A COVID-19 SPECIAL REPORT

School Closures as a Pandemic Mitigation Policy

December 9, 2020

A report by Talus Analytics for the Office of the District of Columbia Auditor

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This is the second report from a collaborative effort between Talus Analytics and the Georgetown University Center for Global Health Science and Security, a research effort to be completed over a six-month period to help understand what COVID-19 mitigation policies have been and will be most effective in National Capital Region. This report is focused on education and school closures used to mitigate spread and impact on pediatric populations across the Region. Though the findings related to the impact of specific policies are limited, this report provides an overview of the best available data related to spread in pediatric populations, the impact of COVID-19 on children, spread in schools, and key considerations for policy makers related to education options during the pandemic.

Talus Analytics is a research and development company that specializes in translating complex data into actionable information for global decision makers, specifically in context of risk. By blending scientific, economic, and policy analysis into interactive decision-making tools, partners can make real time decisions with profound impacts. During the COVID-19 pandemic, Talus Analytics has supported the US Centers for Disease Control and Prevention in developing response tools for hospital visibility and the Nevada Governor's Office to provide real time analytical support and data analysis for the response. In addition, the Talus team has worked closely with the Georgetown University Center for Global Health Science and Security to develop a comprehensive dataset of the policies implemented globally to mitigate COVID-19 provide web-based visual tools to explore those data; this platform has served as the basis for much of the work presented in this report.

Overview

The decision to close and reopen schools has been one of the most critical – and contentious – policy decisions lawmakers and educators have had to make during the COVID-19 pandemic. The impact of school closures has far-reaching consequences including the impact on children's mental health and education attainment, the impact on working parents and therefore the economy, and the impact on disease transmission within the community. As the COVID-19 pandemic has progressed, the science and policy environment has continued to evolve and yet, there is still no 'right' answer about when and how to reopen schools. The goal of this report is to highlight and put into context scientific findings that currently exist around school reopenings, detail key policy measures undertaken within the United States and globally, and bring together the impacts that school closures have had on students and parents in the context of the COVID-19 pandemic.

Introduction

As the COVID-19 outbreak unfolded in the United States in spring 2020, one of the first actions taken by state and local governments across the country was to close schools. On January 29, 2020, with only five U.S. cases reported, the first school closures were reported.[1] By the end of February, the Centers for Disease Control and Prevention (CDC) had released guidance recommending that schools prepare for COVID-19.[2] As COVID-19 spread across the country, nearly every state reacted by issuing policies mandating district or state-wide school closures by mid-March. Only Wyoming and Montana had any school buildings open by May 15, 2020.[3] These closures followed a global COVID-19 response for which school closures were a major feature of early response efforts.

While there was sufficient evidence of rapid spread and a concerningly high fatality rate early in the event, even as of April, there were minimal data about how COVID-19 impacted children.[4] The first CDC weekly report to focus on children was not published until April 10, 2020.[5] Due to the uncertainty around the risk of COVID-19 to children and their role in spreading the disease, closures of school buildings were initiated and largely maintained through the end of the 2019-2020 school year in the United States.[6]

The school closures, especially in the first wave of the pandemic, coincided with a variety of other non-pharmaceutical interventions, all centered around reducing community spread. These included limiting mass gatherings, dining closures or restrictions, restricting borders and travel, and instituting mask policies, among others. As these policies intended, the movement of individuals slowed spread dramatically, both in the United States and globally.[7] As the initial wave subsided, researchers began attempting to understand which policies had the greatest impact on reducing COVID-19 transmission.[8,9] However, given that school closures were implemented in close conjunction with nearly every other

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1 Prothero, A. Coronavirus: How Some Schools are Responding. *Education Week* (2020, January 29). http://blogs.edweek.org/edweek/rulesforengagement/2020/01/coronavirus_cases_schools_prepare.html

2 Lieberman, M. Schools Should Prepare for Coronavirus Outbreaks, CDC Officials Warn. *Education Week*. (2020, February 25). https://www.edweek.org/ew/articles/2020/02/25/schools-should-prepare-for-coronavirus-outbreaks-cdc.html

3 Map: Coronavirus and School Closures in 2019-2020. *Education Week*. (2020. September 16). https://www.edweek.org/ew/section/multimedia/map-coronavirus-and-school-closures.html

4 Patel, A., Jernigan, D.B. Initial Public Health Response and Interim Clinical Guidance for the 2019 Novel Coronavirus Outbreak — United States, December 31, 2019–February 4, 2020. MMWR Morb Mortal Wkly Rep 2020;69:140–146. DOI: http://dx.doi.org/10.15585/mmwr.mm6905e1

5 Coronavirus Disease 2019 in Children — United States, February 12–April 2, 2020. MMWR Morb Mortal Wkly Rep 2020;69:422–426. http://dx.doi.org/10.15585/mmwr.mm6914e4

6 The Coronavirus Spring: The Historic Closing of U.S. Schools *Education Week* (2020, July 1). https://www.edweek.org/ew/section/multimedia/the-coronavirus-spring-the-historic-closing-of.html

7 Mitigation Policy During the Pandemic. *Office of the District of Columbia Auditor* (2020, November 24). https://dcauditor.org/report/mitigation-policy-during-the-pandemic/

8 Haug, N., Geyrhofer, L., Londei, A., Dervic, E., Desvars-Larrive, A., Loreto, V., Pinior, B., Thurner, S., Klimek, P. Ranking the effectiveness of worldwide COVID-19 government interventions. *Nature Human Behaviour* (2020). Figure 1: Change in R_t (ΔR_t) for 46 NPIs at L2, as quantified by CC analysis, LASSO and TF regression. https://www.nature.com/articles/s41562-020-01009-0/figures/1

9 Li, Y., Campbell, H., Kulkarni, D., Harpur, A., Nundy, M., Wang, X. The temporal association of introducing and lifting non-pharmaceutical interventions with the time-varying reproduction number (*R*) of SARS-CoV-2: a modelling study

mitigation policy and given the lack of a comprehensive nationwide database that provides sufficient temporal and spatial detail about school openings or closures for detailed analysis, the relative impact of these policies on the outbreak itself is unclear. While some studies indicate correlation between school closures and reductions in caseload, these are largely conflated with implementation of a large number of other mitigation policies and other studies suggest that reopening schools alone is not a significant driver of increased caseload.

Especially given this uncertainty, the policy of using school closures to mitigate the pandemic needs to be addressed in the context of a whole community risk framework that includes risk of infection, the role of schools in serving critical needs for children and their families, differential risk both of infection and of educational disruptions for underserved and underrepresented populations, and the link between reopening schools and reopening economies, as the two are inextricably linked.

COVID-19 mitigation policy

Over the course of the pandemic there have been thousands of policies put in place at all levels of government to try to mitigate the spread of the virus, including those focused on schools. The majority of policies during COVID-19 were focused on increased social distancing, establishing mask requirements, and providing enabling and relief measures.[10] Initial studies on the effectiveness of these policies have found the policies that have had the greatest impact were limiting the number of people attending gatherings, workplaces and schools; stay-at-home orders; border restrictions; and increased personal protective equipment. A recent study published on November 10, 2020, found that mask mandates reduced fatality growth rates by 12%.[11] Also, while it's not known to what extent, providing relief funding through enabling and relief policies appears to also be a valuable tool for decision makers. Each mitigation strategy required at least one to three weeks to create an impact, and the true amount of each impact is not fully known as many were put in place concurrently. [12,13] As the case numbers throughout the United States declined over the summer many of these policies were cancelled or allowed to expire.

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across 131 countries. *The Lancet Infectious Diseases* (2020, October 22). https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30785-4/fulltext

10 Mitigation Policy During the Pandemic. *Office of the District of Columbia Auditor* (2020, November 24). https://dcauditor.org/report/mitigation-policy-during-the-pandemic/

11 Spiegel, M. I. and Tookes, H. Business Restrictions and COVID Fatalities (November 4, 2020). https://ssrn.com/abstract=3725015 or http://dx.doi.org/10.2139/ssrn.3725015

12 Haug, N., Geyrhofer, L., Londei, A., Dervic, E., Desvars-Larrive, A., Loreto, V., Pinior, B., Thurner, S., Klimek, P. Ranking the effectiveness of worldwide COVID-19 government interventions. *Nature Human Behavior (*2020). Figure 1: Change in R_t (ΔR_t) for 46 NPIs at L2, as quantified by CC analysis, LASSO and TF regression. https://www.nature.com/articles/s41562-020-01009-0/figures/1

13 Li, Y., Campbell, H., Kulkarni, D., Harpur, A., Nundy, M., Wang, X. The temporal association of introducing and lifting non-pharmaceutical interventions with the time-varying reproduction number (*R*) of SARS-CoV-2: a modelling study across 131 countries. The Lancet Infectious Diseases (2020, October 22). https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30785-4/fulltext

As the pandemic progressed, decision-making in most places began occurring at the local level. From social distancing restrictions to school reopening policies, a nationwide patchwork response unfolded. New policies around school reopenings ordered staffing, cleaning, or closure requirements at academic buildings, but again, these policies are governed at many different levels. For example, some school districts decided their own policies, while other locations create policies in conjunction with the local or state health department, the governor, mayor, or unions. This variation has resulted in a widely disparate policy environment throughout the country. New York City schools were initially reopened in the fall but closed again in November 2020 when they reached a 3% positivity rate, as mandated by the state. By comparison, Indianapolis schools were allowed to stay open until they reached a 10% positivity rate.[14] Even cleaning and masking policies differ across the country: as recently as November 18, 2020, only 8,336 out of 14,774 districts in the United States required masks for all students and 9,780 require masks for all staff.[15]

In the United States, as of November 15, 2020, 37% of students attend virtual-only school, but experts widely expect that number to increase over the coming weeks as a third wave of cases has spread across the country and impacts that initially hit large cities have spread to suburbs and rural areas.[16] As cases have risen, many jurisdictions are reimposing stricter policies aimed at reducing transmission including limiting gatherings, closing dining and entertainment venues, and shifting schools back to virtual learning.[17] Additionally, many districts that were planning to reopen for in-person schooling have postponed their plans[18]. The District of Columbia Public School's (DCPS) current plan has a limited number of students in classrooms as of November 2020, with educators still teaching remotely. [19] With many school districts making their own decisions to close or reopen it has been nearly impossible to comprehensively track and update each status accurately, which limits the ability for robust quantitative analysis to truly pinpoint the role of school closures in COVID-19 spread.

Applying current research to school reopening policy

As the initial wave of COVID-19 infections began to subside, researchers began assessing which policies had the greatest impact on reducing COVID-19 transmission. As of December 1, 2020, the most up to date scientific studies examined global policies at the onset of the COVID-19 pandemic. These studies are critical in helping shape how governments should respond to future events and are key to

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14 Brody, L., Koh, Y. Why Some Schools Close as Covid-19 Cases Rise When Others Stay Open. *The Wall Street Journal* (2020, November 19). https://www.wsj.com/articles/why-some-schools-close-as-covid-19-cases-rise-when-others-stay-open-11605789414?mod=ig_eduhub

15 COVID-19 IMPACT: School District Status Updates for Fall 2020. *MCH Data (2020).* Site accessed November18, 2020. https://www.mchdata.com/covid19/schoolclosings; NOTE: These data are routinely updated, so reflect the most current, not the time at which the data were accessed.

16 Covid in the U.S.: Latest Map and Case Count. The New York Times (2020). https://www.nytimes.com/interactive/2020/us/coronavirus-us-cases.html

17 Carey, Benedict. Limiting Indoor Capacity Can Reduce Coronavirus Infections, Study Shows. The New York Times (2020, November 10). https://www.nytimes.com/2020/11/10/health/covid-indoor-venues-infections.html

18 Russo, A. Exclusive: School opening trends and recent district decisions. *Phi Delta Kappan* (2020, November 16). https://kappanonline.org/school-opening-update-exclusive-trends-and-tidbits-russo/

19 School Building Reopening Plans and Readiness Checklists. *DC Reopen Strong, District of Columbia Public Schools.* https://dcpsreopenstrong.com/school-plans/

determining what policies worked when and where, including an analysis of policies related to in-person school.

In the early months of the pandemic researchers believed that closing schools reduced both COVID-19 incidence and mortality.[20] Additionally, the first set of peer-reviewed studies examining what policies had the biggest impact to reducing virus transmission all indicated that school closures had a significant, positive impact in stopping the spread of COVID-19. [21,22] However, these studies all focused on the initial phase of the pandemic, where it was impossible to fully disentangle school closures and other measures used to stop in-person gatherings.

While some studies contend school closures can significantly impact COVID-19 spread, others found no reduced risk with closing schools. [23,24,25] There are also examples of effective school reopenings, such as in South Korea in September 2020, which did not lead to a surge in COVID-19 cases, and ineffective reopenings such as in Minnesota where schools began to close within three weeks of reopening for the 2020-2021 school year due to outbreaks. [26,27] However, as the outbreak has progressed there has been significantly more research suggesting that schools are only limited sources of transmission, with one recent study in Spain in September going so far as to state that there was "no effect of reopening the schools in terms of global incidence". [28,29] In addition to these global impacts, transmission has been significantly lower in schools than elsewhere: one study found that 87% of the students and staff who

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20 Auger, K.A., Shah, S.S., Richardson, T., et al. Association Between Statewide School Closure and COVID-19 Incidence and Mortality in the US. *JAMA* 2020;324(9):859-870 (2020, July 29). doi:10.1001/jama.2020.14348

21 Haug, N., Geyrhofer, L., Londei, A., Dervic, E., Desvars-Larrive, A., Loreto, V., Pinior, B., Thurner, S., Klimek, P. Ranking the effectiveness of worldwide COVID-19 government interventions. *Nature Human Behaviour (*2020). Figure 1: Change in R_t (ΔR_t) for 46 NPIs at L2, as quantified by CC analysis, LASSO and TF regression. https://www.nature.com/articles/s41562-020-01009-0/figures/1

22 Li, Y., Campbell, H., Kulkarni, D., Harpur, A., Nundym, M., Wang, X. The temporal association of introducing and lifting non-pharmaceutical interventions with the time-varying reproduction number (*R*) of SARS-CoV-2: a modelling study across 131 countries. *The Lancet Infectious Diseases* (2020, October 22). https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30785-4/fulltext

23 Haug, N., Geyrhofer, L., Londei, A., Dervic, E., Desvars-Larrive, A., Loreto, V., Pinior, B., Thurner, S., Klimek, P. Ranking the effectiveness of worldwide COVID-19 government interventions. *Nature Human Behaviour (*2020). Figure 1: Change in R_t (ΔR_t) for 46 NPIs at L2, as quantified by CC analysis, LASSO and TF regression. https://www.nature.com/articles/s41562-020-01009-0/figures/1

24 Li, Y., Campbell, H., Kulkarni, D., Harpur, A., Nundy, M., Wang, X. The temporal association of introducing and lifting non-pharmaceutical interventions with the time-varying reproduction number (*R*) of SARS-CoV-2: a modelling study across 131 countries. The Lancet Infectious Diseases (2020, October 22). https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30785-4/fulltext

25 Harriet Forbes, et al. Association between living with children and outcomes from COVID-19: an OpenSAFELY cohort study of 12 million adults in England *med*R*xiv* (2020, November 2) https://doi.org/10.1101/2020.11.01.20222315

26 Cha, V., Kim, D. A Timeline of South Korea's Response to COVID-19. *Center for Strategic and International Studies* (2020, March 27). https://www.csis.org/analysis/timeline-south-koreas-response-covid-19

27 Shockman, E. COVID-19 cases already closing some Minnesota school buildings. *Minnesota Public Radio* (2020, September 25). https://www.mprnews.org/story/2020/09/24/covid19-cases-already-closing-some-minnesota-school-buildings

28 Operating schools during COVID-19: CDC's Considerations. *Centers for Disease Control and Prevention* (2020, October 29). https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/schools.html

29 Analysis and prediction of COVID-19 for EU-EFTA-UK and other countries. *Polytechnic University of Catalonia* (2020, October 2). https://biocomsc.upc.edu/en/shared/20201002_report_136.pdf

tested positive did not infect anyone else at school, and a separate study found only a 0.13% infection rate among students and 0.24% among staff from data examining nearly 200,000 children in 27 states at the end of September.[30,31] This follows findings from Yale this fall that childcare workers were not at increased risk of contracting COVID-19 in a study of 57,000 providers in 50 U.S. states, the District of Columbia, and Puerto Rico in May and June 2020.[3233] Most recently, a study published on December 1, 2020, found that children were as likely as adults to become infected, but had much lower transmission rates and less severe symptoms.[34] Importantly, children under 10 years old appear to have significantly lower transmission rates than older children. According to a World Health Organization study from January-March 2020, children ages 0-9 had approximately a 5% household transmission rate, and children 10-19 had approximately an 18% household transmission rate.[35] There is risk in school and childcare settings, but these studies indicate only limited transmission is being driven by numbers present in these environments.

While children are likely a lower source of transmission, they are also less severely impacted by the disease, and while children under 18 who develop COVID-19 can have symptoms, some severe enough for hospitalization, the vast majority of cases are mild or asymptomatic.[36] In the United States, children are approximately 10% of all COVID-19 cases, and while it's not entirely clear why children are less impacted, it may be because they are more routinely exposed to other coronaviruses such as the common cold and have stronger immune systems.[37] As of October 2020, children were only 1-3% of total COVID-19 hospitalizations and only 0.6 to 6.9% of child COVID-19 cases required hospitalization at all.[38] As of November 2020, children were between zero and 0.23% of all COVID-19 deaths, with 17 states having zero, and zero to 0.14% of child COVID-19 cases resulted in death.

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30 Oster, E. Schools Aren't Super-Spreaders. *The Atlantic* (2020, October 9). https://www.theatlantic.com/ideas/archive/2020/10/schools-arent-superspreaders/616669/

31 COVID-19 School Response (v2). *Qualtrics* (2020). https://statsiq.co1.qualtrics.com/public-dashboard/v0/dashboard/5f78e5d4de521a001036f78e#/dashboard/5f78e5d4de521a001036f78e?pageId=Page_c0595a5e-9e70-4df2-ab0c-14860e84d36a

32 Cruz, A. COVID-19: Overview and Evaluation – Pediatric Collection. *American Academy of Pediatrics* (2020). https://www.aappublications.org/cc/covid-19

33 Child care not associated with spread of COVID-19, Yale study finds. *YaleNews I (2020, October 16).* https://news.yale.edu/2020/10/16/child-care-not-associated-spread-covid-19-yale-study-finds

34 Laws, Rebecca, et al. Symptoms and Transmission of SARS-CoV-2 Among Children- Utah and Wisconsin, March-May 2020. *Pediatrics* (2020, December 1). https://pediatrics.aappublications.org/content/early/2020/12/01/peds.2020-027268

35 What we know about COVID-19 transmission in schools. *World Health Organization* (2020, October 21). https://www.who.int/docs/default-source/coronaviruse/risk-comms-updates/update39-covid-and-schools.pdf?sfvrsn=320db233_2

36 COVID-19 in Children and Teens. *Centers for Disease Control and Prevention* (2020, September 17). https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/children/symptoms.html#:~:text=Most%20children%20with%20COVID%2D19,rare%20cases%2C%20they%20might%20die

37 COVID-19 (coronavirus) in babies and children. *Mayo Clinic* (2020, November 21). https://www.mayoclinic.org/diseases-conditions/coronavirus/in-depth/coronavirus-in-babies-and-children/art-20484405

38 Milstone, A. Coronavirus in Babies and Kids: Symptoms and Prevention. *Johns Hopkins Medicine* (2020, November 9). https://www.hopkinsmedicine.org/health/conditions-and-diseases/coronavirus/coronavirus-in-babies-and-children

Mitigating risk is still key, and as with certain adult populations, there are underlying conditions that increase a child's risk such as obesity, diabetes, chronic lung disease, children born prematurely or with other health disparities, or children under two. [39] When children do become sick they have similar symptoms as adults with fever, congestion, cough, sore throat, difficulty breathing, fatigue, headaches, nausea, loss of taste or smell, or muscle aches. An additional, although rare, concern with children is Multisystem Inflammatory Syndrome (MIS-C) which can cause severe inflammation in the heart, lungs, blood vessels, kidneys, digestive system, brain, skin or eyes.[40]

While COVID-19 poses a risk to children's health, schools provide critical services to the students and families they serve in addition to their role as educators. They play a role in access to food for many low-income families,[41] provide access to physical education and fitness to combat obesity which has been linked to higher morbidity and mortality rates with COVID-19,[42] provide access to mental health, dental, and nursing services,[43] and provide a safety net and access to early warnings for child abuse and neglect.[44]

Closing schools also impacts parents who rely on them for childcare during working hours. There are 33.5 million Americans with children under the age of 14. That equates to 26% of the workforce and 23.5 million of those do not have any caregivers at home and require external childcare. This has an outsized impact on lower income families, with approximately 20% of families with children of school and childcare age, and on women, who are 45% of all working parents with young children.[45] Black, Asian, and Hispanic mothers also had an approximately 7.5% decrease in employment from September 2019 to September 2020.[46] The benefits and risks of each of these policies should be considered as a whole when planning for future policy implementation.

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39 Children and COVID-19: State-Level Data Report. *American Academy of Pediatrics* (2020, November 23). https://services.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/children-and-covid-19-state-level-data-report/

40 Multisystem Inflammatory Syndrome in Children (MIS-C). *Yale Medicine* (2020). https://www.yalemedicine.org/conditions/multisystem-inflammatory-syndrome-in-children-mis-c

41 Bauer, L. About 14 million children in the US are not getting enough to eat. *Brookings* (2020, July 9). https://www.brookings.edu/blog/up-front/2020/07/09/about-14-million-children-in-the-us-are-not-getting-enough-to-eat/

42 Kamin, D. Experts are worried about covid-19's effect on childhood obesity. Here's what we can do. *The Washington Post* (2020, October 6). https://www.washingtonpost.com/lifestyle/2020/10/06/child-obesity-covid/

43 Kamenetz, A. The Pandemic Has Researchers Worried About Teen Suicide. *National Public Radio (*2020, September 10). https://www.npr.org/2020/09/10/911117577/the-pandemic-has-researchers-worried-about-teen-suicide

44 Dooley, D.G., Bandealy, A., Tschudy, M.M. Low-Income Children and Coronavirus Disease 2019 (COVID-19) in the US. *JAMA Pediatrics* 2020;174(10):922-923 (2020, May 13). doi:10.1001/jamapediatrics.2020.2065

45 Bateman, N. Working parents are key to COVID-19 recovery. *Brookings* (2020, July 8). https://www.brookings.edu/research/working-parents-are-key-to-covid-19-recovery/

46 Kochhar, R. Fewer mothers and fathers in U.S. are working due to COVID-19 downturn; those at work have cut hours. *Pew Research Center* (2020, October 22). https://www.pewresearch.org/fact-tank/2020/10/22/fewer-mothers-and-fathers-in-u-s-are-working-due-to-covid-19-downturn-those-at-work-have-cut-hours/

Applying the data to policy decisions

Understanding how to make the decision on reopening schools in any individual community is an almost impossible task. Early scientific studies have shown how school closures had a huge impact on reducing transmission of COVID-19 but were not designed to look at the larger societal impacts of that decision. Critically, when policies are implemented simultaneously, it is nearly impossible to understand which of the policies had significant impact in mitigating transmission. Compounding this, there is currently no comprehensive nationwide database on the school openings or closures that provides sufficient temporal and spatial resolution to support large-scale quantitative analysis on the impacts of these changes. **What is possible is to weigh the benefits and risks of what is known about the impacts of school closure policies to assess what risks a community is willing to undertake.**

The lack of comprehensive data to conduct a quantitative analysis leads to decisions made based on qualitative assessments of both the current status of COVID-19 transmission in the community and the risk benefit assessment of reopening schools. Many tools have been created to assist leaders in decision making such as the Children's Hospital of Philadelphia (CHOP) Roberts Center for Pediatric Research Guidance for In-Person Schooling and the American Academy of Pediatrics (AAP) COVID-19 Planning Considerations.[47,48] The guidance provided by these groups, (see table below) overwhelmingly coincides and bolsters one another and can be viewed together as up to date and comprehensive. This guidance is summarized in the table below with a brief discussion of the comparison.

Recommendation Topic	**CHOP Recommendations[49]**	**AAP Recommendations[50]**	**Comparison**
Community Partnerships	• Partner with local public health agencies for screening, reporting, contact tracing and guidance	• Close communication and coordination with state and local health, school nurses, pediatric practitioners, and other medical experts	Guidance is consistent
Communications	• Clear instructions for families		Guidance is reasonable but not mentioned in both documents

47 Executive Summary: Evidence and Guidance for In-Person Schooling during the COVID-19 Pandemic *Policy LAB* (2020, November 5). https://policylab.chop.edu/sites/default/files/pdf/publications/PolicyLab-Executive-Summary-Evidence-Guidance-In-Person-Schooling-COVID-19-Nov-2020.pdf

48 COVID-19 Planning Considerations: Guidance for School Re-entry. *American Academy of Pediatrics* (2020, August 19) https://services.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/clinical-guidance/covid-19-planning-considerations-return-to-in-person-education-in-schools/

49 Executive Summary: Evidence and Guidance for In-Person Schooling during the COVID-19 Pandemic *Policy LAB* (2020, November 5). https://policylab.chop.edu/sites/default/files/pdf/publications/PolicyLab-Executive-Summary-Evidence-Guidance-In-Person-Schooling-COVID-19-Nov-2020.pdf

50 COVID-19 Planning Considerations: Guidance for School Re-entry. *American Academy of Pediatrics* (2020, August 19) https://services.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/clinical-guidance/covid-19-planning-considerations-return-to-in-person-education-in-schools/

Recommendation Topic	CHOP Recommendations[49]	AAP Recommendations[50]	Comparison
Online Learning	• Short-term flexible online learning options		Guidance is reasonable but not mentioned in both documents
Safety Protocols	• Routine symptom surveillance with daily checks. Absence policies enacted for TWO of the following symptoms fever, muscle aches, headache, sore throat, nausea, vomiting, diarrhea, fatigue, congestion, runny nose; or ONE of the following symptoms cough, shortness of breath/ difficulty breathing, loss of taste or smell • Surgical or cloth masks for ages 2 and up. N95 masks for staff and adults • 6-foot physical distancing with desks facing the same direction • Smaller teacher-student ratios • Small cohorts of students for class, lunch, bathroom, transitions, and recess • Increased ventilation, increased window and outdoor space use • Minimal sharing of objects • OSHA and CDC approved disinfectants on high touch surfaces	• Temperature checks, symptom screenings • Desks placed at least 3 feet apart, ideally 6 feet. • If less than 6 feet of space between desks, face coverings strongly encouraged. Masks for elementary age and above • Cohorts of students, but flexibility with sizes • Adults maintain 6 feet of distance from others • Staggered and outdoor drop-offs and pickups when possible • Consider physical barriers in reception areas and no congregating in shared spaces such as lounges • Utilize outdoor space when possible • Limit visitor access to buildings • Minimize number of students in the cafeteria, use underutilized spaces for lunch/break • Encourage hand washing • In secondary schools: o Block schedules o Reduce need for hallway use o Have teachers rotate into different classrooms instead of students • EPA approved disinfectants, diluted bleach or 70% alcohol	In general guidance is consistent. • CDC recommends desks be placed 2 meters apart (6.5 feet) when feasible[51]

[51] Operational Considerations for Schools. *Centers for Disease Control and Prevention* (2020, August 31). https://www.cdc.gov/coronavirus/2019-ncov/global-covid-19/schools.html

Recommendation Topic	CHOP Recommendations[49]	AAP Recommendations[50]	Comparison
		solutions on high touch surfaces • Established isolation areas to separate symptomatic students	
Flexible Policies	• 10-day absence for positive test result and 24 hours post fever and improved respiratory symptoms • 24-hour absence post symptoms with a negative test result or alternate illness diagnosed and no fever • 14-day absence following last exposure if asymptomatic. "Exposure" is within 6 ft of COVID-19 diagnosed individual for 15 minutes or longer and during / within 48 hours of symptom onset	• Stay home from school with fever over 100.4 or COVID-19 symptoms • 14-day absence following last exposure if asymptomatic. "Exposure" is within 6 ft of COVID-19 diagnosed individual for 15 minutes	In general guidance is consistent. • CDC recommends a 10-day quarantine for exposure without testing and 7 days with a negative test result
Staffing Plans	• Appropriate staffing of health services, nurses, and counselors	• Create focus on health and well-being including behavioral/mental health	Guidance is reasonable but not consistent in both documents
Immunizations	• Prioritizing up to date immunization schedules and influenza vaccination	• Immunization requirements should be maintained • Encourage influenza vaccination	Guidance is consistent
Testing	• PCR confirmation for positive antigen tests	• Virologic testing as necessary	Guidance is consistent
Equity Considerations		• Partner to identify and develop accommodations • Policies communicated in multiple languages, as necessary	Guidance is reasonable but not mentioned in both documents

Table 1: Comparison of CHOP and AAP Recommendations related to in-person learning considerations.

Understanding that scientific studies support the fact that younger children are less likely to suffer from COVID-19 and are not as likely to contribute to widespread community spread is a key aspect of determining how to mitigate risk in a community. There is also the significant role that mitigation protocols play in limiting spread. Policies mandating social distancing and mask wearing have been used in classrooms throughout the globe which have been proven effective at reducing transmission.[52] Many

[52] Danger, J. Mayo Clinic research confirms critical role of masks in preventing COVID-19 infection. *Mayo News Network* (2020, November 24). https://newsnetwork.mayoclinic.org/discussion/mayo-clinic-research-confirms-critical-role-of-masks-in-preventing-covid-19-infection/

schools are ensuring access to accurate testing at no cost to students and staff members, limiting the initial numbers, days, and ages of students who return, mandating face masks, staggering arrival and departure times, limiting students' mobility within schools including eating lunch in classrooms, keeping students socially distant within their classrooms or using additional space as classrooms, and limiting the number of teachers interacting with students throughout the day.[53, 54,55] The fact remains that many school districts will continue to close and reopen their schools based on a multitude of factors, but understanding the role and drivers of community-based transmission, the risks and benefits of in-person schooling, and the role of mitigation policies such as masks, will be critical in determining the relative success of these decisions.

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53 New Guidance for Using Covid-19 Testing Strategies to Reopen America's Schools Safely. *The Rockefeller Foundation* (2020, October 14). https://www.rockefellerfoundation.org/news/new-guidance-for-using-covid-19-testing-strategies-to-reopen-americas-schools-safely/

54 Panovska-Griffiths, J., Kerr, C.C., Stuart, R.M., Mistry, D., Klein, D.J., Viner, R.M., et al. Determining the optimal strategy for reopening schools, the impact of test and trace interventions, and the risk of occurrence of a second COVID-19 epidemic wave in the UK: a modelling study. *The Lancet Child and Adolescent Health* (2020, August 3). https://www.thelancet.com/journals/lanchi/article/PIIS2352-4642(20)30250-9/fulltext

55 Denny, T.N., Andrews, L., Bonsignori, M., et al. Implementation of a Pooled Surveillance Testing Program for Asymptomatic SARS-CoV-2 Infections on a College Campus — Duke University, Durham, North Carolina, August 2–October 11, 2020. *CDC Morbidity and Mortality Weekly Report* (2020, November 20). https://www.cdc.gov/mmwr/volumes/69/wr/mm6946e1.htm