

Science and society are failing children in the COVID era^[1]

The school reopening debate points toward a broader range of problems facing the young

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EXCERPTS

The long-anticipated CDC guidance on schools was released on February 12. This is the latest event in what has been, up to this point, among the most politically charged and scientifically contested aspects of the COVID-19 response. In its guidance, the agency calls for K–12 schools in particular to reopen as soon as possible, noting that with safety precautions in place such as physical distancing, contact tracing and mask-wearing, many have been able to open safely, and stay open. The report also cites evidence, also referenced in a recent article in the *Journal of the American Medical Association* authored by CDC staff, that school attendance in this age range is not a primary driver of community transmission, and that declining infection rates are possible while keeping schools open.

However, the levels of community transmission used as benchmarks have drawn criticism, not least because they seem to not reflect the latest evidence on what is achievable with safeguards, and by implication suggest almost all schools in the U.S. should remain in remote or hybrid forms for the immediate future, in spite of the evidence.

Much has been written arguing for and against urgent reopening, and this latest round of debates reflect a year's worth of very public debates. Leaving aside these discussions, we think it is worth pausing and reflecting on the failures these very debates have brought into bold relief. Simply put, the arguments about school openings during COVID-19 reflect, to our mind, an ongoing failure of science and society, in which academics and policy makers share responsibility.

First, on the science. As the CDC guidance makes abundantly clear, evidence to date points to COVID posing a low risk to children, with the risk of spread among young children also low, if well-managed, in the school setting. It is important to remember that the level of safety we adjudge as “safe” is a relative thing, and unknowns remain about the long-term effects of COVID; however, we know that among children ages 5–14, the COVID-19 mortality rate has been reported at around one per million. To put this in perspective, by contrast, transport accidents account for 15 times that mortality rate. Children in that age range are almost 10 times more likely to die by suicide, than die from COVID-19 (see Figure).

One can reasonably surmise that it has been far more dangerous throughout the past year for children to get to school than it has been for them to be in school.

So why has the science failed us; why has this issue been so contentious? Principally we think that we have looked to science for definitive answers, allowing a “follow the science” mantra to take hold in relation to COVID, but not in the context of the harm to younger children from school closures, even though school openings represent a trade-off that science could and should inform.

Science, as with any other aspect of societal functioning, builds on its own lenses and assumptions. It is indicative of the fundamental problem that among the explosion of tens of thousands of scientific articles on COVID-19—by some estimates 200,000 articles and preprints by December 2020—only a handful of reviews have attempted to assess the range of costs of closing schools to children. Perhaps the most recent and comprehensive review of the literature on child health impacts due to school closures was made available (as a preprint) on the same day as the CDC guidelines. While the review identified 72 studies for inclusion, overall, the authors concluded that too little research had been done for them to draw on key aspects, such as the effects on children by socioeconomic status, or on vulnerable children. The lack of data on socioeconomic status is a remarkable gap, considering that children in poverty are particularly susceptible to school closures. We know from previous research that among children in poverty, breaks in school due to summer holidays are associated with declines in mental well-being, increases in self-reported loneliness, hunger and declines in physical activity.

Of particular concern, the authors were also unable to find a single study describing the effects of school closures on vulnerable groups such as those with learning difficulties, autism, eating disorders or prior substance abuse. That this has not been a larger focus of the COVID science represents a significant gap in critical evidence, as this is what informs the trade-offs of this particular decision, and the ways in which its worst effects can be mitigated, if political leaders judge school closures to be right at a particular time. These harms are given only a brief mention, with little cited evidence, even in the CDC guidance.

Christina Pagan, 7, does her schoolwork at a remote learning location hosted by the Olivet Boys and Girls Club in Reading, PA. Credit: Ben

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Mortality rate per million for children aged 5-14 in the U.S. for COVID-19 (March-October 2020) and other leading causes of death (March-October 2018). Data from “COVID-19 as the Leading Cause of Death in the United States,” by Steven H. Woolf, et al., *JAMA*, Vol. 325, December 17, 2020. Credit: Nason Maani.

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This gap in the science, we argue, maps onto a failure of society to consider and prioritize the needs of young children. We are not blind to the potential risks faced by teachers, even though these seem demonstrably lower than other essential professions, but we suggest that these risks have so dominated the public conversation that they have pushed us, as a society, to vastly underestimate the risk to children, which should have been our priority all along. Decision-makers are understandably concerned about uncertainty amid the risk of exponential nature of harm related to COVID-19, but in the case of younger children in particular, decision-makers need to also be informed of the evidence of impacts to young children that may be exponential in other ways, reverberating for many decades into their futures.

This is particularly concerning because young children are, definitionally, a vulnerable population, deserving of special ethical consideration and social allowances, as reflected in the U.N. Convention on the Rights of the Child. They lack legal autonomy in decision-making and so are “along for the ride” amidst our policy decisions. They are not “small adults,” but rather, given developmental stage, they are especially malleable and affected by their environments and experiences. Indeed, life-course epidemiology, the field of research devoted to the study of health outcomes associated with even the earliest childhood experiences and exposures, has amply shown that disadvantage is unfairly perpetuated through structural barriers that imprint on children even at a young age, through the quality of the air

they breathe, the food they eat, the experiences they face. That is why education level has been identified as one of the strongest predictors of later health and well-being, and investment in early childhood education as among the most cost-effective public health interventions possible.

In this way, it is important to think of the consequences of our policy decisions regarding children as being of unique and lasting significance, to the health and well-being of a large, vulnerable population, to which society, and not just parents and families, owe an obligation.

That being the case, what do we know, and what can we infer, about the effects of school closures to children in this unique situation, and how they map onto this societal responsibility? We summarize observations and evidence to date across three dimensions, effects on learning, effects on safeguarding and effects on health.

First, in the context of learning, for families in higher income brackets, with higher levels of education, and greater ability to work remotely, gaps in attainment may be relatively small; indeed, some national data suggest test scores have largely caught up among children of high wage earners but persist in lower-income households. Differences by race have also been observed, with widening attainment gaps for schools with over 50 percent students of color, who were also twice as likely to receive no live contact from teachers in the previous week. Clearly, these impacts are additional to those of a prior societal failure, that of widening inequality and a failure to invest in schools for communities that have suffered from structural racism.

Inequities in education provision are likely to be particularly impactful for marginalized students, that is, students who are in foster care, experiencing homelessness, disability, English learners and migrants. These groups are considered at greater risk of “disappearing” from the education system during gaps in school, and a 5–10 percent rate of nonengagement with remote learning, as reported in some U.S. cities early in the pandemic, could equate to over a million students missing, considering the group as a whole has been estimated at some 12,388,000 nationwide.

A similar disparity exists in access to internet. Although access to computing equipment has been greatly increased through the provision of laptops by schools, access to high-speed internet, an important element of remote or hybrid learning, also varies significantly by region and income in the U.S. In 2018, 45 percent of households with less than \$25,000 annual income and 32 percent of households earning \$25,000–50,000 didn’t have access to high-speed home internet.

Second, the safeguarding of children is a critical function shared by families, health care professionals, social workers and schools. Pre-COVID, levels of child abuse and neglect in the U.S. were already high compared to other high-income countries. In 2019 there were over 650,000 unique victims of child abuse in the U.S., and 1,840 abuse-related deaths, around nine times the childhood deaths from COVID-19 to date. Advocacy organizations, pediatricians and researchers have highlighted the risk of increased child abuse related to school closures because of the pressures facing parents during the pandemic. Parents accounted for 78 percent of child abuse cases in the U.S. in 2019, and the majority of substantiated abuse or neglect reports came from adults outside the family, typically victim-serving professionals such as teachers or health care providers who were able to identify signs of abuse and report them.

The pressures and predictors of child abuse are strongly associated with the pandemic, including anxiety, loss of income, loss of employment, food and housing insecurity, and declining parental mental health. There is evidence that child and domestic abuse increased during past public health emergencies. During COVID-19, there have been concerning signs of a precipitous decline in allegations of child abuse and neglect, likely reflecting a decline in contact with non-family members, in particular child-serving professionals. A study in Florida estimated a decrease by 27 percent of child abuse notifications. A study in New York City showed a near 30 percent decline in monthly maltreatment allegations, with significant decreases across all subtypes for March, April and May last year. The authors estimate through extrapolation to national data that a predicted 276,293 allegations of child maltreatment that would have been made between March and May 2020 were not reported. One study from the U.K. estimated that referrals originating from schools in particular were reduced by approximately 50 percent.

Calls to local and state abuse hotlines in the U.S. have also fluctuated, with drops across 19 U.S. states coinciding with school closures. Yet data from the CDC show the the number and percentage of emergency department visits related to abuse and neglect that required hospitalization (in other words, of significant severity) have not declined, and a study of emergency department visits found attendances for suspected child abuse and neglect during the pandemic significantly exceeded median 2019 rates.

Similar data from the U.K. indicate a year-on-year 27 percent increase in child deaths and incidents of serious harm associated with abuse and neglect. These threads of evidence suggest there is a high likelihood that abuse of children during the pandemic is occurring at elevated levels but going unreported because of a lack of contact beyond families. These failures of safeguarding have significant long-tail physical, emotional and social consequences, and are likely exacerbated further because young children in these positions are often isolated from extrafamilial support structures or social networks.

Third, school closures have broader effects on children’s health. The most recent review on this topic identified evidence of “substantial and consistent” impacts to health and well-being, with studies from countries across the income spectrum showing that 18–60 percent of children and young people were scoring above thresholds of psychological distress particularly for anxiety and depression, with the effects largest in children with preexisting mental illness. School closures have been found to exacerbate food insecurity, which affected around 14 percent of all U.S. school children prepandemic. By fall 2020, the Coronavirus Tracking Survey reported 24.7 percent of all U.S. families with school-age children experienced food insecurity, with African American and Hispanic/Latino families experiencing food security at triple the rate of white families. Food insecurity has longer-term effects on both health and learning capabilities, and attendant costs to the future lives and prosperity of these children.

These health harms however do not consider the broader long-tail effects of our two previous points, loss of learning and exposure to abuse and neglect. Increasing education level is strongly correlated with positive long-term health outcomes including health status and life expectancy. Previous inequities in the U.S. education system have contributed to the health gaps in U.S. society that COVID-19 exploited, and the evidence suggests these inequities are growing consequent to school closures. By contrast, exposure to traumatic experiences such as abuse and neglect is associated with a variety of poorer health outcomes including declining overall health status, worse mental health and higher risk of coronary heart disease, stroke and asthma. Child abuse is also linked to poorer educational attainment including lower attendance, lower test scores, more frequent placement in special education programs, and higher rates of alcohol and drug use.

In summary, in spite of the increasingly polarized debate about school reopenings, community infection rates and prioritization of vaccination, it seems clear that both science and society are failing children. Children have proven uniquely resilient to COVID-19, but many are already suffering lasting educational, mental and physical harms. The greatest harm is falling on the most vulnerable children, and yet we know so little of the true extent and duration of these harms, because relatively little research has focused on them, compared to the research on COVID-19-related spread and mitigation.

School closures are a prominent example where following the science is not in itself an answer. These are hard decisions based on ethical and moral considerations for elected officials to make, in ways that acknowledge the evidence on the harms, the requirement for safeguarding and the emerging evidence on COVID-19. Understanding the evidence on the potential trade-offs for children is a critical component of such policies and decisions. It is time science and society elevated this central responsibility.

This is an opinion and analysis article.

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