

RESEARCH NOTE

Public School Operating Status During the COVID-19 Pandemic and Implications for Parental Employment

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ABSTRACT

Parents rely on public schools to maintain paid work outside the home. The COVID-19 pandemic caused unprecedented closures of this critical resource in spring 2020. In the fall of 2020, school districts across the country reopened under varied instructional modes. Some school districts returned to in-person instruction; some operated remotely. Others reopened under hybrid models, wherein students alternated times, days, or weeks of in-person instruction. To capture this variation, we developed the Elementary School Operating Status (ESOS) database. ESOS provides data on elementary school districts' primary operating status in the first grading period of the 2020-2021 school year, covering 25 million students in over 9,000 school districts in all 50 states, the District of Columbia, and Puerto Rico. In this research note, we introduce these data and show extensive variation in school operating status at the state and school district levels. We show that school districts with greater representation of Black and Hispanic students were less

likely to offer in-person instruction. We also show that fewer in-person elementary school instruction days was associated with reductions in maternal employment. ESOS is a critical source of information to support plans to address long-term implications for students who experienced less in-person learning over the past year, and reentry support for mothers who exited employment in the absence of in-person instruction and care.

BACKGROUND

Public schools are part of the critical infrastructure of education and care for children in the United States. During the COVID-19 pandemic, schools experienced unprecedented closures across all states. Many moved their operations online for extended periods (McElrath 2020), and some school districts have not reopened for in-person instruction in over a year (Thompson 2021). Without alternative childcare arrangements and increased homeschooling demands, a staggering number of mothers left the labor force (Alon et al. 2020; Heggeness 2020; Landivar et al. 2020; Petts et al. 2020). One in three women who left employment during the pandemic cited childcare demands as a primary reason for their departure (Heggeness & Fields 2020). And mothers, more than fathers, left employment in states where remote schooling was more common (Collins et al. 2021).

During summer 2020, states required their school districts to develop continuity of learning plans. School districts across the United States developed very different operating plans, resulting in a patchwork of K-12 programming at the start of the 2020-2021 school year. Many

school districts reopened in remote status, while others reopened in person. Yet another group of school districts reopened in hybrid status, offering limited attendance to cohorts that alternated times, days, or weeks of in-person instruction. These approaches were a response to a rapidly changing landscape of infection, federal guidance, state and local mandates, teacher union negotiations, and parental surveys (CDC 2021). To understand the resulting variation in school reopening, we collected comprehensive data on school districts' reopening status focusing on elementary school students because, in many districts, these plans differed from options offered to older students. Elementary students are of key concern in analyzing parental employment as young students are most likely to require close supervision and assistance to complete remote education (Dorn et al. 2020).

We developed the Elementary School Operating Status (ESOS) database (Landivar et al. 2021), which provides data on school districts' primary operating status in the first grading period of the 2020-2021 school year. These data are available for 9,195 elementary school districts, representing all 50 states, the District of Columbia, and Puerto Rico. Here, we introduce this data source, show the extensive variation in school operating status at the state- and school-district level, and illustrate some of the analytical capabilities of these data. We provide evidence that school districts with greater representation of Black and Hispanic students were less likely to offer in-person instruction. We also show that fewer in-person elementary school instruction days were associated with reductions in maternal labor force participation.

EDUCATION: FEDERAL, STATE, AND LOCAL OVERSIGHT

U.S. public schools operate within a complex government legislative structure that leads to heterogeneity across states and local school districts (Finn Jr. & Petrilli 2011). To access funding, the federal government mandates minimum school day lengths and

benchmarks school performance (Lynch 2016). However, federal funding only accounts for 8 cents of each dollar, whereas states and local communities provide 83 cents for every dollar spent on public schools (U.S. Department of Education 2018), with a large share based on local property taxes (Reschovsky 2017). These stakeholders create a complex public school system that yields disparate funding and educational outcomes across school districts (Morgan & Amerikaner 2018).

With decision-making largely residing at the state or local level, school reopening was determined by state and local governments as one component of broader COVID-19 response plans (Ballotpedia 2021). At the start of the 2020-2021 school year, California's state government mandated online learning in counties where cases of COVID-19 remained elevated, and the Oregon governor's directives on school operations were so strict that most schools could not reopen (Cowan 2020; Oregon Health Authority 2020). Many states, such as Illinois and Pennsylvania, allowed for more local discretion in schools' reopening plans, resulting in greater internal variation in school operations (Goldstein 2020). On the other hand, the governors of Arkansas and Florida mandated school reopening, resulting in mostly in-person operations at the start of the school year (Demillo 2020; Fraser et al. 2020).

THE ELEMENTARY SCHOOL OPERATING STATUS DATABASE

In the absence of federal government plans to collect detailed school district level data on school reopening, we created the Elementary School Operating Status (ESOS) database. ESOS is the most comprehensive database on school district operating status for elementary-aged students. While existing databases on school reopening provide data for the largest school districts, we cover the majority of school districts: 9,195 of the approximately 13,000 school districts serving all age groups and population sizes. We collect data for districts that serve elementary schools with a minimum of 500 students, which yields coverage for all 50

states, the District of Columbia and Puerto Rico. Data are collected from elementary and unified school districts, focusing on plans for students in grades K-6, covering approximately 25 million students. ESOS provides: (1) operating status (in person, hybrid, remote); (2) type of hybrid program (part-day, part-week, alternating weeks); (3) school district population size; (4) estimated number and share of children living in poverty in the school district; (5) number of students by grade; and (6) racial and ethnic composition of the school district.

We conducted an intensive data collection of materials available in the public domain. School districts must make school reopening plans broadly available to the public as parents and local communities must know schools' operating status to adjust their plans. We located the requisite information primarily on school district websites. For example, schools published letters sent to parents at the start of the school year announcing reopening plans and continued updates through news feeds, videos, and other presentations. Many schools also maintain active social media accounts where they provide operational status updates. We also used supplemental sources of information when the reopening plan or date was ambiguous (e.g., local newspapers) or when state governments or education boards provided the needed information. All sources have an associated date, which is critical to capture the same period across school districts: operating status as of September 20-30, 2020. We selected this date range because it is the point in the term that covers the majority of the first grading period across most school districts nationwide.

School districts were assigned a primary operating status based on the implemented plan for a majority of elementary school grade levels within the district. We coded schools as operating in person if they offered at least 4 days of in-person instruction per week. Schools were classified as remote if no days of in-person instruction were offered for a majority of the student population. Schools operating hybrid plans offered part day (fewer than 4 hours per day), part week (between 1-3 days a week), or rotating week schedules (cohorts attend

different weeks). Although schools may operate multiple programs, we classified the district by the most generous in-person option offered to a majority of students. That is, if schools offered in-person instruction to those that chose it but also supported hybrid or remote options, we classified the school as offering in-person instruction. Among schools not already operating primarily in remote status, all school districts offered a remote option, either broadly available to all who requested it or by medical waiver. However, these school districts were only classified as remote if the majority of the grades operated exclusively through remote learning.

Data are collected at the school district level. For analytical purposes, we also created a weighted aggregation (by student population size) of school district operating status at the state level (e.g., percent of districts in a state operating in in-person, remote, or hybrid status). The weights ensure that school districts have proportional representation. Data published thus far and presented here are wave 1 of data collection. A second wave of data collection will take place in spring 2021 to capture changes in elementary school districts' operating status over the year. Data and documentation for ESOS wave 1 are currently available at:

<https://osf.io/zeqrj/>.

SEPTEMBER 2020: SCHOOL OPERATING STATUS

Figure 1 presents an overview of primary operating status across states. Our data reveal that schools in the West (e.g., California, New Mexico) and along the eastern seaboard (e.g., Maryland, New Jersey) were predominantly remote. By contrast, six eastern seaboard states operated hybrid models (e.g., New York, Connecticut). Primarily in-person instruction took place in 27 states concentrated in the South and middle of the country. Figure 2 presents this at the school-district level. Many states were homogenous in operations (e.g., California, Maryland, and Oregon were primarily remote throughout) whereas other states had significant variation at the school-district level (e.g., New York, Pennsylvania, and Virginia).

Figure 3 displays reopening status by school district racial and ethnic composition. Following the definition of Hispanic-Serving Institution by the Department of Education, we classified school districts as having a large Hispanic student population if at least 25% of students were Hispanic. We classified school districts as having a large Black student population if at least 25% of students were Black, and as having an overrepresentation of White students if at least 75% of students were White. We show that school districts that had greater representation of Hispanic and Black students were more likely to be operating remotely. Half of school districts with a large share of Hispanic students were remote, as were 38% of school districts with a large share of Black students, compared to 11% of school districts where White students were overrepresented. Only 37% and 41% of school districts serving larger percentages of Hispanic and Black students, respectively, were operating in person, compared with 68% of school districts with predominately White student populations. ESOS shows stark racial and ethnic disparities in access to in-person learning in fall 2020.

SCHOOL OPERATING STATUS AND MATERNAL EMPLOYMENT

Mothers of school-aged children have experienced more extensive work-hour reductions and labor force exit than fathers (Collins et al. 2020; Landivar et al. 2020). Key to explaining this relationship may be the loss of in-person learning at schools. Using the Current Population Survey (CPS) (Flood et al. 2020), we assess how school operating status was associated with parental employment in fall 2020. As the CPS lacks adequate sample size to analyze data at the school-district level, we apply state-level aggregates. We create a weighted measure of in-person and hybrid instruction days representing the state-level average number of days children attended in person. We use CPS data for September-November (2019, 2020) to create an adequate sample of parents for state-to-state comparisons. We compare pre-pandemic employment levels reflected in 2019 to employment

during the first grading period of the 2020-2021 school year corresponding to the timeframe in ESOS wave 1. We restrict our sample to mothers and fathers ages 18–55 years with a youngest child 5–12 years.

Using fixed effects linear probability models to account for unobserved state-level characteristics, we find that mothers' labor force participation was higher in states that had a greater proportion of in-person school days. Figure 4 shows that in-person schooling was associated with a reduction in the gender gap in parents' labor force participation. This was driven through the association of in-person schooling and mothers' (but not fathers') employment. The benefits for mothers are roughly one-to-one: an increase of 1 day of in-person schooling is associated with nearly a 1 percentage point increase in mothers' labor force participation. States with in-person education saw little growth in the gender gap in labor force participation between 2019 and 2020, whereas states with more remote education had a widening of the gender gap in labor force participation by 4 percentage points. Hybrid plans were in between remote and in-person options, with a gender gap between 1 and 3 percentage points larger than in 2019, depending on the average number of days students attended in person. Consequently, we show in-person schooling helped reduce gender gaps in parents' labor force participation that grew during the pandemic.

CONCLUSION

Elementary school reopening status varied across states and districts in fall 2020. Remote learning was the modal instructional form for schools with a large share of Hispanic students, whereas in-person learning was most common for school districts where White students were overrepresented. School districts with a larger share of Black students were more evenly split between in-person and remote learning. We show remote learning is associated with reductions in maternal employment, whereas in-person education reduced the

gender gap in labor force participation. For each additional day of in-person schooling, we show nearly a 1 percentage point increase in maternal labor force participation. ESOS provides state and federal governments, policymakers, and advocacy groups with robust evidence to aid decision-making on school operations going forward. These data are also critical to support discussions and plans to address long-term implications for students who have experienced less in-person learning, as well as reentry support for mothers who have scaled back on employment in the absence of in-person instruction and care.

NOTE

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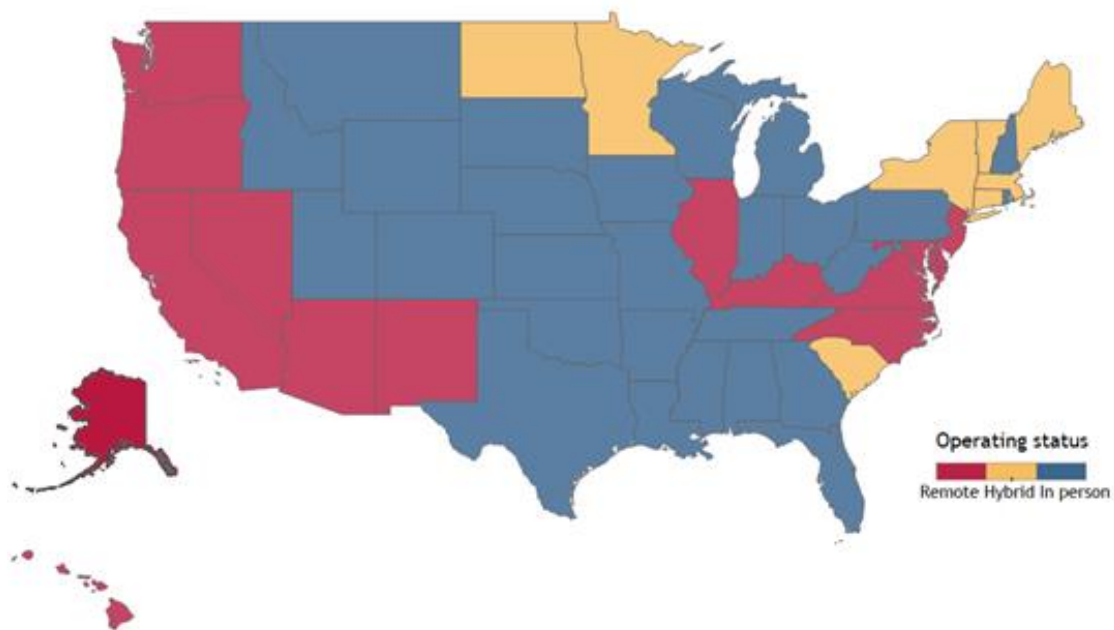
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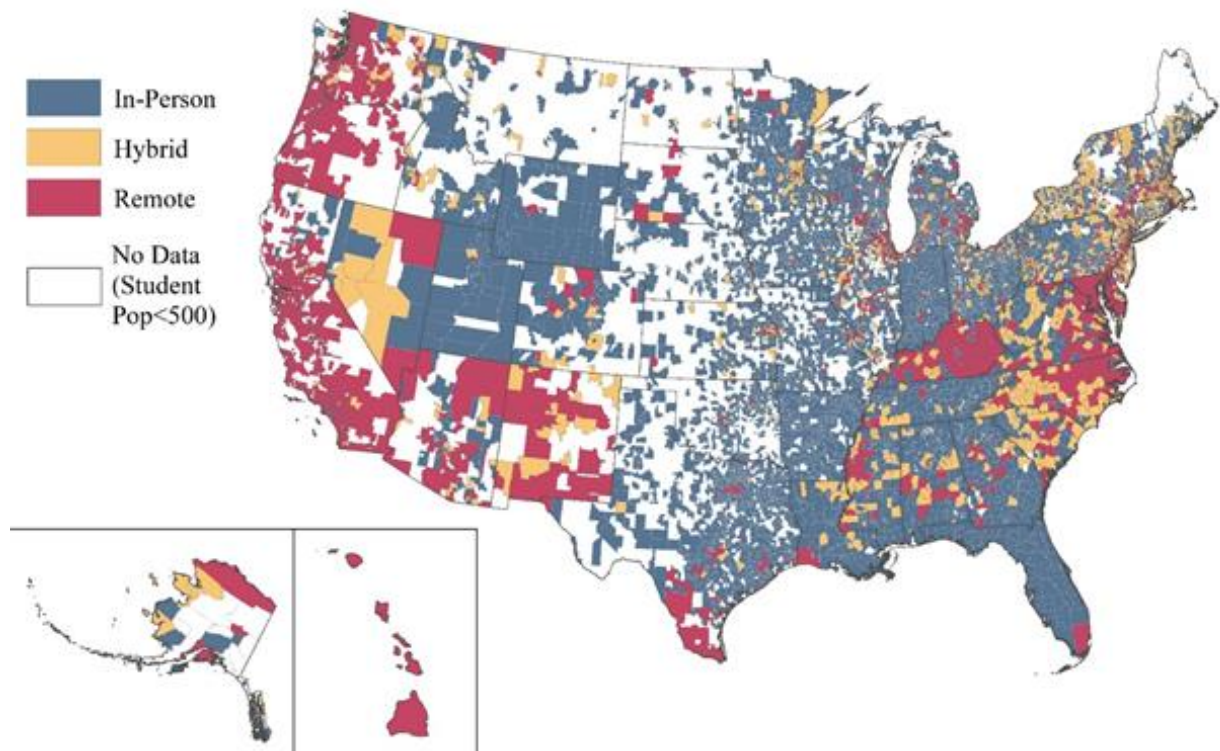
FIGURES

Figure 1. Elementary School Operating Status, September 2020, by State



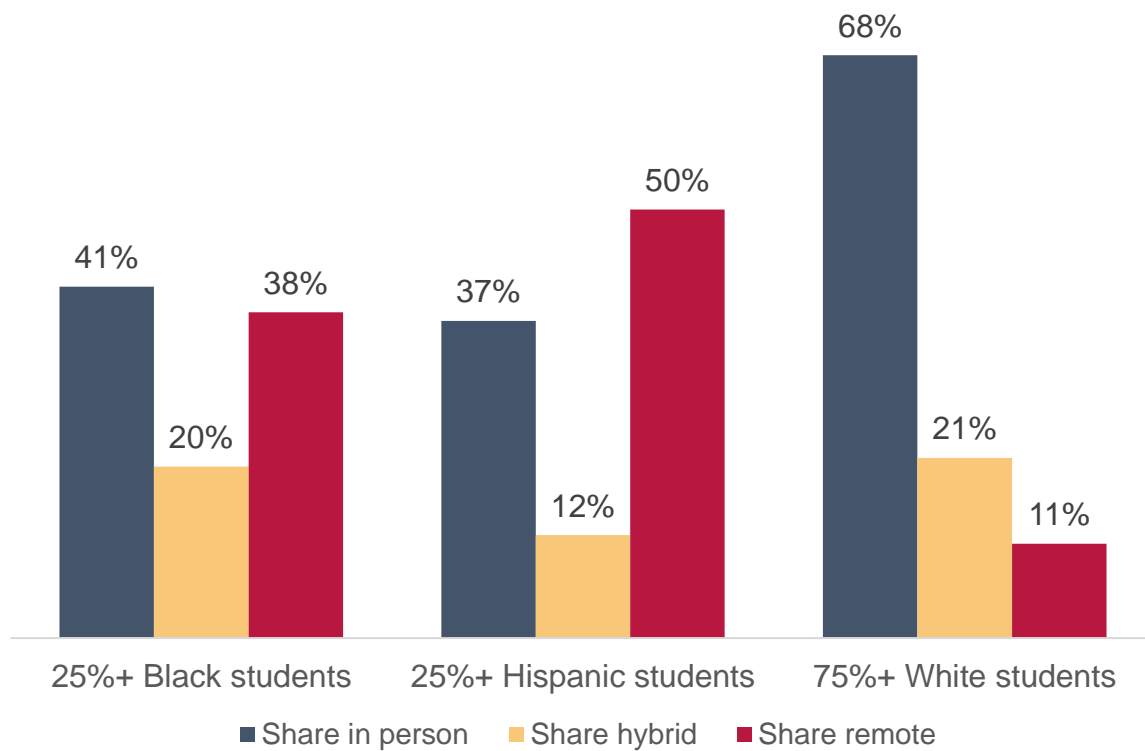
Source: Elementary School Operating Status, wave 1

Figure 2. Elementary School Operating Status, September 2020, by School District



Source: Elementary School Operating Status, wave 1

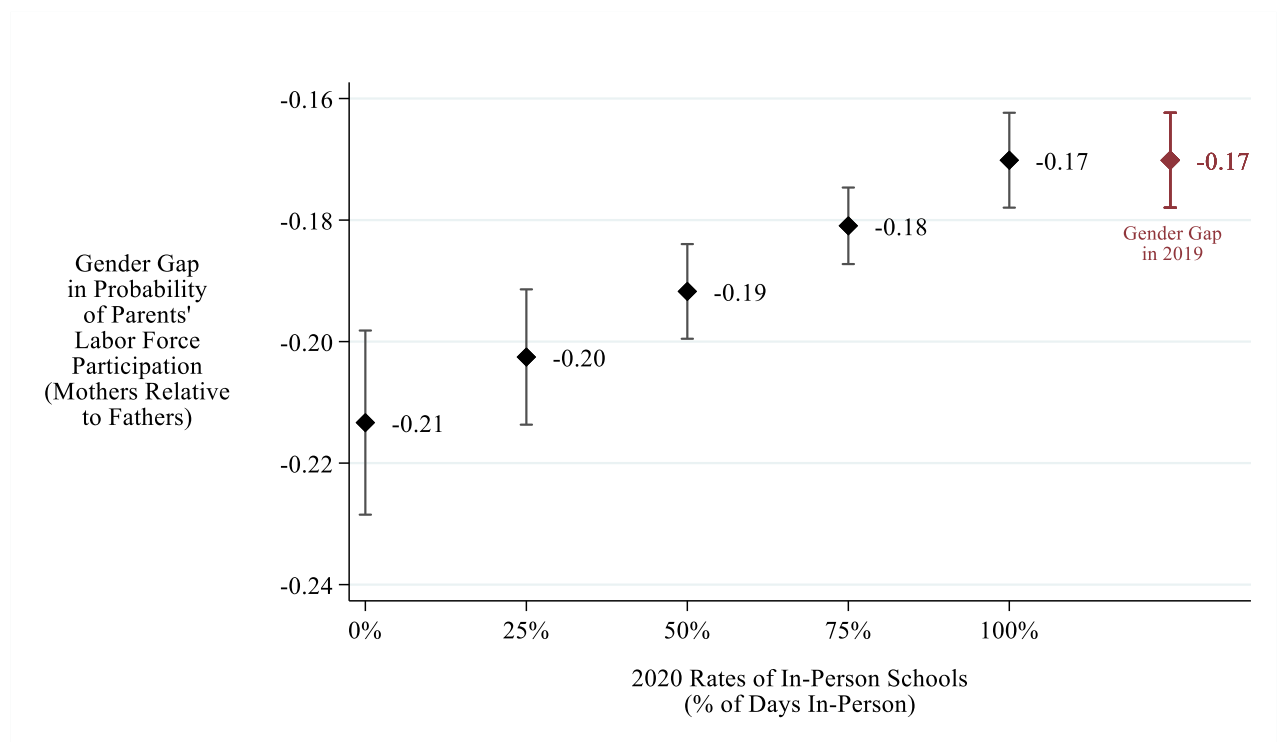
Figure 3. Share of School Districts Operating in In-person, Hybrid, or Remote Status by Race and Ethnicity of Student Population, September 2020



Note. School districts were classified as having a large share of Black or Hispanic students if Black or Hispanic students were at least 25% of the school district student population. White students were overrepresented if they were at least 75% of the school district student population.

Source: Elementary School Operating Status, wave 1

Figure 4. Gender Gap in Parents' Probability of Labor Force Participation by Average Share of Time in In-Person Schooling



Note. Results calculated from linear probability models with fixed effects for state and year to account for unobserved state characteristics and overall labor force shifts between 2019 and 2020. Results derived from an interaction between state-level percentage of in-person school days and gender. Controls include race, age, marital status, education, and state-level average daily cases of COVID-19 per 100,000 residents. Sample restricted to parents with youngest child aged 5-12 surveyed during fall 2019 and 2020 (September-November). $n=50,864$.