



# COVID-19 in Child Care and Preschool Settings

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## Abstract

This research review summarizes what is known about the extent to which COVID-19 spreads in child care and preschool programs. It synthesizes findings from 11 studies that measure transmission in these settings, both in the United States and internationally. The available evidence suggests that early learning programs are not associated with increased risk of contracting COVID-19 when health and safety precautions are in place.

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

## Acknowledgments

This brief benefited from the expertise of Deanna Marshall, Clinical Research Coordinator, PolicyLab at Children's Hospital of Philadelphia; and Abbey Alkon, Professor, University of California, San Francisco (UCSF) School of Nursing.

This work was supported by the Chan Zuckerberg Initiative, Heising-Simons Foundation, and Silver Giving Foundation. Core operating support for the Learning Policy Institute is provided by the S. D. Bechtel, Jr. Foundation, Heising-Simons Foundation, William and Flora Hewlett Foundation, Raikes Foundation, and Sandler Foundation.

## Overview

In this research summary, we clarify what is known about the extent to which COVID-19 spreads in child care and preschool programs by synthesizing findings from 11 studies conducted between January 2020 and January 2021 that measure transmission in these settings, both in the United States and internationally. (See [Appendix](#) for a summary of each study's findings.) This synthesis is meant to augment the summaries of the evidence on [COVID-19 spread in k-12 schools](#) and [in children in general](#) with a focus on the spread of COVID-19 in child care and preschool settings. The available evidence suggests that early learning programs are not associated with increased risk of contracting COVID-19 when health and safety precautions are in place.

## Defining Terms

- **Secondary transmission:** transmission from one individual to another within a single setting (e.g., a child care or preschool setting)
- **Community prevalence:** an assessment of COVID-19 spread within a community (e.g., the number of new cases per 100,000 residents per day)

## To What Extent Does COVID-19 Spread in Child Care and Preschool Settings?

Participating in child care and preschool does not increase children and staff's risk of contracting COVID-19 when providers take precautions such as increased cleaning, enforcing social distancing, and wearing masks. One large-scale, nationwide survey of child care providers conducted in spring 2020 found that staff whose programs were open and serving children birth through school age were no more likely to contract COVID-19 than staff whose programs were closed, even after

controlling for community prevalence. A study of Mississippi children under 18 in fall 2020 similarly found that children who had recently attended school or child care were no more likely to test positive than children who did not.

Population-based studies of early learning programs generally identify little transmission within these settings, and most cases in early childhood settings were contracted in the community. For example, a study of child care programs in Rhode Island serving infants through school-age children found that out of the 666 programs that were open in spring 2020, 29 programs (4.4% of open programs) identified likely cases of COVID-19, but just four of these programs (0.6%) appeared to have had any secondary transmission. Stated differently, more than 99% of programs had no evidence of secondary transmission. In North Carolina, a study of COVID-19 cases in 11 school districts with more than 90,000 p-12 students and staff found 773 single cases of COVID-19 (<0.9% of students and staff attending in person) but just 32 cases of secondary transmission (<0.04%). Of these secondary cases, the majority came from four clusters in which students were not wearing masks, including one prekindergarten program that later changed its mask policy.

International studies from Australia, England, Italy, and Singapore also suggest that there is little transmission in child care and preschool settings serving children birth to age 5. For example, a study of 38,000 early care and education programs in England identified just 16 events of secondary transmission (representing 0.4% of programs). A study from New South Wales, Australia, identified 10 primary cases of COVID-19 across 4,600 early childhood education programs (0.2% of programs). Only one program (0.02%) showed evidence of secondary transmission; in this case, one staff member infected six children and six other staff members. A similar study of a province in Italy identified no secondary transmission in infant and toddler centers or preschools.

### **Where Did Secondary Transmission Originate in the Few Cases in Which It Occurred?**

In the limited instances in which secondary transmission occurred in child care and preschool settings, staff accounted for almost all of the initial cases. Staff transmitted the virus to other staff members more often than to children, indicating the importance of masking and social distancing among adults in child care and preschool settings. In all the studies we reviewed, only the study of schools in England identified any cases in which children under age 5 transmitted COVID-19 to staff or other children. This study documented 6 events across 38,000 programs in a 7-week period (0.02% of programs), resulting in 20 cases. Contact tracing studies show that some children who acquired the virus in child care settings did transmit it to their families. Studies examining outbreaks in child care programs in Poland and in Salt Lake County, Utah, for example, identified instances in which staff infected children, who in turn infected their family members. The children, some of whom were under age 2 and others who were school age, were mostly asymptomatic or exhibited mild symptoms. These studies suggest the benefit of contact tracing and testing for children attending child care programs, given that children are often asymptomatic but can be carriers and transmit the virus to people with whom they have close contact.

## **What Mitigation Strategies Have Been Employed in Child Care and Preschool Settings?**

Studies show that many programs in the United States have been vigilant about cleaning, disinfecting, and health screening. According to a nationally representative survey of child care providers in spring 2020, child care providers whose programs remained open for children birth through school age reported using several mitigation strategies, including increased cleaning, disinfecting, and handwashing (>90%), and health screening (70%). Enhanced cleaning and health screening were mentioned in most of the studies we reviewed. Some early learning programs, such as Head Start, must adhere to stricter guidelines than others.

It is not clear whether child care and preschool programs enforced social distancing in many of the studies we reviewed, although many programs appeared to be maintaining stable cohorts. Of U.S. child care providers surveyed in spring 2020, 68% said they practiced social distancing among children and 54% maintained stable cohorts.

Mask use was required of adults in most of the child care and preschool settings studied, including in North Carolina, Rhode Island, and Salt Lake County, Utah.<sup>1</sup> Masks were not used for children under age 2, per public health guidance, and were generally optional for children ages 2–5. The survey conducted in spring 2020 showed that only 12% of children over age 2 wore masks. The study of North Carolina school districts noted that one of the few outbreaks that occurred during the study period was in a prekindergarten where masks were not required for children ages 2–5.

## **What Is the Context in Which These Studies Were Conducted?**

These studies are informative in the aggregate, although they have several limitations. One is that widespread surveillance testing (testing of individuals regardless of symptoms or contact with a confirmed case) was not in effect in most studies, meaning that asymptomatic individuals were not tested until a close contact presented with symptoms. As a result, asymptomatic cases may have gone undetected—and children are more likely than adults to be asymptomatic. Another limitation is that these studies were conducted prior to the introduction of new variants of COVID-19, which seem to spread more quickly than the original strain (SARS-CoV-2).

Several of the studies we reviewed were conducted during periods of low community prevalence. Studies conducted in Australia, England, and Singapore, for example, had between 0 and 3 cases per 100,000 residents per day during the study period. The study from England showed that outbreaks were more likely in schools with high community prevalence of COVID-19. However, other studies conducted in contexts in which community prevalence was higher found little transmission. In Rhode Island, for example, there were as many as 87 cases per 100,000 residents per day during the period studied, and in Mississippi and North Carolina there were between 70 and 200 cases per 100,000 residents per day. This context is important since there is a higher likelihood of staff or students attending school while infected when community prevalence is high.

## Appendix: Summary of Studies

Below we briefly describe 11 studies published between January 2020 and January 2021 that examine the spread of COVID-19 in child care or preschool settings. For each paper, we provide a brief study description (who was studied, where, when, how, and under what conditions); describe the mitigation strategies used in the child care or preschool setting; state the key findings; and identify the takeaway for an early learning audience. We additionally provide data on local community prevalence during the study period for context.<sup>2</sup>

### COVID-19 Transmission in U.S. Child Care Programs, January 2021

- **Location:** United States, nationwide
- **Study description:** This study analyzed the results of a national survey of 57,000 child care providers in April and May 2020 to identify whether staff who were working in child care programs serving children birth to school age were more likely to contract COVID-19 than staff whose programs were closed. The study controlled statistically for community prevalence, which varied widely.
- **Mitigation strategies:** Child care providers whose programs remained open reported using several mitigation strategies during this period, including increased cleaning, disinfecting, and handwashing (>90%); health screening (>70%); social distancing among children (68%); cohorting (54%); and mask wearing among adults (35%). Only 12% of respondents said that all children over age 2 were required to wear masks.
- **Findings:** Authors found no evidence that exposure to a child care program increased the likelihood of getting the virus. This pattern held while controlling for community prevalence.
- **Takeaway:** Results suggest that working in a child care program does not increase individuals' risk of contracting COVID-19.

### Factors Associated with Positive SARS-CoV-2 Test Results in Outpatient Health Facilities and Emergency Departments Among Children and Adolescents Aged <18 Years, December 2020

- **Location:** Mississippi, United States
- **Study description:** This study surveyed the families of a random sample of children under age 18 who received a COVID-19 test in Mississippi from September 1 to November 5, 2020. It compared the exposure of children with a positive test result to those who received a negative result. Of the 397 children studied, 82 were under age 4 and 90 were between ages 4 and 8. Community prevalence during this period was high, from 92 to 198 cases per 100,000 residents per day.
- **Mitigation strategies:** Most parents reported that children and staff wore masks inside school and child care buildings, as recommended by the Mississippi Department of Public Health. Other mitigation strategies were not discussed in this study.
- **Findings:** Children who attended school or child care during the 14 days prior to being tested were not more likely to have a positive test result than those who did not attend. Parents of children with a positive test were less likely than other parents to report consistent mask use in schools among children and staff.

Children who received a positive result were also more likely to have attended gatherings with people outside of their households (e.g., social functions, activities with children, visitors at home). Children were more likely to have been exposed to a family member with COVID-19 than a school or child care classmate with COVID-19.

- **Takeaway:** Results indicate that attending child care programs and schools does not increase children's risk of contracting COVID-19, even during periods of high community prevalence.

### Implementing Mitigation Strategies in Early Care and Education Settings for Prevention of SARS-CoV-2 Transmission, December 2020

- **Location:** United States, eight states
- **Study description:** This qualitative study, conducted by the Administration of Children and Families with the Centers for Disease Control, examined Head Start programs in eight states from September to October 2020 to document what authors perceived to be successful implementation of mitigation strategies. Eight programs were selected for study by the Office of Head Start, each of which served 500 to 2,500 children across 5 to 17 centers. The researchers reviewed programs' standard operating procedures, surveyed staff, interviewed administrators, and conducted a virtual site visit of one program.
- **Mitigation strategies:** All programs offered a hybrid model with some in-person and some virtual learning. Mitigation strategies employed by all programs included requiring masks for staff, supervising handwashing for children, and increasing the cleaning and disinfecting of high-touch surfaces. While all programs conducted health screenings, strategies varied, with most conducting self-administered temperature checks upon arrival for staff and screening for signs of illness in children. Mask policies for children varied as well. Five of the seven surveyed programs reported increased cleaning and disinfecting of bedding and improved ventilation.
- **Findings:** Administrators and staff identified that flexible medical leave policies for staff; training on health and safety measures; and ongoing communication with parents, staff, and administrators were important parts of keeping programs safe and ensured proper implementation of health and safety guidelines.
- **Takeaway:** This study provides descriptive information that may be useful for child care programs looking to implement large-scale mitigation efforts, although the study includes minimal information on COVID-19 transmission to identify whether these strategies were effective.

### Incidence and Secondary Transmission of SARS-CoV-2 Infections in Schools, January 2021

- **Location:** North Carolina, United States
- **Study description:** The study tracked cases of COVID-19 in 11 school districts in North Carolina serving nearly 100,000 pre-k–12 students and staff from August 15 to October 23, 2020, when schools were open for in-person instruction, to measure the spread of COVID-19. Contact tracing of confirmed cases was conducted by the North Carolina Public Health Department. Community prevalence was relatively high during this period (between 73 and 139 cases per 100,000 residents per week).

- **Mitigation strategies:** Schools employed a hybrid model for in-person instruction, with one group attending Monday and Tuesday, another Thursday and Friday, and cleaning on Wednesdays. Districtwide mitigation strategies included universal masking for children over age 5 (masks optional for children ages 3–5), 6-foot social distancing, and daily symptom checks.
- **Findings:** 773 single cases of COVID-19 were identified out of 100,000 students and staff. There were 32 identified cases of secondary transmission. Of the secondary cases, the majority came from four clusters in which students were not wearing masks. One of these clusters was in a prekindergarten program that had six cases; the others involved students with special needs.
- **Takeaway:** Results suggest very little secondary transmission in preschools and k–12, even when community prevalence is relatively high, particularly when students and staff wear masks.

### Limited Secondary Transmission of SARS-CoV-2 in Child Care Programs—Rhode Island, June 1–July 31, 2020, August 2020

- **Location:** Rhode Island, United States
- **Study description:** A study conducted by the Rhode Island Department of Health examined all publicly reported COVID-19 cases in child care programs serving children birth through school age between June 1 and July 31, 2020. Community prevalence during this period was moderate, from a low of 21 to a high of 87 per 100,000 residents per day.
- **Mitigation strategies:** Monitoring by the Department of Public Health revealed high levels of compliance with state-mandated health and safety measures, including universal masks for adults, daily symptom screening, enhanced cleaning and disinfection, and a 14-day quarantine period for contacts of suspected cases.
- **Findings:** Out of 666 programs that were open, 29 programs identified likely cases of COVID-19. Twenty programs had a single case with no apparent secondary transmission. Five programs had between two and five cases each, but timing of symptoms suggested that the cases were not linked to transmission within the child care programs. Four of the 666 programs appear to have had secondary transmission, resulting in at least six cases in children and six cases in adults.
- **Takeaway:** Results suggest very little secondary transmission associated with child care programs.

### Novel Coronavirus 2019 Transmission Risk in Educational Settings, June 2020

- **Location:** Singapore
- **Study description:** This study examined national contact tracing data in Singapore from February to March 2020 (before schools closed in early April) to identify how COVID-19 spread in school settings serving children birth to school age. All contacts of identified cases were tracked and tested. Community prevalence during this period was low, with a high of just under 1 new case per 100,000 residents per day.<sup>3</sup>
- **Mitigation strategies:** Schools during this period conducted enhanced cleaning and reduced mixing of students, such as canceling extracurricular activities and staggering breaks. The authors did not address mask policies.

- **Findings:** Three cases of COVID-19 were identified in three separate schools: one middle school student, one 5-year-old preschool student, and one preschool teacher. Contacts of the initial cases were traced and tested, and while many of the preschool children had COVID-19-like symptoms (e.g., cough, runny nose, or in a few instances, fever) no other students tested positive. The preschool staff member, however, infected 16 other staff members and 11 of their household contacts.
- **Takeaway:** Results suggest very little secondary transmission in preschool settings but suggest the importance of social distancing and masking for staff.

### SARS-CoV-2 Cluster in Nursery, Poland, January 2021

- **Location:** Poland
- **Study description:** This study examined the characteristics of a cluster of cases that occurred in a single infant and toddler child care center in Poland 2 weeks after reopening from lockdown on May 18, 2020, to understand how COVID-19 spreads among children. The center served 25 children ages 2 and under. Community prevalence was low during this period, with around 1 new case per 100,000 residents per day.
- **Mitigation strategies:** The child care center reported that children were divided into three stable groups with two staff each, with no mixing of staff or children. Caregivers wore masks but children did not, as masks are not recommended for children under age 2. Families dropped children off outside while wearing masks and did not enter the facility.
- **Findings:** On May 31, a staff person reported contact with a symptomatic family member, and the center closed. The staff person received a positive test on June 4, and subsequently 104 children, staff, and their family members were tested. A total of 29 individuals tested positive, included four additional staff members, three of their children, eight children attending the facility, three of their siblings, eight parents, and one grandparent. All children were asymptomatic. Overall, 27% of individuals tested had COVID-19.
- **Takeaway:** This study shows that infants and toddlers can spread COVID-19 to other children and adults and that child care centers can seed outbreaks, which may go undetected unless asymptomatic children are tested.

### SARS-CoV-2 Infection and Transmission in Educational Settings: A Prospective, Cross-Sectional Analysis of Infection Clusters and Outbreaks in England, December 2020

- **Location:** England
- **Study description:** This study examined public health reporting and contact tracing data from public schools in England serving nearly 1 million children, including about 265,000 children at 38,000 early care and education programs serving children birth to age 5. The study took place from June 1 to July 17, 2020, when schools reopened after a period of lockdown. Community prevalence was relatively low during this time, with the number of new cases ranging from 1 to 2 per 100,000 residents per day during this period.
- **Mitigation strategies:** Schools required reduced group size and cohorting, social distancing, and frequent handwashing. Mask policies were not addressed in the study.

- **Findings:** There were 21 identified single cases of COVID-19 among 38,000 early care and education programs (the study did not report the total number of children and staff in these programs). There were 16 cases of secondary transmission in early care and education programs, and in 6 cases, children transmitted the virus to classmates or staff. The authors found a strong association between outbreaks and regional COVID-19 incidence.
- **Takeaway:** Results suggest very little secondary transmission in early care and education programs as well as elementary schools, although the number of school cases should be expected to rise with community prevalence.

### Secondary Transmission of COVID-19 in Preschool and School Settings in Northern Italy After Their Reopening in September 2020: A Population-Based Study, December 2020

- **Location:** Reggio Emilia, Italy
- **Study description:** This study describes public data on transmission of COVID-19 among students and staff after the reopening of schools in the province of Reggio Emilia, Italy, from September 1 to October 15, 2020. Community prevalence ranged from 1 to 10 new cases per 100,000 residents per day in Italy during this period.
- **Mitigation strategies:** Schools required surgical masks for older students and staff but no masks for children birth to age 5 or elementary students; desks 1 meter (3 feet) apart (students attended in shifts when this was not possible at full capacity); and reduced mixing of students—for example, canceling extracurricular classes.
- **Findings:** There were 38 single cases out of 31,000 students attending school, including 8 cases in infant and toddler centers and preschools. There were no identified cases of secondary transmission in infant and toddler centers and preschools.
- **Takeaway:** Results suggest very little secondary transmission in infant and toddler centers and preschools.

### Transmission Dynamics of COVID-19 Outbreaks Associated with Child Care Facilities—Salt Lake City, Utah, April–July 2020, September 2020

- **Location:** Salt Lake County, Utah
- **Study description:** This study examined contact tracing data from three child care facilities serving children birth through school age that experienced COVID-19 outbreaks in Salt Lake County, Utah, between April 1 and July 10, 2020, to understand the role that child care programs play in community transmission. At the beginning of the study, community transmission was moderate, at 44 cases per 100,000 residents per day, but it increased to 283 cases per 100,000 residents per day by the end of the study.
- **Mitigation strategies:** All three facilities reported conducting enhanced cleaning and disinfection and symptom checks prior to the outbreak. Two of the three programs required masks for adults, while none required masks for children, regardless of age.

- **Findings:** The outbreaks, which in each case began with a staff member, resulted in at least 31 cases of COVID-19. Twelve cases were among children in the facility, all of whom had mild or no symptoms. There were at least two asymptomatic children (ages 8 months and 8 years) who contracted COVID-19 in child care facilities and spread it to the community, resulting in 12 cases in household contacts (26% of all known contacts), including one parent who was hospitalized.
- **Takeaway:** Results show that children can contract COVID-19 in child care settings and transmit the virus to household contacts. Incomplete mitigation strategies (i.e., failure to require facial coverings) were present and may be associated with these results.

## Transmission of SARS-CoV-2 in Australian Educational Settings: A Prospective Cohort Study, August 2020

- **Location:** New South Wales, Australia
- **Study description:** This study examined population-wide contact tracing data from New South Wales, Australia, from January 25 to April 9, 2020, at which time there were 1.2 million students and 140,000 staff attending 3,000 schools and approximately 4,600 early childhood education and care programs. The study monitored close contacts of all confirmed cases for 30 days. Schools were open until March 23, 2020, when local cases peaked; after this date only children ages 5 and younger and children of essential workers attended in person. Even at its peak, community prevalence in this study was low, at less than 3 cases per 100,000 residents per day.
- **Mitigation strategies:** Schools that were open followed guidance for physical distancing, hygiene measures, and cleaning. The study does not say what these guidelines entailed.
- **Findings:** There were 10 identified cases of COVID-19 across 4,600 early childhood programs. Three of these 10 programs participated in enhanced contact tracing investigations. Only one program showed evidence of secondary transmission; in this case, one staff member infected six children and six other staff members.
- **Takeaway:** Results suggest very little secondary transmission in child care and preschool settings.

## Endnotes

1. However, masks were not required of staff in Australia and England, and the U.S. survey conducted in April–May 2020 showed that only 35% of child care providers wore masks during the study period, although this was early in the pandemic before guidance changed.
2. For U.S. studies, data on local community prevalence are from the Centers for Disease Control and Prevention [COVID Data Tracker](#). For international studies, the data on the number of new cases per day per million residents (smoothed) were from: Roser, M., Ritchie, H., Ortiz-Ospina, E., & Hasell, J. (2020). Coronavirus pandemic (COVID-19). OurWorldInData.org. <https://ourworldindata.org/coronavirus/country/united-kingdom?country=GBR~SGP~POL>. For the studies of Salt Lake City and New South Wales, we used data on community prevalence provided by the study's authors.
3. There were 9.5 new cases per million on March 29, 2020.

Brief originally published April 13, 2021 | Document last revised April 20, 2021  
Revisions are noted here: <https://learningpolicyinstitute.org/cccps-update>