternative disinfection methods**, such as ultrasonic waves, high-intensity UV radiation, and LED blue light against COVID-19 virus is not known. The EPA does not routinely review the safety or efficacy of pesticidal devices, such as UV lights, LED lights, or ultrasonic devices. Therefore, the EPA cannot confirm whether, or under what circumstances, such products might be effective against the spread of SARS-CoV-2.x

Testing and Screening

Virologic testing is an important part of the overall public health strategy to limit the spread of COVID-19. Virologic testing detects the viral RNA from a respiratory (usually nasal) swab specimen. **The CDC does not recommend universal testing of students and staff**. Testing all students for acute SARS-CoV-2 infection prior to the start of school is not feasible in most settings at this time. Even in places where this is possible, it is not clear that such testing would reduce the likelihood of spread within schools. It is important to recognize that virologic testing only shows whether a person is infected at that specific moment in time. It is also possible that the nasal swab virologic test result can be negative during the early incubation period of the infection. So, although a negative virologic test result is reassuring, it does not mean that the student or school staff member is not going to subsequently develop COVID-19. Stated another way, a student who is negative for COVID-19 on the first day of school may not remain negative throughout the school year.

A student or school staff member who has had a known exposure to COVID-19 (eg, close contact –within 6 feet for at least 15 minutes – with an individual with laboratory-confirmed SARS-CoV-2 infection or illness consistent with COVID-19), according to **CDC guidelines**, should self-quarantine for 14 days from the last exposure. In every case, local health officials should make the determination on quarantine and contact tracing. However, depending on current community viral case rates, local health authorities may make differing recommendations regarding contact tracing and/ or school exclusion or school closure.

Another type of testing is serologic blood testing for antibodies to SARS-CoV-2. At the current time, serologic testing should not be used for individual decision-making and has no place in considerations for entrance to or exclusion from school. **CDC guidance** regarding antibody testing for COVID-19 is that serologic test results should not be used to make decisions about grouping people residing in or being admitted to congregate settings, such as schools, dormitories, or correctional facilities. Additionally, serologic test results should not be used to make decisions about returning people to the workplace. The CDC states that serologic testing should not be used to determine immune status in individuals until the presence, durability, and duration of immunity is established. The AAP recommends this guidance be applied to school settings as well.

Schools should have a policy regarding symptom screening for teachers and staff and what to do if a student or school staff member becomes sick with symptoms. Temperature checks and symptom screening are a frequent part of many reopening processes to identify symptomatic persons to exclude them from entering buildings and business establishments. The list of symptoms of COVID-19 infection has grown since the start of the pandemic and the manifestations of COVID-19 infection in children, although similar, is often not the same as that for adults. **First and foremost, parents should be instructed to keep their child at home if they are ill, and staff members should stay home if they are ill.** Any student or staff member with a fever of 100.4 degrees or greater or symptoms of possible COVID-19 virus infection should not be present in school. **School policies regarding temperature screening and temperature checks must balance the practicality of performing these screening procedures for large numbers of students and staff with the information known about how children manifest and transmit COVID-19 infection, the risk of transmission in schools, and the possible lost instructional time to conduct the screenings**. At this time, the **CDC currently does not recommend universally screening students** at school, because screening may fail to identify a student who has a SARS-CoV-2 infection and may overidentify students with different common childhood illnesses. Schools should develop plans for rapid response to a student or staff member with fever who is in the school regardless of the implementation of temperature checks or symptom screening prior to entering the school building.

In lieu of temperature checks and symptom screening being performed after arrival to school, **methods to allow parent performing and reporting of symptoms and temperature checks performed at home may be considered.** Resources and time may necessitate this strategy at most schools. The epidemiology of disease in children along with evidence of the utility of temperature screenings in health systems may further justify this

approach. Procedures using texting apps, phone systems, or online reporting rely on parent report and may be most practical but possibly unreliable, depending on individual family's ability to use these communication processes, especially if not made available in their primary language or lack of electronic forms of communication. School nurses or nurse aides should be equipped to measure temperatures for any student or staff member who may become ill during the school day and should have an identified area to separate or **isolate students** who may have COVID-19 symptoms.

COVID-19 manifests similarly to other respiratory illness in children. Although children manifest many of the same symptoms of COVID-19 infection as adults, some differences are noteworthy. **According to the CDC**, children may be less likely to have fever, may be less likely to present with fever as an initial symptom, and may have only gastrointestinal tract symptoms. A student or staff member excluded because of symptoms of COVID-19 should contact their health care provider to discuss testing and medical care. In the absence of testing, students or staff should follow local health department guidance for exclusion.

Ventilation

The primary mode of transmission of SARS-CoV-2 appears to be by droplet transmission by people in close proximity. There are emerging studies on the possible role of airborne transmission. Although it is possible that there may be this type of transmission in some settings, the preponderance of evidence at this time suggests that this is not a primary mode of transmission. For example, the reproductive number of SARS-CoV-2 is in the range of other viruses known to be transmitted primarily by respiratory droplets, such as influenza. Further, simple face masks appear to be quite effective for decreasing the likelihood of transmission of SARS-CoV-2, in contrast with known airborne pathogens such as measles. With this in mind, mitigation efforts should focus on prevention of droplet transmission. Proper ventilation, however, does have a role in preventing the spread of any respiratory pathogen. Heating, air conditioning, and ventilation (HVAC) systems should be inspected for optimal functioning, filters should be within their service life, and MERV-13 (minimum efficiency reporting value) efficiency filtration should be used, if the equipment allows.xi,xii Demand-controlled ventilation (DVC) should be disabled when possible, and the system should run continuously to improve air exchanges in the school building.

Other Considerations

On-site School-Based Health Services

On-site school health services, including school-based health centers, should be supported if available, to complement the pediatric medical home and to provide pediatric acute, chronic, and preventive care. Collaboration with **school nurses** will be essential, and school districts should involve school health services staff early in the planning phase for reopening and consider collaborative strategies that address and prioritize immunizations and other needed health services for students, including behavioral health, vision screening, hearing, and reproductive health services.

Vision Screening

Vision screening practices should continue in school whenever possible. Vision screening serves to identify children who may otherwise have no outward symptoms of blurred vision or subtle ocular abnormalities that, if untreated, may lead to permanent vision loss or impaired academic performance in school. Personal prevention practices and environmental **cleaning and disinfection** are important principles to follow during vision screening, along with any additional guidelines from local health authorities.

Hearing Screening

Safe hearing screening practices should continue in schools whenever possible. School screening programs for hearing are critical in identifying children who have hearing loss as soon as possible so that reversible causes can be treated and hearing restored. Children with permanent or progressive hearing loss will be habilitated with hearing aids to prevent impaired academic performance in the future. Personal prevention practices and environmental **cleaning and disinfection** are important principles to follow during hearing screening, along with any additional guidelines from local health authorities.

Education

The impacts of lost instructional time and social emotional development on children and adolescents should be anticipated, and schools will need to be prepared to adjust curricula and instructional practices accordingly without the expectation that all lost academic progress can be caught up. Plans to make up for lost academic progress because of school closures and distress associated with lost academic progress and the pandemic in general should be balanced by a recognition of the likely continued distress of educators and students that will persist when schools reopen. If the academic expectations are unrealistic, school will likely

become a source of further distress for students (and educators) at a time when they need additional support. It is also critical to maintain a balanced curriculum with continued physical education and other learning experiences rather than an exclusive emphasis on core subject areas. In addition, continued improvement of remote learning practices should be encouraged, and further funding should be provided by federal and local governments to provide further support (eg, universal free broadband internet).

Students with Disabilities

The impact of loss of instructional time and related services, including mental health services as well as occupational, physical, and speech/language therapy during the period of school closures is significant for students with disabilities. All students, but especially those with disabilities, may have more difficulty with the social and emotional aspects of transitioning out of and back into the school setting. As schools prepare for reopening, school personnel should develop a plan to ensure a review of each child and adolescent with an IEP to determine the needs for compensatory education to adjust for lost instructional time as well as other related services. In addition, schools can expect a backlog in evaluations; therefore, plans to prioritize those for new referrals as opposed to re-evaluations will be important. Many school districts require adequate instructional effort before determining eligibility for special education services. However, virtual instruction or lack of instruction should not be reasons to avoid starting services such as response-to-intervention (RTI) services, even if a final eligibility determination is postponed.

Behavioral Health/Emotional Support for Children and Adolescents

Schools should anticipate and be prepared to address a wide range of mental health needs of children and staff when schools reopen. Preparation for **infection control** is vital and admittedly complex during an evolving pandemic. But the emotional impact of the pandemic, grief because of loss, financial/employment concerns, social isolation, and growing concerns about systemic racial inequity — coupled with prolonged limited access to critical school-based mental health services and the support and assistance of school professionals — demands careful attention and planning as well. Schools should be prepared to adopt an approach for mental health support, and just like other areas, supporting mental health will require additional funding to ensure adequate staffing and the training of those staff to address the needs of the students and staff in the schools.

Schools should consider providing training to classroom teachers and other educators on how to talk to and support children during and after the COVID-19 pandemic. Students requiring mental health support should be referred to school mental health professionals.

Suicide is the second leading cause of death among adolescents or youth 10 to 24 years of age in the United States. In the event distance learning is needed, schools should develop mechanisms to evaluate youth remotely if concerns are voiced by educators or family members and should be establishing policies, including referral mechanisms for students believed to be in need of in-person evaluation, even before schools reopen.

School mental health professionals should be involved in shaping messages to students and families about the response to the pandemic. Fear-based messages widely used to encourage strict physical distancing may cause problems when schools reopen, because the risk of exposure to COVID-19 may be mitigated but not eliminated. Communicating effectively is especially critical, given potential adaptations in plans for in-person or distance learning that need to occur during the school year because of changes in community transmission of SARS-CoV-2.

When schools do reopen, plans should already be in place for outreach to families whose students do not return for various reasons. This outreach is especially critical, given the high likelihood of separation anxiety and agoraphobia in students. Students may have difficulty with the social and emotional aspects of transitioning back into the school setting, especially given the unfamiliarity with the changed school environment and experience. Special considerations are warranted for students with pre-existing anxiety, depression, and other mental health conditions; children with a prior history of trauma or loss; and students in early education who may be particularly sensitive to disruptions in routine and caregivers. Students facing other challenges, such as poverty, food insecurity, and homelessness, and those subjected to ongoing racial inequities may benefit from additional support and assistance.

Schools need to incorporate academic accommodations and supports for all students who may still be having difficulty concentrating or learning new information because of stress or family situations that are compounded by the pandemic. It is important that school personnel do not anticipate or attempt to catch up for lost academic time through accelerating curriculum delivery at a time when students and educators may find it difficult to even return to baseline rates. These expectations should be communicated to educators, students, and family members so that school does not become a source of further distress.

Mental Health of Staff

The personal impact on educators and other school staff should be recognized. In the same way that students are going to need support to effectively return to school and to be prepared to be ready to process the information they are being taught, teachers cannot be expected to be successful at teaching children without having their mental health needs supported. The strain on teachers this year as they have been asked to teach differently while they support their own needs and those of their families has been significant, and they will be bringing that stress back to school as schools reopen. Resources such as Employee Assistance Programs and other means to provide support and mental health services should be established prior to reopening. The individual needs and concerns of school professionals should be addressed with accommodations made as needed (eg, for a classroom educator who is pregnant, has a medical condition that confers a higher risk of serious illness with COVID-19, resides with a family member who is at higher risk, or has a mental health condition that compromises the ability to cope with the additional stress).

Although schools should be prepared to be agile to meet evolving needs and respond to increasing knowledge related to the pandemic and may need to institute partial or complete closures when the public health need requires, school leaders should recognize that staff, students, and families will benefit from sufficient time to understand and adjust to changes in routine and practices. During a crisis, people benefit from clear and regular communication from a trusted source of information and the opportunity to dialogue about concerns and needs and feel they are able to contribute in some way to the decision-making process. Change is more difficult in the context of crisis and when predictability is already severely compromised.

Food Insecurity

In 2018, 11.8 million children and adolescents (1 in 7) in the United States lived in a food-insecure household.xiii The coronavirus pandemic has led to increased unemployment and poverty for America's families, which will likely increase even further the number of families who experience food insecurity.xiv School re-entry planning must consider the many children and adolescents who experience food insecurity already (especially at-risk and low-income populations) and who will have limited access to routine meals through the school district if schools remain closed. The short- and long-term effects of food insecurity in children and adolescents are profound.xv In the early months of the pandemic, many families were not able

to pick up the food provided through schools despite the school's attempt to reach all families. Given low participation in pick-up food programs this spring in some school districts, school districts should coordinate meal delivery in accessible locations and consider providing multiple days' worth of meals to reduce the burden on families. **Plans should be made prior to the start of the school year for how students participating in free- and reduced- meal programs will receive food in the event of a school closure or if they are excluded from school because of illness or SARS-CoV-2 infection.**

Immunizations

Existing school immunization requirements should be maintained and not deferred because of the current pandemic. In addition, **although influenza vaccination is generally not required for school attendance, in the coming academic year, it should be highly encouraged for all students and staff.** The symptoms of influenza and SARS-CoV-2 infection are similar and taking steps to prevent influenza will decrease the incidence of disease in schools, and the related lost educational time and resources needed to handle such situations by school personnel and families. School districts should consider requiring influenza vaccination for all staff members.

Pediatricians should work with schools and local public health authorities to promote childhood vaccination messaging well before the start of the school year. It is vital that all children receive recommend vaccinations on time and get caught up if they are behind as a result of the pandemic. The capacity of the health care system to support increased demand for vaccinations should be addressed through a multifaceted collaborative and coordinated approach among all child-serving agencies including schools.

Organized Activities

It is likely that sporting events, practices, and conditioning sessions as well as other extracurricular activities will be limited in many locations. The **AAP Interim Guidance on Return to Sports** helps pediatricians inform families on how best to ensure safety when considering a return to sports participation. Preparticipation evaluations should be conducted in alignment with the **AAP Preparticipation Physical Evaluation Monograph, 5th ed**, and state and local guidance.

Additional Information

- Guidance Related to Childcare During COVID-19
- Cloth Face Coverings
- Testing Guidance
- COVID-19 Interim Guidance: Return to Sports
- Information for Parents on HealthyChildren.org: Returning to School During COVID-19
- CDC COVID-19 Resources
- Coalition to Support Grieving Students
- Using Social Stories to Support People with I/DD During the COVID-19 Emergency
- Social Stories for Young and Old on COVID-19

References

Interim Guidance Disclaimer: The COVID-19 clinical interim guidance provided here has been updated based on current evidence and information available at the time of publishing. Guidance will be regularly reviewed with regards to the evolving nature of the pandemic and emerging evidence. All interim guidance will be presumed to expire in December 2020 unless otherwise specified.

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News Release

Pediatricians, Educators and Superintendents Urge a Safe Return to School This Fall

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Science and community circumstances must guide decision-making; funding is critical

Washington, DC—The American Academy of Pediatrics (AAP), American Federation of Teachers (AFT), National Education Association (NEA) and AASA, The School Superintendents Association, join together today in the following statement on the safe return of students, teachers, and staff to schools:

"Educators and pediatricians share the goal of children returning safely to school this fall. Our organizations are committed to doing everything we can so that all students have the opportunity to safely resume in-person learning.

"We recognize that children learn best when physically present in the classroom. But children get much more than academics at school. They also learn social and emotional

skills at school, get healthy meals and exercise, mental health support and other services that cannot be easily replicated online. Schools also play a critical role in addressing racial and social inequity. Our nation's response to COVID-19 has laid bare inequities and consequences for children that must be addressed. This pandemic is especially hard on families who rely on school lunches, have children with disabilities, or lack access to Internet or health care.

"Returning to school is important for the healthy development and well-being of children, but we must pursue re-opening in a way that is safe for all students, teachers and staff. Science should drive decision-making on safely reopening schools. Public health agencies must make recommendations based on evidence, not politics. We should leave it to health experts to tell us when the time is best to open up school buildings, and listen to educators and administrators to shape how we do it.

"Local school leaders, public health experts, educators and parents must be at the center of decisions about how and when to reopen schools, taking into account the spread of COVID-19 in their communities and the capacities of school districts to adapt safety protocols to make in-person learning safe and feasible. For instance, schools in areas with high levels of COVID-19 community spread should not be compelled to reopen against the judgment of local experts**.** A one-size-fits-all approach is not appropriate for return to school decisions.

"Reopening schools in a way that maximizes safety, learning, and the well-being of children, teachers, and staff will clearly require substantial new investments in our schools and campuses. We call on Congress and the administration to provide the federal resources needed to ensure that inadequate funding does not stand in the way of safely educating and caring for children in our schools. Withholding funding from schools that do not open in person fulltime would be a misguided approach, putting already financially strapped schools in an impossible position that would threaten the health of students and teachers.

"The pandemic has reminded so many what we have long understood: that educators are invaluable in children's lives and that attending school in person offers children a wide array of health and educational benefits. For our country to truly value children, elected leaders must come together to appropriately support schools in safely returning students to the classroom and reopening schools."

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About the American Academy of Pediatrics

The American Academy of Pediatrics is an organization of 67,000 primary care pediatricians, pediatric medical subspecialists and pediatric surgical specialists dedicated to the health, safety and well-being of infants, children, adolescents and young adults. For more information, visit www.aap.org and follow us on Twitter @AmerAcadPeds

About the American Federation of Teachers

The AFT represents 1.7 million pre-K through 12th-grade teachers; paraprofessionals and other school-related personnel; higher education faculty and professional staff; federal, state and local government employees; nurses and healthcare workers; and early childhood educators.

About the National Education Association

The National Education Association is the nation's largest professional employee organization, representing more than 3 million elementary and secondary teachers, higher education faculty, education support professionals, school administrators, retired educators, students preparing to become teachers, healthcare workers, and public employees. Learn more at www.nea.org

About AASA

AASA, The School Superintendents Association, founded in 1865, is the professional organization for more than 13,000 educational leaders in the United States and throughout the world. AASA's mission is to support and develop effective school system leaders who are dedicated to equitable access for all students to the highest quality public education. For more information, visit www.aasa.org.

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EXHIBIT 13

School closure and management practices during coronavirus outbreaks including COVID-19: a rapid systematic review

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In response to the coronavirus disease 2019 (COVID-19) pandemic, 107 countries had implemented national school closures by March 18, 2020. It is unknown whether school measures are effective in coronavirus outbreaks (eg, due to severe acute respiratory syndrome [SARS], Middle East respiratory syndrome, or COVID-19). We undertook a systematic review by searching three electronic databases to identify what is known about the effectiveness of school closures and other school social distancing practices during coronavirus outbreaks. We included 16 of 616 identified articles. School closures were deployed rapidly across mainland China and Hong Kong for COVID-19. However, there are no data on the relative contribution of school closures to transmission control. Data from the SARS outbreak in mainland China, Hong Kong, and Singapore suggest that school closures did not contribute to the control of the epidemic. Modelling studies of SARS produced conflicting results. Recent modelling studies of COVID-19 predict that school closures alone would prevent only 2–4% of deaths, much less than other social distancing interventions. Policy makers need to be aware of the equivocal evidence when considering school closures for COVID-19, and that combinations of social distancing measures should be considered. Other less disruptive social distancing interventions in schools require further consideration if restrictive social distancing policies are implemented for long periods.

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Introduction

WHO declared the coronavirus disease 2019 (COVID-19) outbreak, caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), to be a pandemic on March 12, 2020.[1] On March 18, 2020, the UN Educational, Scientific and Cultural Organization estimated that 107 countries had implemented national school closures related to COVID-19, affecting 862 million children and young people, roughly half the global student population. This situation had rapidly escalated from 29 countries with national school closures a week before.[2] School closures are based on evidence and assumptions from influenza outbreaks that they reduce social contacts between students and therefore interrupt the transmission.[3]

School closures can affect deaths during an outbreak either positively, through reducing transmission and the number of cases, or negatively, through reductions in the health-care workforce available to care for those who are sick. Studies of UK children and young people report that the mean number of daily social contacts during school holidays are approximately half that of school term days;[4,5] however, contacts continue and mixing between children and adults and between children at different schools actually increases during holidays and school closures.[4–7] The evidence for the effectiveness of school closures and other school social distancing measures comes almost entirely from influenza outbreaks, for which transmission of the virus tends to be driven by children. It is unclear whether school measures are effective in coronavirus outbreaks—for example, due to severe acute respiratory syndrome (SARS), or Middle East respiratory syndrome (MERS) and, most specifically, COVID-19, for which transmission dynamics appear to be different.

Four systematic reviews[8–11] of the effects of school closure on influenza outbreaks or pandemics suggest that school closure can be a useful control measure, although the effectiveness of mass school closures is often low. School closure strategies might be national, regional, local, or reactive closure of individual schools in response to student infection rates. A systematic review,[8] commissioned by the UK Department of Health in 2014, to inform influenza pandemic preparations, included 100 epidemiological and 45 modelling studies and concluded that school closures can reduce transmission of pandemic influenza if instituted early in outbreaks. School closures result in greater reductions in peak than in cumulative attack rates and, according to modelling studies, are likely to have the greatest effect if the virus has low transmissibility (reproductive number [*R*] <2) and if attack rates are higher in children than in adults. A second review[9] of modelling studies by the same authors drew similar conclusions.

A 2018 review[10] of 31 studies that addressed whether school closure had a quantifiable effect on influenza transmission reported that school closure reduced the peak of the related outbreak by a mean of 29·7% and delayed the peak by a median of 11 days. They also reported that earlier school closure predicted a greater reduction in the outbreak peak, although these estimates did not come from formal meta-analyses.[10] A 2015 systematic review[11] of social distancing practices, including school closures, for influenza pandemics reported a wide variation in the reduction of transmission (range 1–50%) but noted that up to 70% of students might shift social contacts to other non-school sites during closures, reducing the effect of closures. A 2020 systematic review[12] of school closures and other social distancing measures during influenza outbreaks also found compelling evidence that closures reduced transmission, particularly among school-aged children (5–17 years). However, there was substantial evidence that transmission surged again once schools reopened, and there was little consensus on the appropriate timing of closures, let alone reopening of schools.

One way that school closures are effective during outbreaks might be through forcing parents to work at home and thus reducing work-related contacts. However, reviews have also noted the adverse effects of school closure, including economic harms to working parents, health-care workers, and other key workers being forced from work to childcare, and to society due to loss of parental productivity, transmission from children to vulnerable grandparents, loss of education, harms to child welfare particularly among the most vulnerable pupils, and nutritional problems especially to children for whom free school meals are an important source of nutrition.[8,10,11] Social isolation itself brings a range of psychological harms.[13] A rapid review[13] found evidence that, during unplanned school closures, children's activities and contacts decreased but did not cease, with some evidence that this was particularly so among older children and those whose parents disagreed with closures.[7]

The economic harms of school closures are high. A UK study[14] from 2008 suggested that approximately 16% of the workforce are the main caregivers for dependent children and are at very high risk of absenteeism if schools are closed, a proportion that rises to 30% in the health and social care sectors. In the USA, unpublished estimates suggest that 29% of health-care workers have childcare obligations.[15] A 2010 economic modelling analysis[16] of school closures as mitigating interventions during influenza outbreaks suggested that 4-week or 13-week closures reduced the clinical attack rate minimally but markedly increased the economic cost to the nation, in particular through forced absenteeism by working parents, in the UK, France, Belgium, and the Netherlands. Costs have been estimated to be as high as 0·2–1% of UK national gross domestic product (GDP) per annum for school closure for 12–13 weeks,[14] or up to 3% of GDP for an 8-week closure in US studies.[17] Reviews have not summarised economic harms from school closure in detail, but economic modelling from an influenza outbreak in Hong Kong, China, suggested that the most cost-effective models were selective local closures rather than city-wide closures.[18]

Notably, regardless of official school closure or other distancing policies, unofficial student and staff absenteeism (whether due to illness or precautionary) can be very high during epidemics. Staff absenteeism can lead to forced local school closures.[19] School dismissal—whereby all students, except the most vulnerable and children of health-care and other essential workers, are sent home but the school stays open—has been suggested to be a less strict intervention than school closure, although there is no evidence supporting its use separately to full closure.[20]

There are many other potential social distancing actions available for schools that are less drastic than full closure, although these have received little attention.[21] A 2018 systematic review[21] of such strategies noted that potential practices include suspending affected classes or year groups, or changing the school organisation structure to reduce student mixing (eg, by closing playgrounds, cancelling non-essential activities and meetings, keeping students in constant class groups or classrooms, increasing spacing between students in classes, shortening the school week, and staggering school start and lunch or break times across year groups or classes). The review concluded that few studies have been done but that a small number of modelling studies supported the use of alternative strategies during influenza outbreaks.[22,23] There were no UK studies included in this review.[21] In the 2009 H1N1 influenza pandemic, Taiwan instituted class suspensions rather than school closures, facilitated by keeping students in a homeroom class with a core teacher and having other teachers routinely moving between classes. Studies suggest that this approach was an effective social distancing measure in this outbreak while reducing social disruption.[24]

To reduce the transmission of COVID-19, many countries had instituted large-scale or national closure of schools by March, 2020. These actions appear largely based on assumptions that the benefits apparent in influenza outbreaks are also likely to be true for COVID-19. There are several theoretical reasons why school closures might be less effective in COVID-19 than in influenza outbreaks. Children contribute more to influenza transmission than do adults,[25] with low levels of immunity and high levels of transmission due to symptomatic disease. However, in the COVID-19 pandemic thus far, children appear to form a much lower proportion of cases than expected from their population, although evidence for this is mixed and some data suggest that children might be as likely to be infected as adults but largely remain asymptomatic or have a mild form of the disease.[26] It remains unclear whether the low proportion of confirmed COVID-19 cases among children in mainland China relate to a reduced risk of infection, having subclinical or milder infections, or specific population factors (eg, one-child policy). Evidence of COVID-19 transmission through child–child contact or through schools is not yet available, although family transmission has an important role in the outbreak.

In some previous coronavirus outbreaks, evidence suggested that transmission in schools was very low or absent.[27] As modelling studies of school closures for influenza outbreaks rely on assumptions about the proportion of cases transmitted in schools being relatively high,[28] these models cannot be assumed to be informative regarding effectiveness for COVID-19. Emerging epidemiological data suggest little evidence of transmission of COVID-19 through schools in China, although this might reflect closure of schools during most of the outbreak. Notably, school closures began with not reopening schools after the Chinese New Year

holidays.[29] As of April 3, 2020, Taiwan has been recognised to have effectively minimised spread of COVID-19,[30] but with national policies that avoided widespread planned school closures and instead mandated initially local class closures, and subsequently local temporary school closures, based on low thresholds for infected cases within individual schools.[30] In view of the scarce information and pressure on countries to consider school closures to deal with the COVID-19 pandemic, we did a systematic review of the literature to answer the question: what is known about the use of and effectiveness and cost-effectiveness of school closure and other school social distancing practices on infection rates and transmission during coronavirus outbreaks?

Methods

We sought to include quantitative studies using diverse designs to model or empirically evaluate the effects of school closure and other school social distancing practices on infection rates and transmission during coronavirus outbreaks. Our search was designed to be inclusive of any studies providing data on schools or nurseries. We searched various electronic databases on March 9, 2020, and again on March 19, 2020, with no language restrictions. We searched PubMed using search terms and database-appropriate syntax: SARS [tw] OR "severe acute respiratory syndrome"[mh] OR "severe acute respiratory syndrome" OR "Middle East Respiratory Syndrome Coronavirus"[mh] OR "middle east respiratory syndrome*"[tw] OR "MERS-CoV"[tw] OR Mers[tw] OR "Middle Eastern Respiratory Syndrome*"[tw] OR "MERSCoV*"[tw] OR coronavirus[mh] OR Coronavirus Infections[mh] OR coronavirus*[tw] OR "COVID-19"[tw] or "2019-nCoV"[tw] or "SARS-CoV-2"[tw]) AND (Schools[mh:noexp] OR schools, nursery[mh] OR "Child Day Care Centers"[mh] OR "Nurseries, Infant"[mh] OR school[tiab] OR schools[tiab] OR preschools[tiab] OR preschool[tiab] OR "pre school"[tiab] OR "pre schools"[tiab] OR nursery[tiab] OR nurseries[tiab] OR kindergarten[tiab] OR kindergarten[tiab] OR "day care" OR daycare AND child* OR infant*. We searched the WHO Global Research Database on COVID-19 using the term "school", which only retrieved one article that we excluded as it did not contain research. Therefore, we searched again using the search terms "child", "children", "childhood", "infant", "baby", "babies", "pediatric", and "paediatric". We also searched the preprint server medRxiv for all papers using the search terms "SARS or MERS or coronavirus or COVID-19". We did not find it useful to include search terms relating to schools as the search facilities were not sophisticated.

All articles were triple screened (by SJR, HC, and JP) on title and abstract. We excluded opinion pieces, systematic reviews, studies addressing other viruses, university-specific settings, epidemiological studies not examining intervention effects (eg, of prevalence of infection in schools), and studies in other languages with no English translation. All full-text articles identified were reviewed by RMV. For each retrieved full-text article, we hand searched included references and examined the citation chain for additional studies. We did not attempt to rate the quality of included studies in this Review. We considered findings from preprint articles separately to published peer-reviewed articles.

Results

Study selection and characteristics

The PubMed search identified 119 articles, of which 22 full-text articles were assessed and eight included in the Review. Searching the WHO Global Research Database on COVID-19 did not return relevant articles. The search on medRxiv yielded 480 articles, of which 36 full-text preprint articles were assessed and six included in the Review. Hand searching of full-text articles identified one additional reference, and one additional modelling study[31] published as a non-peer-reviewed report was identified and included. In total, 16 studies were included in this Review (figure).

All published articles concerned the 2003 SARS outbreak. One preprint article[32] concerned the effect of school closures on transmission of other (endemic)

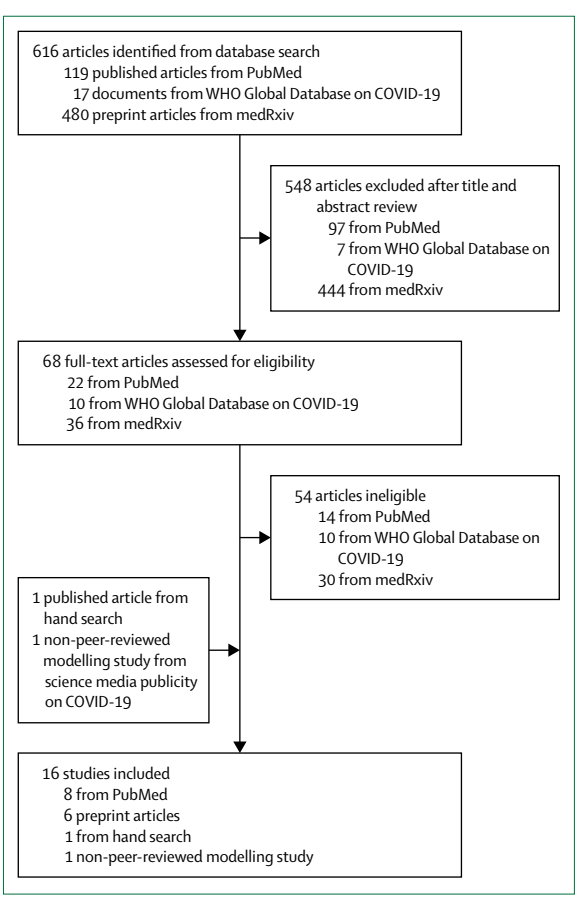

Figure: **Study selection process**
COVID-19=coronavirus disease 2019

For the **WHO Global Research Database on COVID-19** see https://www.who.int/emergencies/diseases/novel-coronavirus-2019/global-research-on-novel-coronavirus-2019-ncov

coronaviruses (229E, NL63, OC43, and HKU1) and five preprints and one report[31] concerned the COVID-19 pandemic.

Six papers described or evaluated school actions as part of control measures undertaken in response to the SARS outbreak in Taiwan,[24] Singapore,[33–35] and Beijing, China.[36,37] Two papers were modelling studies that estimated SARS transmission in schools[38] or the effect of school closure[39] on transmission in SARS outbreaks. One paper reported qualitative research with health-care workers after the SARS outbreak relating to the effect of school closures.[40] Five preprint articles reported on school closures during the COVID-19 outbreak in mainland China[41–43] and Hong Kong.[12,44] One preprint article described the impact of school closure on winter transmission of other human coronaviruses.[32] One report modelled the impact of school closures in the UK on transmission of COVID-19.[31]

Effectiveness of school social distancing measures

Preprint studies[41,42] report that school closures were initiated nationally across mainland China in late January, 2020—which manifested as delaying the restarting of schools after the Chinese New Year holidays—as part of a broader series of control measures during the COVID-19 epidemic. No data are available on the effectiveness of school closure as there was little variation in timing of closures (closures were reportedly applied in all Chinese cities uniformly and without delay) and school closures were part of a broad range of quarantine and social distancing measures. Both of these studies concluded that the overall package of quarantine and social distancing was effective in reducing the epidemic in mainland China,[41,42] although the relative contribution of school closures was not assessed.

Preprint studies of actions in Hong Kong related to COVID-19 noted that a 4-week school closure was initiated across the city on Feb 1, 2020, approximately 1 week after the first cases were identified in Hong Kong. School closures were implemented at the same time as a number of other stringent social distancing measures, with school closures extended initially to March, 2020, then to April, 2020.[12,44] Collectively, these measures were considered to have reduced the *R* below 1, controlling the spread of the outbreak.[12] As in mainland China, no data were available from either paper on the effect of school closures separate from other measures. Cowling and colleagues[12] noted that the social distancing measures implemented during the COVID-19 outbreak reduced community transmission by 44%, which was much greater than the estimated 10–15% reduction in influenza transmission conferred by school closures implemented alone during the 2009 pandemic in Hong Kong.[44]

During the SARS epidemic, schools in Beijing were closed on April 24, 2003, approximately 6 weeks after the beginning of the outbreak, and remained closed for over 2 months. One study[36] concluded that school closures made very little difference to the prevention of SARS in Beijing, given the very low attack rate in schools before the closure and the low prevalence of disease in children. A second study[37] estimated the effective *R* for each day of the Beijing SARS outbreak, noting that school closures occurred after the *R* had dropped below 1 and that school closures in this case added little to control of the outbreak. Class cancellation strategies, in which upper high-school and college students remained on college campuses but did not attend classes, were also widely used during the SARS outbreak in mainland China.[45] There was no recorded transmission of SARS in schools during the outbreak in mainland China.[46]

A review[33] of the 2003 SARS outbreak in Singapore noted that twice daily, mandatory temperature screening of all children aged 6–16 years in schools was part of the containment measures instituted. Pupils were excluded from school if their temperature was more than 37·8°C for students aged 12 years or younger, or more than 37·5°C for students older than 12 years. Although there were school children diagnosed with SARS in Singapore, none of them were identified through temperature screening.[35] All educational facilities in Singapore were closed for 3 weeks from March 27, 2003 (the SARS outbreak ran from late February to May 2003), together with suspension of other activities to prevent the congregation of large groups of children.[34]

A review[24] of responses in Taiwan to the SARS outbreak and 2009 H1N1 influenza pandemic noted that schools were designated as alternative health-care sites in case the health system was overwhelmed during the SARS outbreak, but that there were no school social distancing measures (including closures) introduced during the SARS outbreak. This finding is in contrast to the use of class suspensions during the H1N1 pandemic in Taiwan.[24]

Schools were also closed in Hong Kong during the SARS epidemic; however, the extent to which this was at a city-wide or local level is unclear. There was no evidence of spread of the infection in schools, with spread among children almost entirely through family settings and living in the same apartment blocks as infected cases.[27]

A preprint study by Jackson and colleagues[32] used routine viral surveillance to examine the effects on transmission of endemic human coronaviruses (229E, NL63, OC43, and HKU1) and other viruses of a 5-day closure of nearly all schools in the greater Seattle metropolitan area in February, 2019, due to extreme weather on transmission of these viruses. Their study estimated that the school closure resulted in a 5·6% (95% CI 4·1–6·9) reduction in coronavirus infections, similar to influenza H1N1 (7·6%; 5·2–9·7) but higher than influenza H3N2 (3·1%; 2·5–3·2), all of which were prevalent at the time.[32]

Modelling studies

A preprint modelling study[43] examined the effect of school closure together with other social distancing measures in Wuhan, China. The study used transmission data representative of COVID-19, but it was unclear whether epidemiological data from the outbreak were used further

in the modelling. This study concluded that the package of social distancing measures was effective in reducing the final size and peak incidence of the outbreak while also delaying the peak.[43] However, it did not examine the effect of school closures relative to other measures. It modelled different timings of relaxation of social distancing measures and concluded that earlier relaxation (after 2 months of restrictions) risked a second peak, whereas 3 months of restrictions did not result in a second peak.[43]

Only one study examined the effect of school closures separately to other social distancing measures. In a non-peer-reviewed but widely cited report from an established group, Ferguson and colleagues[31] modelled the estimated effects of a range of different social distancing measures and combinations of measures. They used UK population and schools data together with data on transmission dynamics reported from the COVID-19 outbreak in Wuhan. Using data from previous influenza outbreaks, they assumed that per-capita contacts within schools were double those in households, workplaces, or the community, and that, overall, approximately a third of transmission occurred in schools. They modelled a scenario in which all schools and 25% of universities were closed and where the effect on non-school social contacts was an increase of 50% in household contact rates for families with children and a 25% increase in community contacts during the closure. They concluded that school closure as an isolated measure was predicted to reduce total deaths by around 2–4% during a COVID-19 outbreak in the UK, whereas single measures such as case isolation would be more effective, and a combination of measures would be the most effective. The authors concluded that school closure is predicted to be insufficient to mitigate (never mind suppress) the COVID-19 pandemic in isolation, which is in contrast to seasonal influenza epidemics where children are the key drivers of transmission.[31]

An early modelling study of a SARS-like illness in school children concluded that a school closure policy would reduce the effective *R* by 12–41% depending on the proportion of between-household mixing that occurred during school hours. The study noted that modelling was based on plausible assumptions regarding characteristics of the SARS virus, noting that obtaining good quality estimates of epidemiological parameters for SARS was difficult as the outbreak was contained rapidly.[39]

A modelling study of the transmission of SARS in hospitals and in elementary school classrooms in Taiwan using data from the 2003 SARS outbreak concluded that a single case of SARS would infect an average of 2·6 secondary cases in a population from transmission in hospital, whereas less than 1 secondary infection would be generated per case in a school classroom.[38]

Broader societal issues

Conflict between the work and family requirements of health-care professionals during the SARS epidemic was explored in qualitative research with 100 Canadian emergency and critical care nurses, many of whom had been involved with the SARS outbreak.[40] The study found that health-care workers experience substantial personal dilemmas in balancing work and family commitments, particularly relating to childcare needs if schools are closed and childcare services are unavailable. The study concluded that there was a need for provision of adequate resources to protect the families of health-care workers during outbreaks to maintain maximal staffing.[40]

Discussion

This Review provides the first summary of data on school closures and other school social distancing practices during coronavirus outbreaks. We were able to include only nine published studies and seven non-peer-reviewed studies. We decided to include unreviewed studies as data would not otherwise be available on COVID-19, although findings were interpreted with caution. Except for one modelling study, none of the included studies were designed to specifically examine the effectiveness of school distancing measures. Thus, data provided on the effect of school measures were of relatively low quality.

We identified a remarkable dearth of policy-relevant data on the implementation of school social distancing during coronavirus outbreaks. This finding is perhaps not surprising for the rapidly emerging COVID-19 pandemic, but previous coronavirus outbreaks such as SARS and MERS provide limited information about the effectiveness of school closures and no data on cost-effectiveness. No data on other less disruptive school social distancing practices during coronavirus outbreaks were identified.

Data from the SARS outbreak in mainland China, Hong Kong, and Singapore suggest that school transmission played no substantial role in the outbreak, and that school closures and other activities such as school temperature monitoring did not contribute to control of infection transmission. It is possible that these findings reflect an effect of school closures in rapidly stopping transmission; however, this is unlikely as schools remained open for prolonged periods during the early part of the outbreak. Modelling studies from the SARS outbreak produced different results. Although Becker and colleagues[39] estimated that school closure resulted in potentially important reductions in transmission, Liao and colleagues[38] estimated that transmission in school classrooms was low.

School closures were rapidly deployed across mainland China and Hong Kong in early 2020 as part of a wider set of control measures for COVID-19, with the result that no data were available on the comparative effectiveness of school closure interventions in isolation. Authors of preprint studies[41,44] concluded that school closures likely contributed to the control of COVID-19 in China as part of a package of very broad quarantine measures. However, they provide no data to support this assertion and indeed it might be very difficult to disentangle the relative contribution of school closures.

Modelling studies from the COVID-19 pandemic support the use of national school closure as part of a package of social distancing measures. Yet, the only study to examine school closures as a separate intervention warned that the impact was relatively marginal, given the reasonable assumptions that household and community contacts would rise as a consequence.

There are few data available from the literature on coronavirus outbreaks to guide countries on the use of school closures or other school social distancing practices during the COVID-19 pandemic. Available evidence is consistent with a broad range of impacts of school closures, from little effect on reducing transmission through to more substantial effects. Yet, the economic costs and potential harms of school closure are undoubtedly very high.

As evidence from coronavirus outbreak control is scarce, we must turn to evidence for the benefits of school closures from influenza epidemics and pandemics. School closures have been widespread in some countries during influenza pandemics, and many studies report important effects on reducing transmission and the size of the pandemic. Yet, there is considerable heterogeneity in the impact of school closures on transmission depending on characteristics of influenza serotype transmission. Systematic reviews of influenza outbreaks suggest that school closures are likely to have the greatest effect if the virus has low transmissibility ($R<2$), particularly if attack rates and transmission are higher in children than in adults.[8] Although our information on SARS-CoV-2 remains incomplete, this appears not to be the case with COVID-19 outbreaks. Reported R values for COVID-19 are high ($\geq 2 \cdot 5$).[47] Although children appear to contract infection at the same rate as adults, they largely have mild or asymptomatic forms of the disease and appear to be less likely to spread the virus through coughing or sneezing; however, a precise understanding is as yet lacking. Notably, analyses using UK clinical data from the 1957 Asian influenza pandemic suggest that school closures would reduce the epidemic size by less than 10% when the R was similar to that of COVID-19 (ie, $2 \cdot 5$–$3 \cdot 5$).[48] Reviews also note that the benefits of school closure might be less than what have been assumed or modelled, as social contacts between children and between children and adults continue as part of informal childcare and non-school gatherings of children and young people.[11] This conclusion is a particular concern for COVID-19, with its higher mortality among older people, as around 40% of the UK's grandparents provide regular childcare for their grandchildren.[49]

The WHO Director-General noted on March 12, 2020, that "all countries must strike a fine balance between protecting health, preventing economic and social disruption, and respecting human rights".[1] Currently, the evidence to support national closure of schools to combat COVID-19 is very weak and data from influenza outbreaks suggest that school closures could have relatively small effects on a virus with COVID-19's high transmissibility and apparent low clinical effect on school children. At the same time, these data also show that school closures can have profound economic and social consequences.

More research is urgently needed on the effectiveness of school closures and other school social distancing practices to inform policies related to COVID-19. We also need more detailed knowledge about how COVID-19 affects children and young people, as the role of school measures in reducing COVID-19 transmission depends on the susceptibility of children to infection and their infectiousness once infected.[12] However, observational studies might be uninformative if closures are national and implemented at the same time as other mitigation measures. Better learning might come from countries that have instituted later or subnational closures. Modelling studies—particularly those parameterised for COVID-19 in children, and those that can consider interaction with other contextual factors (eg, timing, parents working from home, and additional social mixing as a consequence of school closures) or different strategies (national *vs* staged roll out)—are likely to be more informative and are urgently needed.

These findings pose a dilemma for policy makers seeking measures to protect populations. School closure presents an apparently common-sense method of dramatically reducing spread of disease and the evidence from previous influenza outbreaks appears compelling. However, policy makers need to be aware of the equivocal evidence when proposing or implementing national or regional school closures for COVID-19, given the very high costs of lengthy school closures during pandemics. Decisions about closures and their timing and length involve a series of trade-offs between conflicting factors, and a substantial loss of health-care staff to childcare duties during closures might substantially reduce any benefit to health systems and populations brought by closures of schools.[50] Nonetheless, in a context of high rates of staff absence through disease, school systems will be under strain and schools remaining open only for the children of health-care and other essential workers might be a better strategy than a haphazard process of schools closing and therefore providing no childcare for any essential workers.

The scale and speed of school closures are unprecedented globally. It is unclear how long countries can maintain tight suppression measures before behavioural fatigue in the population occurs.[31] Given predictions that social distancing measures might need to be in place for many months or even years,[31] there is an urgent need to identify how countries can safely return students to education and parents to work. Education is one of the strongest predictors of the health and the wealth of a country's future workers, and the impact of long-term school closure on educational outcomes, future earnings, the

health of young people, and future national productivity has not been quantified.

Once the number of COVID-19 cases begin to fall, the measures used to achieve suppression might evolve over time. Schools have begun to reopen in parts of China,[2] and it will be essential for studies to monitor the effect of the reopening of schools on the numbers of COVID-19 cases. Examining countries that have not implemented school closures will also be important. Taiwan reopened schools in late February, 2020, relatively early in the outbreak; it has not yet initiated further large-scale closures but has been recognised to have effectively minimised spread of COVID-19. Policy makers and researchers should also look to other school social distancing interventions that are much less disruptive than full school closure and might substantially contribute to maintaining the control of this pandemic. Although strong evidence is not available for the effectiveness of these practices, they might be implementable with much less disruption, financial costs, or harms. Modelling and observational studies are urgently needed to guide policy on the opening of schools once the pandemic is under control.

Contributors

RMV conceptualised the paper, reviewed full-text articles, extracted the data, and wrote the first draft of the manuscript. Searches and screening of papers were done by SJR, HC, and JP, who were advised by CS. JW and OM also contributed to screening of papers. OM, CB, and RB helped to revise the paper and consider policy implications. All authors contributed to revision of the final version of the manuscript.

Declaration of interests

We declare no competing interests.

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EXHIBIT 14

Updated August 5, 2020

Decision Tree for Provision of In Person Learning among K-12 Students at Public and Private Schools during the COVID-19 Pandemic

Introduction

The purpose of this decision framework is to assist local health officers and school administrators in making decisions around resuming in-person instruction for public and private K-12 schools during the COVID-19 pandemic. This decision making tool is added to the Department of Health's (DOHs) K-12 Fall Health and Safety Guidance and both will be updated as the pandemic evolves and additional science becomes available.

School administrators are currently faced with challenging decisions around how to operate their schools this year in the midst of the pandemic. It is important for school administrators to consult with their local health officer, local elected leaders, teachers and other school staff, families and other stakeholders when considering the risks and benefits of different locations and modes of education in the context of COVID-19 activity in the community. In particular, health officers and school administrators should engage staff and families of students at risk for severe COVID-19. In addition, they should engage the families of students with disabilities, English language learners, students living in poverty, students of color and young students to determine how to best meet the health and education needs of these students and the community.

While DOH encourages local health officers and school administrators to work together to determine the best setting or mix of settings for their students, school administrators remain ultimately responsible for establishing the education services appropriate for their students. The local health officer should advise the school administrator and the school community regarding the level of COVID-19 activity, as well as the local community's access to testing, and the health department's capacity to respond to potential cases or outbreaks in schools with time investigations and contact tracing.

Local health officers remain responsible for controlling the spread of communicable disease. Toward that end, the local health officer will monitor COVID-19 activity in the community as measured by the number of cases per 100,000 population over 14 days for the county in combination with other key health indicators (such as the percentage of positive tests and the trend in cases or hospitalizations) and proactively inform the school administrator when there are significant changes. These indicators are available at the statewide and county level on Washington's Risk Assessment Dashboard (cases per 100K over 14 days and percentage of positive tests) and Department of Health's COVID-19 Dashboard (epidemiologic curves for cases and hospitalizations). The local health jurisdiction may further disaggregate these indicators or have other data that inform their recommendations for schools and in-person learning during the pandemic.

All parties should remain aware that if a school's opening to or continued operation of in-person learning poses an imminent public health threat to the community in the estimation of the local health officer, then that local health officer has the legal power and duty to direct or order an interruption of

in-person learning (WAC 246-110-020). School administrators are obligated to cooperate with investigations, directives, and orders of the local health officer (WAC 246-101-420).

Background

In developing this guidance, DOH reviewed the experiences of other countries that resumed some degree of in-person educational instruction earlier this year. The countries that resumed in-person instruction generally had low and decreasing rates of COVID-19 cases in the community. Table 1 shows that the incidence rates in several countries that resumed in-person educational instruction were below 35 cases / 1,000,000 population / day. As of July 23, 2020, Washington State had an incidence rate that was almost three times higher at 92 cases / 1,000,000 population / day. In addition, the rate of COVID-19 in Washington slightly increased during the prior 20 days whereas the trend in the rate of COVID-19 was decreasing in most other countries in the 20 days before reopening schools.

Table 1: School Re-Openings: Country Comparisons on Key Metrics Compared to Current U.S. Data

	Date of Reopening	**Daily Cases (7-day average)**	**Daily Cases Per Million Population**	**Test Positive Rate (%) (7-day average)**	**Estimated Cases Per 100,000 Population Per 14 days**
United States	**—**	**65,750.4**	**198.6**	**8.3**	**278.0**
Washington	**—**	**711**	**92.9**	**5.6**	**130.1**
Belgium	5/18/2020	291.3	25.1	2.1	35.1
Denmark	4/15/2020	205.7	35.5	6.2	49.7
France	5/11/2020	1,110.9	17.0	1.1	23.8
Germany	5/4/2020	1,140.3	13.6	2.4	19.0
Greece	6/1/2020	5.6	0.5	0.1	0.7
Israel	5/3/2020	126.7	14.6	1.4	20.4
Japan	4/24/2020	439	3.5	8.7	4.9
South Korea	6/8/2020	44.4	0.9	0.3	1.3
New Zealand	5/14/2020	1.1	0.2	0	0.3
Norway	4/20/2020	93.3	17.2	3.8	24.1
Switzerland	5/11/2020	57.1	6.6	1.3	9.2
Taiwan	2/25/2020	1.1	0.0	0.2	0
Vietnam	5/18/2020	4.6	0.0	0	0

This table was adapted from the Kaiser Family Foundation "What Do We Know About Children and Coronavirus Transmission?" website accessed on August 2, 2020 at: https://www.kff.org/coronavirus-covid-19/issue-brief/what-do-we-know-about-children-and-coronavirus-transmission/

NOTES: U.S. estimates calculated based on most recent data. France positivity rate from May 24. Vietnam positivity rate from April 29. Data represent 7-day average, as of re-opening date (unless other date noted).

SOURCES: COVID-19 data from: Department of Health COVID-19 Data Dashboard retrieved August for data through July 23, 2020 and "Coronavirus Pandemic (COVID-19)". Published online at OurWorldInData.org. Retrieved on July 28, 2020. School reopening dates from: University of Washington, Summary of School Re-Opening Models and Implementation Approaches During the COVID 19 Pandemic, July 6, 2020.

In addition to experiencing lower and decreasing community rates of disease, other countries took a very cautious approach to resuming in-person instruction. Most countries initially only resumed in-person learning for a portion of their students, and many implemented a variety of health and safety measures like physical distancing, frequent hand washing, use of face coverings, and frequent environmental cleaning to reduce the spread of COVID-19 in schools if introduced.[1]

Little data are available on the health impacts of resuming in-person learning when community incidence rates are as high as the current rates in the United States. With limited data, states are taking a wide range of approaches to resuming in-person learning. The Oregon Health Authority recommends in-person instruction for K-3 students if rates are less than 60 cases per 100,000 over 14 days and test positivity is <5%[2] while the Minnesota Department of Health recommends in-person instruction for elementary students if rates are less than 500 cases / 100,000 population over 14 days[3].

The decision to resume in-person learning is a complex decision that requires weighing both risks and benefits. When considering thresholds for resuming in-person learning, DOH considered both the health risks of COVID-19 to students, school staff and the surrounding community, as well as the benefits of in-person school to children and their families.

Health risks of COVID-19 to students, school staff and the community

The risk of COVID-19 being introduced into the school environment depends on the level of COVID-19 spread in the community. At this time, any degree of in-person instruction will present some risk of infection to students and school staff. It is difficult to predict the number of infections that might occur under different in-person models and levels of transmission in the community.

The full spectrum of illness due to COVID-19 is not completely understood currently. While children generally have mild COVID-19 disease, serious infections have occurred[4]. Teachers and other school staff are at risk for more serious disease, particularly older adults and those with certain underlying health conditions. Students and staff that acquire COVID-19 in the school setting can lead to transmission in the school setting as well as in households and the community. DOH is recommending comprehensive and strict health and safety measures to minimize the risk of transmission within the school setting.

Benefits of school for children

In-person learning provides a broad range of benefits to our children. In addition to providing educational instruction, schools support the development of social and emotional skills; create a safe

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[1] Summary of School Re-Opening Models and Implementation Approaches During the COVID 19 Pandemic. July 6, 2020. Available at: https://globalhealth.washington.edu/sites/default/files/COVID-19%20Schools%20Summary%20%28updated%29.pdf

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[3] Safe Learning Plan for 2020-2021: A Localized Data-Driven Approach. Accessed August 1, 2020 at: https://mn.gov/covid19/assets/safe-learning-plan_tcm1148-442202.pdf

[4] Götzinger F, Santiago-García B, Noguera-Julián A, et al. COVID-19 in children and adolescents in Europe: a multinational, multicentre cohort study. *Lancet Child Adolesc Health* 2020. Available at: https://www.thelancet.com/action/showPdf?pii=S2352-4642%2820%2930177-2.

environment for learning; address nutritional, behavioral health and other special needs; and facilitate physical activity[5]. The absence of in-person learning may be particularly harmful for children living in poverty, children of color, English language learners, children with diagnosed disabilities, and young children and can further widen inequities in our society[6].

The decision tree on the following page is designed to assist local health officials and school administrators in determining the degree of in-person learning that is advisable in their school and ensuring that the school is able to implement comprehensive health and safety measures and is ready to respond swiftly if a person with confirmed COVID-19 is identified in the school environment. The Department of Health favors a slow, cautious, phased-in approach to resuming in-person instruction beginning with staff, small groups of our youngest learners, and students who are unable to learn or receive critical services asynchronously. Over time, schools can add additional students to in-person models. In-person learning should be prioritized for elementary school students because they may be less likely to spread COVID-19 than older children[7], have more difficulty learning asynchronously and may otherwise need to be in a childcare setting if their parent(s) are working. While important to a child's growth and development, the Department also prioritizes educational opportunities over extra-curricular activities in the school setting and other discretionary activities in the surrounding community.

More COVID-19 Information and Resources

Stay up-to-date on the current COVID-19 situation in Washington, Governor Inslee's proclamations, symptoms, how it spreads, and how and when people should get tested. See our Frequently Asked Questions for more information.

A person's race/ethnicity or nationality does not, itself, put them at greater risk of COVID-19. However, data are revealing that communities of color are being disproportionately impacted by COVID-19- this is due to the effects of racism, and in particular, structural racism, that leaves some groups with fewer opportunities to protect themselves and their communities. Stigma will not help to fight the illness. Share accurate information with others to keep rumors and misinformation from spreading.

- WA State Department of Health 2019 Novel Coronavirus Outbreak (COVID-19)
- WA State Coronavirus Response (COVID-19)
- Find Your Local Health Department or District
- CDC Coronavirus (COVID-19)
- Stigma Reduction Resources

Have more questions about COVID-19? Call our hotline: **1-800-525-0127,** Monday – Friday, 6 a.m. to 10 p.m., Weekends: 8 a.m. to 6 p.m. For interpretative services, **press #** when they answer and **say your language.** For questions about your own health, COVID-19 testing, or testing results, please contact a health care provider.

To request this document in another format, call 1-800-525-0127. Deaf or hard of hearing customers, please call 711 (Washington Relay) or email civil.rights@doh.wa.gov.

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[5] CDC. The Importance of Reopening America's Schools this Fall. Accessed August 1, 2020 at https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/reopening-schools.html

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Decision Tree for Provision of in Person Learning among Public and Private K-12 Students during COVID-19

Should your community provide in person learning and for whom?

For School Administrators, Local Health Officers, and Community Stakeholders

The risk of COVID-19 being introduced into the school depends on the level of COVID-19 spread in the community and the health and safety measures taken by schools. Consider the following educational modalities based on community transmission and other health and education risks and benefits.

COVID-19 Activity Level	Education Modality*	Extracurricular
HIGH **>75 cases/100K/14 days** Other considerations: • Increasing trend in cases or hospitalizations • Test positivity >5% • Other health and education risks and benefits to children and their families	Strongly recommend distance learning with the option for limited in-person learning in small groups, or cohorts, of students for the highest need students, such as students with disabilities, students living homeless, those farthest from educational justice, and younger learners.	Strongly recommend canceling or postponing all in person extra-curricular activities, including sports, performances, clubs, events, etc.
MODERATE **25–75 cases/100K/14 days** Other considerations: • Increasing trend in cases or hospitalizations • Test positivity >5% • Other health and education risks and benefits to children and their families	Recommend distance learning as described above. In addition, consider expanding in person learning to elementary students. Over time, consider adding hybrid in person learning for middle or high school students if limited COVID transmission occurs in schools.	Strongly recommend canceling or postponing all in-person extra-curricular activities. Consider low risk activities when all students have some level of in person learning.
LOW **<25 cases/100K/14 days**	Encourage full-time in person learning for all elementary students and hybrid learning for middle and high school. Over time and if physical space allows, consider full-time in person learning for middle and high school.	Consider low and moderate risk in person extra-curricular activities.

When any in-person

Can the school(s) implement recommended COVID-19 health and safety measures?

For School Administrators and Staff

The risk of COVID-19 spreading in schools depends on the ability of the school to implement DOH's K-12 health and safety measures.

Does the school have the plans, staff, space, and supplies to do the following?

- ✓ Protect staff and students at higher risk for severe COVID-19 while ensuring access to learning
- ✓ Transport or facilitate drop-off and pick-up of students
- ✓ Group students (required in elementary, recommended for middle and high school)
- ✓ Practice physical distancing of ≥6 feet among students and staff.
- ✓ Promote frequent hand washing or sanitizing
- ✓ Promote and ensure face covering use among students and staff
- ✓ Increase cleaning and disinfection
- ✓ Improve ventilation

Are all staff trained on health and safety practices?

When all YES

Is the school and health system ready to monitor for and respond to suspected and confirmed cases of COVID-19?

For Schools and Local Public Health

COVID-19 cases in the school should be expected. The risk of COVID-19 spreading in schools depends on the ability to quickly identify and respond to suspected and confirmed cases and the level of community transmission.

- ✓ Can the school ensure monitoring of symptoms and history of exposure among students and staff? (attestation acceptable)
- ✓ Is the school prepared to manage students and/or staff who get sick onsite?
- ✓ Does the school have letters drafted to inform families and staff about confirmed cases or outbreaks?
- ✓ Is there adequate access to testing in the community health system for ill students and staff?
- ✓ Is there capacity in your local health department to investigate confirmed COVID-19 cases, quarantine their close contacts and assess whether transmission is occurring in the school?
- ✓ Can local public health monitor the level of community spread to determine when a change in education modality is needed?

When all YES

Begin in Person Learning Model and Monitor

*Staff may work in school at any COVID-19 activity level if the school follows DOH and LNI health and safety guidance

EXHIBIT 15

Overview of Reopening at TPS for Fall, 2020
Per OSPI, TPS is required to adopt a reopening plan for the 2020–21 school year through local board resolution. OSPI developed the Washington School 2020 Reopening Plan Template in consultation with the State Board of Education (SBE).

The plan template has three major components:

Part I	**Mandatory Health Requirements**
Part II	**Statutory Education Requirements**
Part III	**Additional Expectations**

Below, you will each point from the OSPI template, and after each point/question is the response for TPS. In addition, you will find links to the District's Frequently Asked Questions (**FAQ**) for more information. Lastly, OSPI has a Planning Guide that provides guidance to all school districts regarding the reopening of schools.

TPS Plan for Re-Opening School 2020-21

TPS Guiding Principles

PART I—MANDATORY HEALTH REQUIREMENTS

QUESTION 1
Our district has identified our primary local health officer(s).
Yes
Dr. Anthony Chen.
Updates from Tacoma-Pierce County Health Department regarding Covid-19

QUESTION 2
Our district has identified a primary district-level point of contact for our reopening effort.
Yes
Dr. Thu Ament
253-571-1333
tament@tacoma.k12.wa.us

QUESTION 3
We have reviewed the U.S. Centers for Disease Control and Prevention (CDC) definition of high-risk employees and we have clearly communicated with staff their opportunity to identify themselves as high-risk.
Yes

> ***3a. We are engaging self-identified high-risk employees to address accommodations consistent with L&I requirements and the Governor's proclamation about high-risk employees.***
> Yes

QUESTION 4
We have reviewed our drop-off and pick-up plans to provide proper physical distancing and minimal opportunities for parents and other adults, who are not staff, to enter our buildings.
Yes

QUESTION 5
We have a daily healthscreening plan in place for students and staff.
Yes

> ***5a. Please identify which health screening protocol best fits your school district planning.***
> Our plan is to rely on attestations, but to screen staff who do not provide an attestation that a screen was done at home before school and students who do not provide an attestation that a screening was conducted by a parent, guardian, or caregiver before school. *(Note: This is one of the options provided by OSPI and has been determined to be the best approach for TPS.)*

QUESTION 6
We have altered our indoor classroom and common spaces and reconfigured our processes to ensure six feet of physical distance between all persons in our school facilities as a planning framework.
Yes

6a. ***We are using additional common spaces to ensure six feet of physical distance between all persons in our school facilities as a planning framework.***
Yes

6b. ***We are using additional community-based spaces outside of our school facilities to ensure six feet of physical distance between all persons in our school facilities as a planning framework.***
No

6c. ***We understand that this is a planning framework and there will be limited times when students and/or staff may need to be within six feet for short periods of time.***
Yes

6d. ***We understand there are limited exceptions to the six-foot rule, but we will accommodate students with disabilities or others who meet the exceptions in order to deliver equitable services, which may include providing additional personal protective equipment (PPE) to staff and/or the student.***
Yes

QUESTION 7
We have altered physical spaces, reconfigured schedules, and adopted necessary plans to provide meals to students that ensures six feet of physical distance between all persons as a planning framework.
Yes

QUESTION 8
We have established clear expectations and procedures to ensure frequent hand washing in all of our facilities for students and staff.
Yes

QUESTION 9
We have established clear expectations with students, staff, and families that all persons in our facilities will be wearing face coverings consistent with DOH and L&I requirements, including any of the narrow exceptions identified by DOH and L&I in guidance.
Yes.

9a. ***We have an adequate supply of face coverings on our premises to accommodate students who arrive at school without a face covering.***
Yes

9b. ***We will provide adequate face coverings and other PPE requirements to protect all staff in each building and/or worksite consistent with the law and L&I guidance.***
Yes

QUESTION 10
We have developed busing plans to maximize physical distancing on our buses as much as possible on a given bus route.
Yes

10a. ***We recognize that busing is an exception to the six-foot rule, as long as we exercise proper cleaning, maximum ventilation when reasonable, face coverings on students and adults, and proper PPE for our drivers.***
Yes

QUESTION 11
We have developed a cleaning regimen in our facilities and buses consistent with DOH guidance and the Infection Control Handbook 2010.
Yes

From TPS School Cleaning FAQ: How TPS is cleaning and disinfecting schools and facilities to keep students and staff

QUESTION 12
We have clearly established procedures, in coordination with our local health authority, to report any suspected or known cases of COVID-19.
Yes

12a. ***We understand that contact tracing and any other procedures to identify additional COVID-19 cases are to be conducted and led by the local health authority, the Washington State Department of Health, or a designee at the direction of the public health authority.***
Yes

PART II—STATUTORY EDUCATION REQUIREMENTS

QUESTION 13
We have established a school calendar to accommodate 180 instructional days and the required instructional hours assuming all of the guided learning planned by and under the direction of the certificated teacher counts (in-person face-to-face, distance learning on screen with a teacher, independent learning assigned and evaluated by a teacher, and any other directed learning) subject to the State Board of Education requirements outlined in WAC 180- 16-200.
Yes

13a. ***We have created a flexible calendar with additional days that may be needed to address short-term school closure in the event that our facilities are not accessible as directed by a public health authority or the Governor, and for which we were not able to make an immediate transition to Continuous Learning 2.0.***
Yes

13b. ***Copy of Calendar***

Tacoma Public Schools
2020-21 School Year Student Calendar

7th Labor Day Holiday
8th Teacher Workshop Day (no school)
9th First Student Day – regular Start time
14th Kindergarten Start Date
16th Late Starts Begin
16 student days

SEPTEMBER 20

S	M	T	W	Th	F	S
		N	N	N	N	5
6	H	N	SS	10	11	12
13	KS	15	LS	17	18	19
20	21	22	LS	24	25	26
27	28	29	LS			

OCTOBER 20

S	M	T	W	Th	F	S
				1	2	3
4	5	6	LS	8	9	10
11	12	13	*14	E	E	17
18	19	20	LS	22	23	24
25	26	27	LS	29	30	31

14th No late start today
Elementary Conferences
*Early release grades K-5

15th-16th All Grades Conferences
Early Release grades K-12

22 student days

4th District Data Day (no school)
11th Veterans' Day Holiday
25th, 26th, 27th Thanksgiving Break
16 student days

NOVEMBER 20

S	M	T	W	Th	F	S
1	2	3	D	5	6	7
8	9	10	H	12	13	14
15	16	17	LS	19	20	21
22	23	24	N	H	H	28
29	30					

DECEMBER 20

S	M	T	W	Th	F	S
		1	LS	3	4	5
6	*7	8	LS	10	11	12
13	14	15	LS	17	18	19
20	N	N	N	H	H	26
27	N	N	N	H		

7th Elementary Trimester Break
*Elementary PRS Day, no school for elementary students only

8th 2nd elementary trimester begins

Dec 21 – Jan 1 Winter Break/ No school

13 days – Elementary students
14 days – Secondary students

1st New Year's Day
4th School resumes
18th Martin Luther King Jr. Day
19 student days

JANUARY 21

S	M	T	W	Th	F	S
					H	2
3	4	5	LS	7	8	9
10	11	12	LS	14	15	16
17	H	19	LS	21	22	23
24	25	26	LS	28	29	30
31						

FEBRUARY 21

S	M	T	W	Th	F	S
	1	2	LS	4	*5	6
7	8	9	LS	11	M	13
14	H	16	LS	18	19	20
21	22	23	LS	25	26	27
28						

5th Secondary Semester Break
*No school for secondary students only

8th 2nd semester begins

12th Make-up day

15th Presidents' Day Holiday

18 days – Elementary students
17 days – Secondary students,

3rd No Late Start Today

11th – 12th All grades conferences Early Release for all students

15th 3rd elementary trimester begins

23 student days

MARCH 21

S	M	T	W	Th	F	S
	1	2	3	4	5	6
7	8	9	LS	E	E	13
14	15	16	LS	18	19	20
21	22	23	LS	25	26	27
28	29	30	LS			

APRIL 21

S	M	T	W	Th	F	S
				1	2	3
4	N	N	N	N	N	10
11	12	13	LS	15	16	17
18	19	20	LS	22	23	24
25	26	27	LS	29	30	

5th – 9th Spring Break

17 student days

5th No late start today
12th No late start today
28th Make-up day
31st Memorial Day Holiday
19 work & student days

MAY 21

S	M	T	W	Th	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	LS	20	21	22
23	24	25	LS	27	M	29
30	H					

JUNE 21

S	M	T	W	Th	F	S
		1	LS	3	4	5
6	7	8	LS	10	11	12
13	14	15	LS	17	18	19
20	E	M	M	24	25	26
27	28	29	30			

21st Last Day of School/ Early Release

22nd, 23rd Make-up days, if needed

15 student days

D = District Data Day (no school) **N =** Non-School Day **H =** Holiday (no school) **SS =** School Starts **KS =** Kindergarten Start Date
LS = Late Start Day **E =** Early Release **M =** Make-Up Day

QUESTION 14

In order to accommodate the instructional hours requirements, please describe your typical weekly schedule for students and professional collaboration. Include any reasonable options to maximize cohorts of students to reduce the risk of possible virus transmissions.

a. TPS is beginning 2020/21 with Remote Learning and Online Option

b. Below is Remote Learning Schedules for Students.

c. Students who choose online learning will use TPS online learning platform.

d. Approximate minutes will be determined with Learning Design Team as well as integration of SEL and specialists (all will align with state requirements).

i. For elementary, please describe:

K-2 Remote Learning Schedule

Monday/Tuesday/Thursday/Friday

Independent Remote Learning
Whole Class Meeting
Brain Break
Instruction/Specialist/SEL
Brain Break
Instruction/Specialist/SEL
Brain Break
Lunch
Instruction/Specialist/SEL
Brain Break
Instruction/Specialist/SEL
Intervention (Whole Class)
Whole Class

Wednesday (Staff PD on Wednesdays)

Independent Remote Learning
Late Start
Whole Class Meeting
Intervention (Whole Class)
Brain Break
Lunch
Brain Break
Intervention (Whole Class)
Extended Remote Learning
Brain Break
Extended Remote Learning
Intervention (Whole Class)
Whole Class

Grades 3-5 Remote Learning Schedule
Monday/Tuesday--Cohort A Focus
Thursday/Friday—Cohort B Focus
Independent Remote Work
Whole Class Meeting
Brain Break
Instruction
Brain Break
Instruction
Brain Break
Lunch
Instruction
Brain Break
Instruction
Whole Child Connection

Wednesday/Cohort A & B (Staff PD on Wednesdays)
Independent Remote Work
Late Start
Whole Class Meeting
Whole Child Connection
Brain Break
Lunch
Brain Break
Intervention (Whole Class)
Extended Remote Learning
Brain Break
Extended Remote Learning
Whole Child Connection

ii. For middle school, please describe:

Grades 6-8, Remote Learning Schedule
Monday/Tuesday—Cohort A Focus
Thursday/Friday—Cohort B Focus
Independent Remote Work
Class 1 (Mon.-A/Thurs.-B); Class 4 (Tues.-A/Fri.-B)
Break
Whole Child Connection
Break
Class 2 (Mon-A/Thurs.-B); Class 5 (Tues.-A/Fri.-B)
Lunch
Class 3 (Mon.-A/Thurs.-B); Class 6 (Tues.-A/Fri.-B)
Break/SEL/Fitness, (Mon./Tues—A; Thurs./Fri.-B)
Office Hours All Classes (Mon/Tues.-A; Thurs./Fri.-B)

Wednesday—Cohort A and B (Staff PD on Wednesdays)
Independent remote Work
Late Start
Office Hours All Classes
Whole Child Connection
Break
Office Hours All Classes
Lunch
Office Hours All Classes
Break/SEL/Fitness
Office Hours All Classes

iii. For high school, please describe:

Grades 9-12, Remote Learning Schedule

Monday/Tuesday—Cohort A Focus
Thursday/Friday—Cohort B Focus
Independent Remote Work
Class 1 (Mon.-A/Thurs.-B); Class 4 (Tues.-A/Fri.-B)
Break
Whole Child Connection
Break
Class 2 (Mon-A/Thurs.-B); Class 5 (Tues.-A/Fri.-B)
Lunch
Class 3 (Mon.-A/Thurs.-B); Class 6 (Tues.-A/Fri.-B)
Break/SEL/Fitness, (Mon./Tues—A; Thurs./Fri.-B)
Office Hours All Classes (Mon/Tues.-A; Thurs./Fri.-B)

Wednesday—Cohort A and B (Staff PD on Wednesdays)
Independent remote Work
Late Start
Office Hours All Classes
Whole Child Connection
Break
Office Hours All Classes
Lunch
Office Hours All Classes
Break/SEL/Fitness
Office Hours All Classes

From TPS FAQ—A side-by-side look at Remote and Online Learning
From TPS FAQ—Remote Learning Goal is for remote learning to "match" a school day as closely as possible.
From TPS FAQ—Online Learning. This is a different option—See how it differs from Remote Learning.

QUESTION 15

We have a plan to take daily attendance for all students, regardless of our teaching modality, as well as a tiered approach to supporting students not participating and aligned to the OSPI attendance rules.

Yes

15a. ***We have a clear plan for ongoing communication with students and families, and we have provided a means by which all students will be required to check in daily even on days when the student is not physically present at school. Attendance expectations align with regular attendance policies.***

Yes

TPS FAQ includes information about attendance

QUESTION 16

We have identified learning standards across grade levels and/or content areas to ensure instructional time and professional learning are effectively tied to our reopening plan.

Yes

When TPS educators were surveyed in November, 2016, it was determined that due to the high number of standards per content area and grade, teachers were prioritizing what standards to teach and assess as

individuals or in teams. This was because the number of Washington State Learning Standards for each content area was just too overwhelming.

In order to ensuring every student has equitable access to learning opportunities directly related to the skills and content in the WSLS, the district is taking a more strategic approach to align content standards by grade level. Under the leadership of the Curriculum and Instruction department, TPS educators are working in K-12 content teams to identify priority standards as well as supporting standards. The process began in February, 2017, and will continue each year until all content areas are prioritized.

The criteria used to identify which standards are priority includes:

Endurance: Those standards that provide students with knowledge and skills beyond a single test date.

Leverage: Those standards that provide knowledge and skills that will be of value in multiple disciplines (example non-fiction writing).

Readiness: Those standards that provide knowledge and skills that are necessary for success in the next grade or level of instruction.

External Exams: State and national exams are brought in as a 4th lens during the prioritization process. This includes the Smarter Balance Assessment, Advanced Placement exams, International Baccalaureate exams, etc.

Accordion Feedback Process

An accordion process is used to obtain feedback on the determined priority standards. All teachers who teach and assess each set of content standards have the opportunity to provide their feedback. Prioritization teams review feedback from their colleagues at large, refine and make adjustments as appropriate, and make recommendations for the final rollout of prioritized standards. This accordion process is conducted (3) times for each content area as the standards are prioritized.

This protocol is based on Larry Ainsworth's Framework for Prioritizing Standards.
https://www.tacomaschools.org/departments/ci/k-12-prioritization-and-standards

K-12 Prioritization and Standards - Tacoma Public Schools
In Tacoma Public Schools (TPS), we align our work with our strategic plan to measure and support the Whole Child.

QUESTION 17

We have determined our 2020–21 grading policies.

Yes

17a. If yes: We have reviewed our grading practices, learned from decision-making this spring, and established the following grading system:

For elementary, please describe: In spring at the end of the 2019-2020 school year, the state Office of Superintendent of Public Instruction set emergency rules and restrictions on grading. Those rules have expired. TPS grading policy will be reinstituted for the 2020-2021 school year. If there are any changes to the policy, our School Board of Directors would take action at a later date.

For middle school, please describe: In spring at the end of the 2019-2020 school year, the state Office of Superintendent of Public Instruction set emergency rules and restrictions on grading. Those rules have expired. TPS grading policy will be reinstituted for the 2020-2021 school year. If there are any changes to the policy, our School Board of Directors would take action at a later date.

For high school, please describe: In spring at the end of the 2019-2020 school year, the state Office of Superintendent of Public Instruction set emergency rules and restrictions on grading. Those rules have expired. TPS grading policy will be reinstituted for the 2020-2021 school year. If there are any changes to the policy, our School Board of Directors would take action at a later date.

TPS FAQs includes information about grading.

PART III—ADDITIONAL EXPECTATIONS

QUESTION 18

Our district has a specific plan to support students who received "incompletes" in the spring of 2020.

Yes

18a. If yes, please briefly describe that plan:

Students should not have been issued "incompletes" by the end of the 2019-2020 School Year. All students should have received a posted grade. Regarding grade inputs that indicate an "Incomplete": Those very few exceptions will be addressed individually, with students offered the opportunity to finish what is missing by the end of first semester (February, 2021). Transcripts will reflect that change shortly thereafter.

QUESTION 19

Our district developed summer learning and services opportunities for students who needed additional support to be ready for success this fall.

Yes

19a. ***If yes, what percentage of your students did you provide services to?***

0-30%

19b. ***If yes, briefly describe the learning and service opportunities you provided, including any programs or targeted supports:***

Title and LAP Summer Online Opportunities: 4th/5th Graders: Camp Discovery; Online ELA Program (aligned to priority standards); 6-12 online program offered (Edgenuity—targeted learning and credit retrieval). Special Education: ESY (Extended School Year) offered—of the 100 invited, 29 enrolled and participated. Summer learning continues for Special Education Students in alternative settings such as Day Schools (40 students).

19c. ***If yes, please briefly describe your process for prioritizing your students furthest from educational justice:***

Our efforts were focused and strategic. Title I and LAP teachers called and invited the students they served to participate in summer learning; these students were below grade level in elementary schools. Secondary schools prioritized inviting students who were below grade level. A Director of Special Education identified students needing ESY (extended school year) and summer services; then, through multiple methods of communication (phone calls, emails, text messaging, special edition letter), the communication efforts ensured that parents were informed of the summer learning opportunities. Students furthest away from educational justice were offered varied levels of service to meet their needs to include but not limited to: technology, collaboration between service providers, recovery learning.

TPS FAQ about Special Education

QUESTION 20

We have a plan to perform a universal screening of each student when they return to school to better understand their strengths, learning needs, and social-emotional needs.

Yes

Screening considerations for all schools, buildings, work sites when staff/students/employees are on site:

- Determine locations for preliminary screening, secondary screening, isolation for those who are sick, and isolation for those who are well but unable to complete screening.
- Consider outdoor options with back up plans for inclement weather.
- Consider locations with access to eSchool Plus and a phone line.
- Consider space/room size as to safely socially distance multiple students (6 feet apart).
- The Health Room should not be used.
- Prepare the facility:
  Limit building access points, create one-way flow of traffic, assign entry doors to students, mark 6-foot separations on the ground in screening areas, and post required COVID materials.
- Determine Support Staff for Screening, train them, and practice.
- Ensure appropriate PPE and Equipment.
- Thermometers for those who are unable to temperature check at home
- Staff have appropriate PPE for screening and students have appropriate PPE to be onsite; masks must be worn.
- Staff will contact purchasing for PPE as needed (masks, gloves).
- Communications to staff, students, and families with detailed information regarding screening safety and process expectations.
- Staff to complete Health Attestation; onsite COVID Supervisor to ensure completion prior to work day. Those who respond "yes" to any survey question should be excluded and should not report to work.
- Students: For each day student will be onsite, guardian to complete a health attestation. Upon arrival to school, school staff will review student health attestation and perform a visual health inspection. Attestation and onsite screen will be documented and tracked in eSchool Plus. Staff will need to look up each student in eSchool Plus. Consider utilization of student ID scanner or individual input of student ID number or name.
- Enforce strict adherence to social distancing and mask-wearing throughout the screening process. Those who are ill or have been exposed should stay home and should not report to campus.
- Ensure appropriate planning for cleaning of the facility, screening and isolation spaces, and in the event there is a reported case of COVID-19

Elementary Checklist for return to school (timeline to be determined in alignment with Pierce County Health Department guidance)

- Students to report to their classroom teacher catchment area.
- Teacher to review each student attestation and do a visual inspection.
- Those students with a complete attestation, no recent exposure to COVID-19, and no signs or symptoms of COVID-19 will report to their designated classroom with their teacher.
- Those student with an incomplete attestation, an attestation with a notated exposure or sign/ symptom, or those who look unwell will be referred to the onsite COVID Supervisor for additional screening.
- COVID Supervisor and appointed team will review student attestation, visually inspect student, and complete the health screening.
- Team will contact parent/guardian to complete attestation and verify report.
- Team will complete a student temperature check
- Students who pass will be escorted to their classroom.
- Students who screen out due to a possible exposure and/or symptom and those who are unwell should be immediately placed in monitored isolation* and parent notified for pick up. *Those with

symptoms should not be isolated with those who do not have current symptoms (i.e. a student with reported exposure and no symptoms would not isolate in the same locations as an individual who has active symptoms).
- Consider non-classroom staff who report to your building daily to support with the secondary screening phase.
- Door entries should be limited to no more than 100.
- Screening is ideally done outdoors and must be completed prior to classroom entry.

Secondary Checklist for return to school (timeline to be determined in alignment with Pierce County Health Department guidance)

- Students to report to assigned building entry (limit entry to 100-200 students).
- Stations should be set up at building entry; consider a "fast lane" and a "rescreen lane," with a point person to determine which lane the student will screen through.
- Those students with a complete attestation, no recent exposure to COVID-19, and no signs or symptoms of COVID-19 will be referred to the "fast lane" for visual inspection and will then report to their designated classroom independently.
- Those students with an incomplete attestation, an attestation with a notated exposure or sign/ symptom, or those who look unwell will be referred to the "rescreen lane" for additional screening.
- "Rescreen Lane" should have at least 2 stations to help with flow of student entry.
- COVID Supervisor and appointed teams will review student attestation, visually inspect student, and complete the health screening.
- Team will contact parent/ guardian to complete attestation and verify report.
- Team will complete a student temperature check.
- Students who pass will report to their classroom.
- Students who screen out due to a possible exposure and/or symptom and those who are unwell should be immediately placed in monitored isolation and parent notified for pick up. Note: Those with symptoms should not be isolated with those who do not have current symptoms (i.e. a student with reported exposure and no symptoms would not isolate in the same locations as an individual who has active symptoms).
- Consider non-classroom staff who report to your building daily to support with the secondary screening phase. Screening is ideally done outdoors and must be completed prior to initiation of the school day.
- Potentially consider gym spaces if outdoors unavailable.
- Designate staff to monitor hallways to ensure students report directly to class and maintain appropriate social distancing of 6 feet.

Health Screening (to be reviewed to be sure everything is in alignment with Pierce County Health Department guidelines)

- Combination of home attestation and onsite review (Student must have both completed prior to entry)
- Check for signs of illness for all staff and students at entry each day. ð For more information or options for temperature checking, see the CDC guidance. Staff and students with any illness must stay home.
- Ask the parents or guardians the following questions: o Does your student have any of the following symptoms [on the first day after a break or for a new student, please ask about symptoms in the past three days (72 hours)]:
- A cough
- Shortness of breath or difficulty breathing
- A fever of 100.4°F or higher or a sense of having a fever

- A sore throat
- Chills
- New loss of taste or smell
- Muscle or body aches
- Nausea/vomiting/diarrhea
- Congestion/running nose – not related to seasonal allergies
- Unusual fatigue
- Does anyone in your household have any of the above symptoms?
- Has your student been in close contact with anyone with suspected or confirmed COVID-19?
- Has your student had any medication to reduce a fever before coming to school?
- The student must be excluded from school if the answer to any of the above questions is "yes." Refer to Returning to school after suspected COVID-19 symptoms.
- If the answer to all of the above questions is "no," check the student for signs of being sick, such as flushed cheeks or tiredness. Keep a distance of at least six feet of space or have a physical barrier between you and the student during assessment.

Data Use

- Data must be available daily for attestation review.
- Data must be compiled from home attestation and onsite health check.
- Data must be accessible to coordinate with attendance and quarantine/ isolation.
- Attendance will be determined as follows:
  At least three days (72 hours) have passed since recovery – defined as no fever without the use of medications and improvement in respiratory signs like cough and shortness of breath;
  AND
  At least 10 days have passed since signs first showed up.
  OR
  It has been at least three days (72 hours) since recovery
  AND
  a health care provider has certified that the student does not have suspected or confirmed COVID-19.
- Data must be accessible for Contract Tracing and Health Department report
- Data must be accessible for trend monitoring

Whole Child

TPS Whole Child Lessons

TPS has, for a number of years, implemented a ***Whole Child Initiative*** to concentrate our system on addressing the needs of our students—communication, academics, social interactions, emotional needs, developmental considerations, self-motivation, confidence, diversity, responsibility, reflection, problem-solving, independence, relationships, goal-setting, analysis of situations, self-regulation, self-management, empathy, and more.

QUESTION 21

Our district has developed a family and community engagement process that includes strategies to reach non-English speaking families to inform our reopening plan.

Yes

21a. ***Please briefly describe your engagement strategy and the organizations or individuals who took part in your planning effort:***

TPS has developed and implemented a comprehensive survey that was translated into Spanish, Russian, Korean, Vietnamese, and Khmer (our most common non-English languages in TPS). Using email, the survey was sent on three occasions to parents/guardians, staff, and community members. The survey was also available through the District's website. We have engaged with a number of organizations, to include Graduate Tacoma, Boys and Girls Clubs, Metro Parks, YMCA, Communities in Schools, Metropolitan

Development Council, and myriad other TPS partners. Partnership is one of the four TPS District-wide strategic goals; one of the priorities for effective Family and Community Engagement is effective two-way communication.

Regarding TPS communication strategies:

- Sharing up to date district information, providing updates to and partnering with community partners and community-based direct service providers to communicate with TPS students and families.
- Reaching out to TPS formal and informal community partners to proactively to ascertain how their programming is changing due to virtual school & how the district can support them and promote virtual expanded learning opportunities.
- Making sure staff and partners have current information to provide consistent messaging and information to parents and community;
- Creating a social marketing message utilizing parent voices to communicate learning from home best practice and district information.
- Providing information and surveys in multiple languages.

TPS utilizes multiple strategies and communication methods to keep staff and families updated on all plans for returning to school. Weekly updates are sent directly to all staff and all parents/guardians through email and text message notifications. Additionally, each school administrator records a weekly message to families with updates. The District website is also continually updated. Social media is leveraged to reach the broader community, including Facebook, Twitter and Instagram. Updates on back-to-school plans are shared and discussed during live Board Meetings and Study Sessions which are aired on cable television and streamed on both Facebook and the District website.

Throughout the Spring and Summer TPS has also worked to gather input and feedback from staff, students, and parents through the use of surveys. Both quantitative and qualitative information was gathered. The data has shaped plans and communications for returning to school in the 2020-2021 school year.

- 2020 Budget Ranking Survey
- Family Tech Survey
- Distance Learning Survey
- Fall Learning Options
-

For regular updates on the 2020-21 school year's planning

TPS Partnership—Goal 2—Engagement with Parents, Community and Staff

QUESTION 22

Our district has invested in additional accessible technology, hardware, or connectivity for students and educators as we have prepared for fall reopening.

Yes.

22a. ***Please identify the percentage of students that you believe have adequate technology and connectivity to learn remotely during the 2020–21 school year.***

61-70%

22b. ***Please briefly describe your strategy to accommodate students during the 2020–21 school year who do not have adequate technology or connectivity to effectively learn remotely:***

A comprehensive survey was completed for parents/guardians and students to identify areas, schools, and students with need (which schools/students by region/school/area have the greatest number of students with little to no internet access; 13,931 students represented by 8,101 respondents). There was a laptop/i-pad/tablet distribution this past spring during the "shut down." As a result of continued efforts,

all students in grades 3-12 will have in-hand technology at the start of the 2020-21 school year, with K-2 students expected to have their technology in October, 2020, per ordering and expected delivery. Connectivity is addressed through partnership with Foundation for Tacoma Students and Rainier Connect (cable company). They have partnered with each other and TPS to ensure that every student has needed technology device and high-speed internet.

From TPS FAQ: How TPS has been scheduling the distribution of Laptops for Grades 6-12

QUESTION 23

Our district has provided professional learning for our educators to prepare them for effective instruction during the 2020–21 school year.

Yes.

23a. ***If yes, briefly describe the professional learning provided or facilitated by the district:***

TPS has scheduled training for all teachers on the use of learning management system, Schoology, prior to the opening of school. TPS has regular Wednesday "late starts" scheduled to provide continued professional development throughout the year to support teacher delivery of learning regarding Schoology, remote learning, hybrid learning, and transition, when the time comes, to fulltime back-in-class/face-to-face learning. TPS has developed a calendar for trainings for certificated and classified staff that directly supports instruction and transition considerations that impact staff and students.

QUESTION 24

Our district has selected a primary learning management system for consistent use with students across the district during the 2020–21 school year.

Yes.

24a. ***If yes: Please select or write-in the primary learning management system the district is using with students:***

Schoology

Distance Learning

Students will begin the school year in distance learning. This decision is based on the trajectory of COVID infections in King County, feedback from staff and families, and conversations with our neighboring school districts. Our priority is the health and safety of students and staff.

We cannot predict how long we will remain in distance learning. We will monitor infection rates and rely on public health guidance to determine when we can reopen school buildings. We will consult the Department of Health decision making tool (https://resources.finalsite.net/images/v1597170367/highlineschoolsorg/b3k1uctypplix6jnatp6/PagesfromDecisionTree-K12schools.pdf) when deciding to transition to in-person learning and activities.

Distance Learning Plan

English

All students will participate in distance learning. Check out the plan for Fall 2020 and see an example student schedule.

LEARN MORE (/FS/PAGES/7067)

Hybrid Learning

When we are able to return to in-person instruction, we plan to begin in our hybrid model (https://www.highlineschools.org/coronavirus/fall-2020/hybrid-learning) with social distancing. Students will have the option to continue distance learning if they choose. We will do our best to keep students with their teachers and classmates while learning from home; however, class changes may be necessary, depending on a number of factors that are unknown at this time.

We believe that keeping our students and teachers together--in distance learning or hybrid models--throughout this school year will help us meet the social-emotional needs of our students. This is especially important during a time of crisis and upheaval.

English

Hybrid Learning

When we return to in-person learning, we will begin with hybrid learning. Learn what to expect when the transition time comes.

LEARN MORE (/FS/PAGES/7015)

Virtual Academy

Since we will offer distance learning as an option after hybrid learning starts, we have postponed the opening of Highline Virtual Academy (https://www.highlineschools.org/coronavirus/fall-2020/virtual-academy) until Fall 2021. This allows us to fully focus on our improved distance learning program, which will be significantly different than what students experienced last spring.

This gives also us the opportunity to thoughtfully develop a permanent high-quality, challenging online school for Highline students who thrive in this environment.

What Went Into Planning?

There were many factors to consider when planning for the new school year. See how we gathered input from families and staff, and learn about the workgroups that developed the plan for fall.

LEARN MORE (/FS/PAGES/7068)

English

Overview

We have learned from family and student feedback and our experience last spring. We have developed an improved distance learning program for this fall that includes:

- A digital device for every individual student
- Learning materials, such as math books, math manipulatives and composition notebooks for elementary students.
- Live instruction
- Virtual small group support
- Broadband internet access to more families, with the support of our city governments and private donors
- A check-in with the same adult each week for one-on-one support

Students will be learning five days a week from their homes with a combination of live full-class instruction and small group instruction, as well as independent learning activities.

Types of Instruction

LIVE INSTRUCTION

Teachers deliver **live instruction** and communication to the whole class or in small groups. This instruction (also called synchronous instruction) includes intensive support for students who need it, including students learning English and students with special needs.

Live instruction is recommended to be no more than 30-40 minutes for each session; however, students will have up to 4 hours of live instruction daily depending on age and the need for additional support. Students in grades pre-K to 1 will receive 1-2 hours of live instruction per day. Students in grades 2-12 can expect 3-4 hours per day.

SELF-PACED INSTRUCTION

Students engage in **learning at their own pace** (also called asynchronous instruction). Students may use digital platforms like Seesaw or Google Classroom or watch teacher-created videos. They will also engage in non-digital activities such as reading and independent learning projects.

Sample Schedules: Day and Week

Day in the Life of Distance Learning

Below are example schedules. Your school and teacher may structure the day differently.

ELEMENTARY:

9:15 a.m. - 3:45 p.m.

MORNING

- Morning meeting (30 min)
- Literacy instruction (30-45 min)
- Independent learning (15-45 min)

  Individual learning on Seesaw and/or non-digital learning materials
- Music (45 minutes)

LUNCH (30 MIN)

AFTERNOON

- Math instruction (30 min)
- Independent learning (15-45 min) *Individual learning on Seesaw and/or non-digital learning materials*
- Check-in with teacher (15 min)
- Independent learning (0-60 min)*Individual learning on Seesaw and/or non-digital learning materials*

Times are general and will vary by grade level.

Elementary Week Sample

Monday

9:15 a.m. - Morning Meeting

9:45 a.m. - Reading and Writing Group A

10:15 a.m. – Reading and Writing Small Groups and Independent learning

11:15 a.m. – Reading and Writing Group B

11:45 a.m. - Lunch

12:15 p.m. - Music, Library or PE

1:00 p.m. - Math Group A

1:30 p.m. – Math Small Groups and Independent Learning

2:30 p.m. – Math Group B

2:45 p.m. - Wrap Up or Student check-ins

3:45 p.m. - School Day Ends

Tuesday

9:15 a.m. - Morning Meeting

9:45 a.m. - Reading and Writing Group A

10:15 a.m. – Reading and Writing Small Groups and Independent learning

11:15 a.m. – Reading and Writing Group B

11:45 a.m. - Lunch

12:15 p.m. - Music, Library or PE

1:00 p.m. - Math Group A

1:30 p.m. – Math Small Groups and Independent Learning

2:30 p.m. – Math Group B

2:45 p.m. - Wrap Up or Student check-ins

3:45 p.m. - School Day Ends

Wednesday

9:15 a.m. - Morning Meeting

9:45 a.m. - Independent Learning

11:45 a.m. - Lunch

12:15 p.m. - Music, Library or PE

1:00 p.m. - Math Small Groups and Independent Learning

2:15 p.m. – School day ends

Thursday

English

9:15 a.m. - Morning Meeting

9:45 a.m. - Reading and Writing Group A

10:15 a.m. – Reading and Writing Small Groups and Independent learning

11:15 a.m. – Reading and Writing Group B

11:45 a.m. - Lunch

12:15 p.m. - Music, Library or PE

1:00 p.m. - Math Group A

1:30 p.m. – Math Small Groups and Independent Learning

2:30 p.m. – Math Group B

2:45 p.m. - Wrap Up or Student check-ins

3:45 p.m. - School Day Ends

Friday

9:15 a.m. - Morning Meeting

9:45 a.m. - Reading and Writing Group A

10:15 a.m. – Reading and Writing Small Groups and Independent learning

11:15 a.m. – Reading and Writing Group B

11:45 a.m. - Lunch

12:15 p.m. - Music, Library or PE

1:00 p.m. - Math Group A

1:30 p.m. – Math Small Groups and Independent Learning

2:30 p.m. – Math Group B

2:45 p.m. - Wrap Up or Student check-ins

3:45 p.m. - School Day Ends

SECONDARY:

8:30 a.m. - 3:00 p.m.

Start times may shift in the hybrid model.

PERIOD ONE

- Synchronous (live) instruction (30 min)
- Asynchronous/small group (55 min)

PERIOD TWO

- Synchronous (live) instruction (30 min)
- Asynchronous/small group (55 min)

LUNCH AND BREAKS (45 MIN)

ADVISORY (30 MIN)

PERIOD THREE

- Synchronous (live) instruction (30 min)
- Asynchronous/small group (55 min)

INDEPENDENT LEARNING

- Asynchronous Google Classroom with other materials (flexible 60 min)

Times are approximate. Periods are 85 minutes with a mix of live and recorded engagement as well as independent or small group support.

Secondary Week Sample

Monday

8:30 a.m.: Period 1

9:55 a.m.: Period 2

11:25 a.m.: Lunch

12:00 p.m.: Advisory

12:35 p.m.: Period 3

2:00 p.m.: Individual Learning

3:00 p.m.: Day Ends

Tuesday

8:30 a.m.: Period 1

9:55 a.m.: Period 2

11:25 a.m.: Lunch

12:00 p.m.: Individual Learning or Check-in

12:35 p.m.: Period 3

2:00 p.m.: Individual Learning

3:00 p.m.: Day Ends

Wednesday

8:30 a.m.: Independent Learning

11:25 a.m.: Lunch

12:00 p.m.: Advisory

12:35 p.m.: Small Group Instruction

2:00 p.m.: Individual Learning

3:00 p.m.: Day Ends

Thursday

8:30 a.m.: Period 1

9:55 a.m.: Period 2

11:25 a.m.: Lunch

12:00 p.m.: Individual Learning or Check-in

12:35 p.m.: Period 3

2:00 p.m.: Individual Learning

3:00 p.m.: Day Ends

Friday

English

8:30 a.m.: Period 1

9:55 a.m.: Period 2

11:25 a.m.: Lunch

12:00 p.m.: Advisory

12:35 p.m.: Period 3

2:00 p.m.: Individual Learning

3:00 p.m.: Day Ends

**These schedules are examples only. Specific schedules will be communicated by classroom teacher.*

Fall 2020 OSD School Reopening Plan Summary

All OSD schools will open in a full-time distance learning model on September 9, 2020. The school district will transition to a hybrid learning model (mixture of in-person and remote learning) when it is safe to do so, based on guidance from local and state health and education officials.

	
Full-Time Distance Learning	**Hybrid Schedule**
School schedules specific to elementary, middle and high school learning needs with focus on equitable learning opportunities, and staff professional development.	Students attend school in person on two alternating days (Mon/Thurs or Tues/Fri). Wednesday is a full-time remote learning day with staff professional development and office hours.
Homeroom/advisory at middle and high schools.	Homeroom/advisory at middle and high schools.
Social-emotional learning support embedded.	Social-emotional learning support embedded.
Synchronous (real-time interaction) and asynchronous (individualized learning without real-time interaction).	Synchronous (real-time interaction) and asynchronous (individualized learning without real-time interaction).

Families are automatically enrolled in neighborhood (home) school in full-time distance learning and hybrid models. Optional programs include iConnect (online academy), hConnect (home-based instruction) and Avanti High School.

Critical learning standards focus at each grade level, program and content area to ensure learning progression.

Single K-12 learning management system: Schoology.

Academic screening/assessment to determine the learning needs of individual students.

Social/Emotional screening/assessment to determine mental health needs of individual students.

Grading
Elementary Schools: Standards-based (competency-based) grading; measures student progress relative to specific learning standards.
Middle and High Schools: “A” through “C.” Students significantly below standard will receive “Incomplete.”

Chromebook (computer) for every student K-12.

Daily attendance including questions related to how students are faring academically, emotionally and physically.

Strong staff professional development before and after the school year begins.

Family supports including training in technology tools and platforms; translations/interpretations; partnerships with child care agencies and parent group leaders, and single point of contact at schools to address questions/concerns.

Health and safety requirements, including face coverings and physical distancing, will be followed by students, staff and guests in full-time distance learning and hybrid models. Daily wellness screenings will be required for in-person learning in the form of at-home attestations; screening at school for students who arrive without proof of attestation.

In full-time distance learning, small groups of five students may be allowable if safety protocols are in place and adhered to. Students receiving special services and English language services, students experiencing unstable housing, and the district’s youngest learners will be given first choice to attend these small groups. These same learners will be prioritized for more frequent personal contact and paraeducator support in a full-time distance learning model. More in-person schooling will be prioritized for these same students while in a hybrid model, again, provided safety measures can be met.

Remote Learning Fall 2020

Sample Remote Learning Schedules for Fall 2020

Posted on 08/13/2020

Sample Remote Learning Schedules

Staff have provided sample student learning schedules that reflect what we learned from students and families this past spring, while ensuring we meet the mandated state requirements of 1,027 instructional hours and 180 days.

Schools will adjust these sample schedules to meet the unique needs of their community and students.

Responding to Community Feedback

In response to community feedback, staff recommended and the school board approved new start times. Consistency in school start and end times is important as we work with partners to provide child care and other services.

Instructional Blocks and Remote Schedules

The proposed PreK-12 learning schedules are designed to provide high-quality instruction in a remote setting. The schedules outline a consistent start/end time, common instructional blocks, but allow for flexibility at a school site to ensure student learning needs are met.

Each instructional block may show a full hour of reading for example, but that instructional block provides for teacher-led instruction, small group learning, and independent learning. This is also when a teacher might connect with an individual student to listen to them read and provide feedback. The teacher is available for the entire instructional block, but the individual student is

not expected to be on the screen for the entire period. This is the same for the math block and social studies/science blocks.

The social and emotional health of our students has been and continues to be a priority. Time for students to connect with their teacher, their classmates, and build community has been included into daily schedules.

Students Receiving Special Education Services

For students receiving special education services, specially designed instruction (SDI) and supports will be provided throughout the instructional day in accordance with their IEP across general and special education settings. Just like in a brick-and-mortar setting, special education staff will provide supports and deliver remote services via consultation, push-in, small group, a targeted special education programming. This will occur in both live and offline formats designe to support each student in making progress toward meeting their IEP goals.

Draft Sample Schedules

Elementary Students

This is a draft of a sample schedule time blocks for elementary students.

Draft Sample Schedule for Elementary Students

Time	Content
30 minutes	**Check-in/ Community Building** Special Education/504 supports and services*
1 hour	**ELA Instructional Block** Mini-lesson, independent reading, embedded Social-Emotional learning, Read Aloud, small group reading instruction, shared reading, writing about reading and conferring/feedback with student readers, Special Education/504 supports and services*

30 minutes	Recess/Break
1 hour	**Math Instructional Block** Mini-lesson/direct instruction, independent work time, small group math instruction, teacher conferring/feedback with individual students, Special Education/504 supports and services*
45 minutes	**Art/Music/P.E./Library** Special Education/504 supports and services*
45 minutes	Lunch and Recess
30 minutes	**Social Studies/Science/STI** (Washington State Tribal History, Since Time Immemorial)
1 hour	**Small groups and independent offline learning** (asynchronous) Special Education/504 supports and services*
30 minutes	Family Connection

*Special Education and 504 supports and services will be provided to students during the instructional day based on the student's IEP or 504 plan. These services will take place in collaboration with the student's educational team, including general education and special education staff.

Elementary Teaching: Teachers will provide the following instructional periods with a
bination of whole class, synchronous learning, small group synchronous learning, and
chronous learning.

- Check-in/community building 30 min 5 x week
- ELA 60 minutes 5 x week
- Math 60 min 4 x week
- Social Studies/STI/Science 30 min 4 x week
- Small group support 60 min 5 x week (determined by school)
- Family connection 30 min 5 x week

Middle School and High School Students

This is a draft of a sample Monday, Tuesday, Thursday, Friday schedule for 6th - 12th grade students based on a six (6) period day: Three (3) periods each day (alternating days; combination live vs. offline).

On Wednesdays students will have advisory/SEL (social emotional learning) support/connection and teacher-student learning time (independent or small group work).

The live instructional period in the morning could also be paired with the independent and smal group work time for longer periods throughout the day. These decisions will be made at the school building level.

Draft Sample Schedule for 6th - 12th Grade Students

Time	Content
50 minutes	**Period 1*/Period 4*** (live instruction)
50 minutes	**Period 2*/Period 5*** (live instruction)
50 minutes	**Period 3*/Period 6*** (live instruction)
1 hour	Lunch
Afternoon	**Approximately 50 min per offline (asynchronous) Independent and small group work 30 min office hours** Period 1/4*

	(independent and small group work) Period 2/5* (independent and small group work) Period 3/6* (independent and small group work) Clubs, counseling, library

*Special Education and 504 supports and services will be provided to students during the instructional day based on the student's IEP or 504 plan. These services will take place in collaboration with the student's educational team, including general education and special education staff.

Middle and High School Teaching: Secondary classroom teachers will provide instruction across a minimum of three and a maximum of four instructional periods a day on an A/B schedule Mon., Tues., Thurs., and Friday.

Instructional periods will provide synchronous and asynchronous instruction. Teachers will provide a minimum of two synchronous sessions for each class period during the week. Secondary schools will provide a minimum of 35 minutes each Wednesday for student check-in/community building/SEL supports.

What does Synchronous mean?

- Teacher provides whole class instruction / online lesson.
- Teacher works with a small group of students live via video conferencing.
- Students work independently but teacher is available to answer questions via video conferencing, chats, emails, or phone calls.

What does Asynchronous mean?

- Students watch a pre-recorded video lesson on their own schedule.
- Students complete assignments posted on district platforms on their own schedule.
- Educators provide feedback on completed assignments over district platforms.

What is Check-in, Community Building, and Family Connection time?

- Check-in and community building can look like many things.
- It can be 1:1 contacts or whole group Family Connection is a time for teachers to reach out to families to support their students, this includes contacts via Seesaw or Schoology, chat, email, or phone calls.