

Disparities in the implementation of COVID-19 prevention strategies among US K-12 public schools

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Abbreviations: CDC – Centers for Disease Control and Prevention; AAP – American Academy of Pediatrics; HVAC – heating, ventilation, and air conditioning; HEPA – high-efficiency particulate air; COVID-19 – Coronavirus Disease 2019; FRPM – Free- and Reduced-Price Meals; NCES—National Center for Education Statistics; NSCPS—National School COVID-19 Prevention Study; aOR—adjusted odds ratio; CI—confidence interval

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention (CDC).

Article Summary: Provides national prevalence estimates of COVID-19 prevention strategies among U.S. K-12 public schools and disparities by school-level characteristics.

What's Known on This Subject: Schools were encouraged to take a layered approach to COVID-19 prevention in schools, incorporating multiple strategies to curb transmission of SARS-CoV-2 and protect students, staff, and families while maintaining in-person learning.

What This Study Adds: Using survey data representative of U.S. public K-12 schools, we provide prevalence estimates of COVID-19 prevention strategies early in the 2021–2022 school year and describe disparities in implementation of strategies by school characteristics.

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Contributors Statement Page

Ms. Pampati conceptualized and designed the study, designed data collection instruments, conducted the data analyses, drafted the initial manuscript, and reviewed and revised the manuscript.

Drs. Rasberry, Lee and Barrios designed data collection instruments, conceptualized and designed the study, and reviewed and revised the manuscript.

Mr. McConnell, Drs. Timpe and Iachan, and Ms. Deng conducted the data analyses and reviewed and revised the manuscript.

Dr. Spencer and Ms. Moore conceptualized and designed the study, conducted the data analyses, and reviewed and revised the manuscript.

Drs. Murray and Conklin designed data collection instruments, coordinated and supervised data collection, and reviewed and revised the manuscript.

Drs. Tripathi and Adkins reviewed and revised the manuscript.

All authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

Abstract

Background: Schools have been encouraged to take a layered approach to COVID-19 prevention in schools, incorporating multiple strategies to curb transmission of SARS-CoV-2 and protect students, staff, and families while maintaining in-person learning.

Methods: The National School COVID-19 Prevention Study is designed to be representative of K-12 public schools in the United States. Using data from early in the 2021–2022 school year, we present weighted prevalence estimates of 21 COVID-19 prevention strategies (e.g., promoting vaccination). Bivariate associations between school characteristics (level, locale, poverty, having a full-time school nurse, having a school-based health center (SBHC)) and strategies were examined. Multivariable models examined relationships between school-level characteristics and strategies after adjustment for county-level COVID-19 case rate.

Results: Prevalence of prevention strategies ranged from 9.3% (offered COVID-19 screening testing to students and staff) to 95.1% (had a school-based system to report COVID-19 outcomes). Schools with a full-time school nurse or a SBHC had higher odds of implementing several strategies, including those related to COVID-19 vaccination. Additional disparities in prevalence of strategies by locale, school level, and poverty were identified. For example, mid-poverty schools had lower odds of having inspected and validated existing HVAC systems and used high-efficiency particulate air (HEPA) filtration systems in classrooms than low-poverty schools.

Conclusions: Overall, less resource intensive strategies had greater uptake than more resource intensive strategies. Advancing school health workforce and infrastructure, ensuring schools use available COVID-19 funding effectively, and promoting efforts in schools with the lowest prevalence of infection prevention strategies is needed.

Introduction

To prevent transmission of SARS-CoV-2, the virus that causes COVID-19, in school settings and maintain in-person learning during the 2021–2022 school year, schools implemented a range of COVID-19 prevention strategies.^{1–4} Since the beginning of the pandemic, the U.S. Centers for Disease Control and Prevention (CDC) has provided guidance for schools on strategies for COVID-19 prevention.⁵ This guidance evolved as new scientific evidence emerged, but has consistently included emphasis on layering multiple prevention strategies, as has guidance from the American Academy of Pediatrics.⁶ CDC updated guidance for COVID-19 prevention in schools in May 2022.⁵ Recommended core prevention strategies for schools included encouraging families, staff, and students to stay up to date on vaccines, staying home when sick, optimizing ventilation, reinforcing proper hand hygiene and respiratory etiquette, and cleaning and disinfection to reduce the risk of germs spreading by touching surfaces. Based on local COVID-19 context, additional prevention strategies included mask requirements, COVID-19 screening and diagnostic testing, cohorting, ventilation improvements, case investigation and contact tracing, and quarantine.

Recommended strategies vary in terms of expertise, staffing, infrastructure, and financial costs required for implementation, yet little is currently known about how implementation of COVID-19 prevention strategies varied across K-12 schools in the United States. This study aims to describe strategies implemented among a nationally representative sample of K-12 public schools early in the 2021–2022 school year. Additionally, we explored disparities by school-level characteristics (e.g., poverty) in implementation of strategies.

Methods

Data

The National School COVID-19 Prevention Study (NSCPS) was initiated to better understand implementation and effectiveness of infection prevention strategies in K-12 school settings.^{7,8} NSCPS is a

population-based, longitudinal study designed to be representative of K-12 public schools in the United States. The study used a stratified random sample of K-12 public schools using strata defined by region (Northeast, South, Midwest, West), school level (elementary, middle, high), and NCES locale (city, town, suburb, rural). The cohort of schools was followed for five waves of data collection from June 2021–May 2022. For each wave, a school-level designee was invited to complete a survey on COVID-19 prevention strategies and COVID-19 related outcomes.

This study presents data from Wave 2, the first wave of the 2021–2022 school year. The Wave 2 survey was administered October 5–November 19, 2021. Of the 1602 schools invited to participate, 437 (27%) completed the survey. The primary survey respondents were principals (n=340) and school nurses (n=39). Respondents were offered an electronic gift card valued at \$50 for their time and effort. This study was approved by ICF’s Institutional Review Board in accordance with CDC’s policies.

Measures

Twenty-one school-level prevention strategies (e.g., promoting vaccination) were examined and Supplemental Table 1 provides an overview of these strategies, survey questions, and operationalization. Two school-level characteristics were obtained from the NSCPS survey: having a school-based health center (SBHC) and having a full-time school nurse. School level was categorized as elementary (included any grade from K through 4), middle (included any grade 7 or 8), or high (included any grade from 10 to 12). Grades 5, 6, and 9 were not used in the categorization of school-level and schools that were categorized as multiple school levels (e.g., K-8) were considered separate schools for sampling purposes. NSCPS surveys were linked with the MDR database, which provides information about individual U.S. schools.⁹ The percent of students eligible for free or reduced-price meals (FRPM) in 2019–2020 was used as a proxy for school-level poverty.^{10,11} High-poverty schools had $\geq 76\%$ of students eligible for FRPM, mid-poverty had 26% to 75% eligible, and low-poverty schools had $\leq 25\%$ eligible.¹² School locale was categorized based on the NCES locale classification scheme: town, suburb, rural, or city.¹³

To capture local COVID-19 transmission dynamics preceding survey administration, the total number of new cases per 100,000 persons within the last 7 days in each school's county on September 23, 2021 (i.e., 2 weeks before the survey opened) was pulled from CDC's county-level community transmission level data.

Statistical Analyses

Survey nonresponse was accounted for through the creation of survey weights (Supplemental Table 2). We presented the weighted prevalence of each prevention strategy and 95% confidence intervals (CI) for the overall sample. Additionally, we presented the prevalence of strategies by school-level characteristics and used chi-square tests to identify differences. We ran separate weighted logistic regression models with each COVID-19 prevention measure as the dependent variable and school-level characteristics as the independent variables, controlling for new cases per 100,000 persons in the past 7 days in the county. Adjusted odds ratios (aOR) were presented and statistical tests were considered significant if p-values were <0.05. Analyses were conducted in R (version 4.1.2; The R Foundation) using the "survey" package.¹⁴

Results

Participating schools were heterogenous in terms of school level, urban status, school size, and the racial composition of schools (Supplemental Table 2).

Over two-thirds of schools reported having had a school-based system to report COVID-19 outcomes (95.1%), had a COVID-19 isolation space in school (92.5%), quarantined students identified as close contacts (83.5%), adhered to at least daily or between use cleaning schedules (79.7%), inspected and validated existing HVAC systems (74.6%), maintained a physical distance of 3 feet or more in classrooms (74.3%), offered COVID-19 diagnostic testing to students and staff (68.7%); and opened windows when safe to do so (66.8%; Table 1). Additionally, 66.4% of schools required masks for students and staff. Less than one-third of schools reported having offered COVID-19 screening testing to students and staff

(9.3%), installed or used HEPA filtration systems in classrooms (27.3%), provided COVID-19 vaccines on-campus to staff, students, or their families (30.9%).

Based on bivariate examinations, among seven strategies related to school-level mask requirements, ventilation improvements, and cleaning procedures, none varied by school level, two varied by NCES locale (required masks for students and staff; installed or used HEPA filtration systems in classrooms), four varied by school poverty (required masks for students and staff; inspected and validated existing HVAC systems; replaced/upgraded HVAC systems; installed or used HEPA filtration systems in classrooms), and opened doors when safe to do so varied by having a full-time school nurse and school-based health center (Table 2). After adjustment for all examined school-level characteristics and the county COVID-19 case rate, mid-poverty schools had lower odds of having inspected and validated existing HVAC systems (aOR: 0.37, 95% CI: 0.16, 0.84), used HEPA filtration systems in classrooms (aOR: 0.52, 95% CI: 0.28, 0.96), and opened windows when safe to do so (aOR: 0.48, 95% CI: 0.24, 0.95) than low-poverty schools. Rural schools had lower odds of having installed or used HEPA filtration systems in classrooms (aOR: 0.36, 95% CI: 0.17, 0.76) than city schools. However, rural schools had higher odds of having opened doors (aOR: 2.08, 95% CI: 1.03, 4.17) and opened windows (aOR: 4.51, 95% CI: 2.11, 9.60) when safe to do so compared to city schools. Town schools had lower odds of having required masks for students and staff than city schools (aOR: 0.38, 95% CI: 0.17, 0.85). Schools with a full-time school nurse had lower odds of having opened doors when safe to do so (aOR = 0.57, 95% CI: 0.34, 0.96).

Based on bivariate examinations, among seven strategies relating to physical distancing, isolation space, COVID-19 testing and screening, contact tracing, and quarantine protocols, none varied by school level, NCES locale, school poverty, and having a school-based health center (Table 3). Schools that had a full-time school nurse had a higher prevalence of having had a school-based system to report COVID-19 related outcomes (98.1% vs. 90.5%) and quarantined students identified as close contacts (88.0% vs. 76.6%). After adjustment for all examined school-level characteristics and the county COVID-19 case

rate, schools that had a full-time school nurse had higher odds of having quarantined students identified as close contacts (aOR: 2.02, 95% CI: 1.05, 3.91)

Based on bivariate examinations, among seven strategies relating to and efforts to promote and track vaccination of students and staff, three varied by school level (provided information on COVID-19 vaccines to students; provided COVID-19 vaccines on-campus to students, staff, or their families; tracked vaccination status of students), two varied by NCES locale (provided COVID-19 vaccines through school district events to staff, students, or their families; tracked vaccination status of staff), three varied by school poverty (provided information on COVID-19 vaccines to students; provided information on COVID-19 vaccines to students; provided COVID-19 vaccines through school district events to staff, students, or their families; Table 4). Schools that had a full-time school nurse had a higher prevalence of having provided parents or students with information about catching up on missed healthcare (e.g., routine vaccines; 56.7% vs. 45.5%), provided COVID-19 vaccines on-campus to staff, students, or their families (36.6% vs. 22.3%), and tracked the vaccination status of students (39.2% vs. 25.3%). Schools that had a school-based health center had a higher prevalence of having provided information on COVID-19 vaccines to students (56.6% vs. 40.9%), provided COVID-19 vaccines on campus to staff, students, or their families (49.4% vs. 27.2%), provided COVID-19 vaccines through school district events to staff, students, or their families (71.3% vs. 49.3%), and tracked vaccination status of staff (73.8% vs. 57.1%).

After adjustment for all examined school-level characteristics and the county COVID-19 case rate, compared to high schools, elementary schools had lower odds of having provided information on COVID-19 vaccines to parents (aOR: 0.49, 95% CI: 0.25, 0.97), provided information on COVID-19 vaccines to students (aOR: 0.15, 95% CI: 0.08, 0.29), provided COVID-19 vaccines on-campus to staff, students, or their families (aOR: 0.47, 95% CI: 0.26, 0.87), and tracked vaccination status of students (aOR: 0.45, 95% CI: 0.24, 0.83). Compared to high schools, middle schools had lower odds of having provided information on COVID-19 vaccines to students (aOR: 0.39, 95% CI: 0.20, 0.79), provided COVID-19 vaccines through school district events to staff students, or their families (aOR: 0.44, 95% CI:

0.21, 0.92), and tracked vaccination status of staff (aOR: 0.44, 95% CI: 0.20, 0.95). High-poverty schools had higher odds of having provided information on COVID-19 vaccines to students (aOR: 3.88, 95% CI: 1.81, 8.30) and provided COVID-19 vaccines through school district events to staff, students, or their families (aOR: 2.47, 95% CI: 1.23, 4.98). Mid-poverty schools had higher odds of having provided parents or students with information about catching up on missed healthcare (e.g., routine vaccines; aOR: 1.91, 95% CI: 1.06, 3.44). Rural schools had lower odds of having provided COVID-19 vaccines through school district events to staff, students, or their families (aOR: 0.45, 95% CI: 0.23, 0.88) and tracked vaccination status of staff (aOR: 0.45, 95% CI: 0.23, 0.90) than city schools. Town schools had higher odds of having tracked the vaccination status of students (aOR: 3.09, 95% CI: 1.36, 7.01) than city schools. Schools that had a full-time school nurse had higher odds of having tracked the vaccination status of students (aOR: 1.80, 95% CI: 1.07, 3.03). Schools that had a school-based health center had higher odds of having provided COVID-19 vaccines on campus to staff, students, or their families (aOR: 2.00, 95% CI: 1.03, 3.89) and of provided COVID-19 vaccines through school district events to staff, students, or their families (aOR: 2.25, 95% CI: 1.18, 4.30).

Discussion

Guidance from CDC released in May 2022 and the AAP recommended a layered approach to COVID-19 prevention in schools, incorporating multiple strategies to curb transmission of SARS-CoV-2 and protect students, staff, and families while maintaining in-person learning.^{5,6} These approaches were used to varying degrees by schools, as affirmed by this study. This heterogeneity might be, in part, due to school-level inequities which predate the COVID-19 pandemic (e.g., financial resources, available staff, environmental and physical school infrastructure) which affect schools' ability to implement the recommended infection prevention strategies. Findings not only reflect school-based responses to the ongoing pandemic, but also the expertise and resources required to implement infection prevention and control in schools more broadly.

In general, less resource intensive strategies had greater uptake than more resource intensive strategies. For example, most schools reported having a mask requirement for students and staff. In contrast, the prevalence was lower for providing COVID-19 screening testing to students and staff or providing COVID-19 vaccines on-campus to staff, students, or their families. Numerous facilitators to school-based COVID-19 testing and vaccination have been documented (e.g., partnerships with local health departments, workforce capacity, communication with parents and students), as well as challenges (e.g., staffing shortages, availability of testing supplies, lack of perceived community support, difficulty reporting test results and obtaining consent forms, low participation).¹⁵⁻²⁰ Identifying additional sources of support at the school, school district, community, health department, state, and federal level might help strengthen schools' capacity to respond to public health emergencies.

Several strategies which are recommended regardless of local COVID-19 community levels according to updates to CDC guidance released in May 2022,⁵ such as promoting routine vaccines, had low uptake. Differences in COVID-19 vaccination promotion by school level were likely because vaccines were not approved or widely available for most elementary-aged children at the time of survey administration. Only half of schools provided parents or students with information about catching up on missed healthcare (e.g., routine vaccines), which is concerning given declines in coverage of childhood immunizations during the COVID-19 pandemic.^{21,22} Schools can play an important role in educating about, linking to, or directly offering vaccines in accordance with local or state policies, including COVID-19 and routine pediatric vaccines (e.g., MMR and HPV vaccines) and CDC has resources for schools and community partners to support such efforts.²³

Schools with health infrastructure and personnel (i.e., having a school-based health center or full-time school nurse) were more likely to have certain prevention strategies in place even *after* adjustment for other school- and county- level characteristics. Schools with a school-based health center might be better equipped to respond to a public health emergency and provide certain health services (e.g., vaccines). School nurses provide health services to individual students and serve as champions for various school-

based health efforts, and the National Association of School Nurses and the AAP recommend that every school has a full-time school nurse.^{24,25} Nurses undergo training in infection prevention and control, serve as liaisons with local health officials, and are well-positioned to develop comprehensive emergency response procedures.^{26,27} Our finding that schools with a full-time school nurse were more likely to have several prevention strategies extends a robust body of research which has linked school nurses to health-promoting practices and programs in schools and positive student health and service related outcomes.^{24,28} In this study, approximately 60.4% of schools had a full-time school nurse and only 17.3% had a school-based health center. The White House's National COVID-19 Preparedness Plan explicitly acknowledges investing in the expansion of nurses in schools as a priority.²⁹ Such investments in the school nurse workforce, as well as in expanding the health infrastructure of schools, could not only provide immediate benefits for COVID-19 prevention in school settings but also lead to long term gains in emergency preparedness for schools, as well as positive downstream effects for other student health related outcomes.

Since March 2020, the federal government has approved billions of dollars in funding to cover pandemic related costs for K-12 schools through the U.S. Department of Education's Elementary and Secondary Schools Emergency Relief Fund,³⁰ the Governor's Emergency Education Relief Fund,³¹ the Department of Health and Humans Services' Head Start and Child Care American Rescue Plan funds,³² and the Epidemiology and Laboratory Capacity for Prevention and Control of Emerging Infectious Diseases Reopening Schools supplement.³³ Mid-poverty schools had the lowest prevalence of several prevention strategies, including higher-cost strategies to improve ventilation (e.g., having used HEPA filtration systems in classrooms), compared to low-poverty and high-poverty schools, as noted in a previous NSCPS publication.⁷ One possible hypothesis explaining this pattern is high-poverty schools might have more experience applying for federal funding and might be prioritized by state and local education agencies for these funds. In fact, a recent survey found that school districts with a higher percentage of free or reduced-price lunch eligibility were more likely to use federal COVID-19 funds for ventilation

improvements.³⁴ Low-poverty schools might have more substantial existing operational and discretionary funds to rely on for implementation of prevention strategies. Taken together, while all schools might benefit from additional technical assistance and support in implementing prevention strategies, mid-poverty schools, in particular, could require more strategic efforts.

Several limitations to our study are worth noting. First, the presence of prevention strategies was assessed through a survey given to school administrators. Nuances related to compliance, participation, and fidelity were not examined. Second, school administrator-report of certain prevention strategies might be subject to recall and social desirability biases. Third, the response rate for our survey was low (27%); however, the majority of school-level characteristics were not associated with survey participation based on our non-response analysis (Supplemental Table 2) and non-response weight adjustments were incorporated into all analyses.

Despite these limitations, this study expands the field's understanding of COVID-19 prevention strategies used by schools in the 2021-2022 school year, using data from a population-based sample drawn to be representative of K-12 public schools in the US. As survey administration coincided with the surge of the Delta variant of SARS-CoV-2, the time period examined represents one of high community transmission nationally, necessitating layered prevention strategies in *all* schools. Moving forward, schools might consider adapting to their local context and monitoring COVID-19 community levels to inform implementation of prevention strategies.³⁵ This study shows variation in the prevalence of strategy implementation, with lower implementation of several strategies that can be more resource intensive, particularly among mid-poverty schools, and increased implementation for several key strategies among schools with expanded health infrastructure (e.g., school nurses and/or SBHCs). Findings suggest a need to enhance efforts to ensure schools can take advantage of available federal funding for COVID-19 prevention, and they suggest advancing the school health workforce and infrastructure across U.S. schools might provide stronger support for current and future pandemic preparedness.

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421

422 Table 1. Prevalence of COVID-19 prevention strategies implemented by K-12 public schools in the
 423 United States – National School COVID-19 Prevention Study, United States, October 5–November 19,
 424 2021

Characteristic	% (95% CI) ^a
COVID-19 Prevention Strategy^b	
Required masks for students and staff	
Yes	66.4 (61.9 - 70.6)
No	33.6 (29.4 - 38.1)
Inspected and validated existing HVAC systems	
Yes	74.6 (69.8 - 78.8)
No	10.4 (7.5 - 14.1)
Don't know	15.1 (11.7 - 19.2)
Replaced/upgraded HVAC	
Yes	39.1 (34.3 - 44.0)
No	41.6 (36.6 - 46.7)
Don't know	19.4 (15.6 - 23.8)
Installed or used HEPA filtration systems in classrooms	
Yes	27.3 (23.3 - 31.7)
No	60.6 (55.6 - 65.3)
Don't know	12.2 (9.1 - 16.1)
Opened doors when safe to do so	
Yes	65.9 (61.2 - 70.2)
No	30.9 (26.6 - 35.4)
Don't know	3.3 (1.8 - 5.8)
Opened windows when safe to do so	
Yes	66.8 (62.2 - 71.1)
No	29.2 (25.1 - 33.6)
Don't know	4.0 (2.4 - 6.8)
Adhered to at least to daily or between use cleaning schedules	
Yes	79.7 (75.5 - 83.4)
No	20.3 (16.6 - 24.5)
Maintained physical distance in classrooms	
3 feet or more	74.3 (69.8 - 78.4)
No physical distancing requirements or less than 3 feet	25.7 (21.6 - 30.2)
Had a school-based system to report COVID-19 outcomes	
Yes	95.1 (92.5 - 96.8)
No/don't know	4.9 (3.2 - 7.5)
Had a COVID-19 isolation space in school	
Yes	92.5 (89.4 - 94.7)
No	7.1 (5.0 - 10.2)
Don't know	— ^c
Offered COVID-19 diagnostic testing to students and staff	
Yes	68.7 (63.8 - 73.3)
No	31.3 (26.7 - 36.2)
Offered COVID-19 screening testing to students and staff	

Yes	9.3 (6.9 - 12.5)
No	90.7 (87.5 - 93.1)
Conducted contact tracing	
Yes	53.4 (48.5 - 58.3)
No	41.5 (36.7 - 46.5)
Don't know	5.1 (3.3 - 7.8)
Quarantined students identified as close contacts	
Yes	83.5 (79.3 - 87.0)
No	16.5 (13.0 - 20.7)
Provided information on COVID-19 vaccines to parents	
Yes	65.8 (60.8 - 70.5)
No	30.4 (25.9 - 35.4)
Don't know	3.8 (2.2 - 6.3)
Provided information on COVID-19 vaccines to students	
Yes	43.6 (38.9 - 48.4)
No	52.7 (47.8 - 57.6)
Don't know	3.7 (2.2 - 6.2)
Provided parents or students with information about catching up on missed healthcare (e.g., routine vaccines)	
Yes	52.3 (47.0 - 57.6)
No	38.2 (33.2 - 43.5)
Don't know	9.5 (7.0 - 12.8)
Provided COVID-19 vaccines on-campus to staff, students, or their families	
Yes	30.9 (26.5 - 35.8)
No	67.6 (62.8 - 72.2)
Don't know	— ^c
Provided COVID-19 vaccines through school district events to staff, students, or their families	
Yes	53.0 (48.0 - 58.0)
No	47.0 (42.0 - 52.0)
Tracked vaccination status of students	
Yes	33.7 (29.1 - 38.6)
No	66.3 (61.4 - 70.9)
Tracked vaccination status of staff	
Yes	59.9 (55.0 - 64.6)
No	40.1 (35.4 - 45.0)
School-level characteristics	
School level	
Elementary	52.4 (51.1 - 53.7)
Middle	25.7 (24.6 - 26.8)
High	21.9 (20.8 - 23.0)
NCES locale	
City	29.4 (27.3 - 31.6)
Suburb	32.3 (29.9 - 34.7)
Town	12.9 (11.6 - 14.2)
Rural	25.4 (23.4 - 27.5)
School-level poverty	
Low-poverty	18.2 (14.7 - 22.2)

Mid-poverty	58.1 (53.0 - 63.0)
High-poverty	23.7 (19.6 - 28.4)
Full-time school nurse	
Yes	60.4 (56.1 - 64.5)
No	39.6 (35.5 - 43.9)
School-based health center	
Yes	17.3 (13.7 - 21.7)
No	82.7 (78.3 - 86.3)

HEPA = high-efficiency particulate air; HVAC = heating, ventilation, and air conditioning; NCES = National Center for Education Statistics

^aWeighted percents and 95% confidence intervals (CIs) are presented.

^bRefer to Supplemental Table 1 for survey questions and operationalization for infection prevention strategies.

^cPrevalence suppressed due to a relative standard error greater than >30%.

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Table 2. Prevalences and adjusted^a odds ratios examining associations between school-level characteristics and school-level mask requirements, ventilation improvements, and cleaning procedures – National School COVID-19 Prevention Study, United States, October 5–November 19, 2021

Characteristic	Required masks for students and staff (n=344)		Inspected and validated existing HVAC systems (n=360)		Replaced/upgraded HVAC (n=360)		Installed or used HEPA filtration systems in classrooms (n=359)		Opened doors when safe to do so (n=360)		Opened windows when safe to do so (n=359)		Adhered to at least to daily or between use cleaning schedules (n=360)	
	% ^b	aOR (CI) ^a	% ^b	aOR (CI)	% ^b	aOR (CI)	% ^b	aOR (CI)	% ^b	aOR (CI)	% ^b	aOR (CI)	% ^b	aOR (CI)
School level														
Elementary	64.7	1.08 (0.55, 2.12)	71.9	0.56 (0.26, 1.19)	37.2	0.66 (0.36, 1.20)	29.0	1.27 (0.68, 2.36)	68.4	0.98 (0.56, 1.71)	70.5	1.40 (0.78, 2.50)	78.4	0.66 (0.33, 1.33)
Middle	70.7	1.19 (0.56, 2.54)	76.0	0.70 (0.30, 1.64)	40.1	0.86 (0.44, 1.68)	26.7	1.12 (0.56, 2.24)	60.7	0.68 (0.36, 1.29)	64.3	0.97 (0.50, 1.86)	80.0	0.85 (0.36, 2.00)
High	65.1	Ref.	79.6	Ref.	42.5	Ref.	23.8	Ref.	65.8	Ref.	60.5	Ref.	82.8	Ref.
P-value ^c	0.50		0.40		0.69		0.63		0.36		0.17		0.70	
NCES locale														
City	79.7	Ref.	74.9	Ref.	44.3	Ref.	39.9	Ref.	62.5	Ref.	59.1	Ref.	78.7	Ref.
Suburb	78.4	1.40 (0.68, 2.89)	79.7	1.29 (0.63, 2.64)	42.9	1.10 (0.61, 1.98)	30.0	0.71 (0.39, 1.30)	67.4	1.45 (0.78, 2.71)	67.6	1.58 (0.85, 2.93)	83.4	1.76 (0.83, 3.73)
Town	49.2	0.38 (0.17, 0.85)*	72.5	1.02 (0.44, 2.36)	37.9	1.01 (0.48, 2.16)	28.6	0.83 (0.39, 1.78)	64.7	1.60 (0.78, 3.27)	59.9	1.55 (0.71, 3.38)	69.0	0.69 (0.31, 1.57)
Rural	51.8	0.65 (0.32, 1.30)	68.4	0.93 (0.45, 1.95)	34.5	0.99 (0.51, 1.91)	14.2	0.36 (0.17, 0.76)**	67.6	2.08 (1.03, 4.17)*	75.9	4.51 (2.11, 9.60)***	79.9	1.14 (0.51, 2.55)
P-value ^c	p<.001		0.33		0.48		p<.001		0.83		0.05		0.24	
School poverty														
Low-poverty	76.8	Ref.	88.1	Ref.	46.7	Ref.	39.1	Ref.	69.3	Ref.	75.6	Ref.	81.7	Ref.
Mid-poverty	57.4	0.57 (0.29, 1.12)	71.0	0.37 (0.16, 0.84)*	33.2	0.61 (0.33, 1.12)	21.4	0.52 (0.28, 0.96)*	62.8	0.75 (0.39, 1.45)	64.0	0.48 (0.24, 0.95)*	76.9	0.77 (0.35, 1.68)
High-poverty	82.1	2.73 (0.98, 7.59)	73.0	0.43 (0.17, 1.08)	47.0	1.05 (0.53, 2.08)	31.9	0.72 (0.35, 1.50)	69.1	1.11 (0.50, 2.47)	67.7	0.75 (0.32, 1.74)	85.2	1.45 (0.58, 3.62)
P-value ^c	p<.001		0.02		0.03		0.009		0.48		0.24		0.26	
Full time school nurse														
Yes	69.1	1.21 (0.70, 2.10)	75.3	1.11 (0.64, 1.92)	39.9	0.93 (0.58, 1.49)	26.5	0.85 (0.51, 1.41)	61.3	0.57 (0.34, 0.96)*	65.9	0.98 (0.59, 1.62)	77.4	0.57 (0.31, 1.06)
No	62.2	Ref.	73.4	Ref.	37.8	Ref.	28.6	Ref.	72.9	Ref.	68.2	Ref.	83.3	Ref.
P-value ^c	0.16		0.67		0.68		0.64		0.01		0.62		0.15	
School based health center														
Yes	76.9	1.67 (0.68, 4.11)	75.5	1.14 (0.54, 2.40)	49.6	1.57 (0.84, 2.94)	30.9	1.30 (0.69, 2.46)	54.8	0.69 (0.36, 1.34)	61.9	0.92 (0.47, 1.82)	74.6	0.65 (0.33, 1.27)
No	64.2	Ref.	74.4	Ref.	36.8	Ref.	26.5	Ref.	68.2	Ref.	67.8	Ref.	80.8	Ref.
P-value ^c	0.06		0.85		0.06		0.47		0.04		0.36		0.26	

aOR = adjusted odds ratio; CI = confidence interval; HEPA = high-efficiency particulate air; HVAC = heating, ventilation, and air conditioning; NCES = National Center for Education Statistics

^aFor each COVID-19 prevention measure, models adjusted for school-level characteristics (school-based health center, school level, NCES locale, % of students eligible for free or reduced-price meals [FRPM], full-time school nurse) and the total number of new cases per 100,000 persons within the last 7 days in each county the school resides on September 23, 2021. Adjusted odds ratios, 95% confidence interval, and number of observations included are presented for each model.

^bAll percents are weighted.

^cChi-square p-values are presented examining bivariate associations between each school-level characteristic and prevention strategy.

*p<0.05, **p<0.01 ***p<0.001; bolding indicates any finding that is significant at p<0.05

Table 3. Prevalences and adjusted^a odds ratios examining associations between school-level characteristics and school-level physical distancing, isolation space, COVID-19 testing and screening, contact tracing, and quarantine protocols – National School COVID-19 Prevention Study, United States, October 5–November 19, 2021

	Maintained physical distance in classrooms (n=362)		Had a school-based system to report COVID-19 outcomes % ^{b, c}	Had a COVID-19 isolation space in school (n=357)		Offered COVID-19 diagnostic testing to students and staff (n=357)		Offered COVID-19 screening testing to students and staff (n=357)		Conducted contact tracing (n=357)		Quarantined students identified as close contacts (n=332)	
Characteristic	% ^b	aOR (CI)		% ^b	aOR (CI)	% ^b	aOR (CI)	% ^b	aOR (CI)	% ^b	aOR (CI)	% ^b	aOR (CI)
School level													
Elementary	75.1	1.45 (0.77, 2.74)	96.7	92.7	1.77 (0.56, 5.60)	65.9	1.06 (0.53, 2.09)	7.8	0.69 (0.27, 1.73)	53.3	0.87 (0.51, 1.50)	81.3	1.11 (0.45, 2.75)
Middle	73.5	0.95 (0.46, 1.95)	92.7	93.8	1.55 (0.45, 5.29)	75.9	1.62 (0.74, 3.56)	12.0	1.16 (0.40, 3.35)	51.9	0.68 (0.36, 1.30)	87.1	1.41 (0.50, 3.96)
High	73.3	Ref.	93.9	90.2	Ref.	67.1	Ref.	— ^c	Ref.	55.8	Ref.	84.6	Ref.
P-value ^d	0.92		0.26	0.65		0.21		0.48		0.86		0.46	
NCES locale													
City	74.8	Ref.	96.3	93.8	Ref.	75.7	Ref.	13.2	Ref.	50.8	Ref.	86.3	Ref.
Suburb	74.9	1.11 (0.58, 2.16)	95.6	91.3	0.73 (0.25, 2.18)	63.7	0.57 (0.30, 1.10)	— ^c	0.69 (0.27, 1.74)	48.8	0.95 (0.53, 1.71)	87.5	1.18 (0.48, 2.89)
Town	76.0	1.11 (0.49, 2.53)	97.6	96.4	5.44 (0.60, 49.30)	63.4	0.57 (0.24, 1.35)	— ^c	0.93 (0.29, 2.98)	54.2	1.23 (0.59, 2.56)	82.4	0.68 (0.24, 1.93)
Rural	73.2	1.12 (0.55, 2.28)	91.6	91.2	0.75 (0.25, 2.28)	73.9	0.94 (0.44, 2.01)	— ^c	0.70 (0.24, 2.03)	57.1	1.30 (0.70, 2.43)	81.2	0.86 (0.34, 2.15)
P-value ^d	0.98		0.35	0.62		0.18		0.46		0.66		0.63	
School poverty													
Low-poverty	72.5	Ref.	100.0	89.3	Ref.	63.2	Ref.	— ^c	Ref.	59.4	Ref.	87.0	Ref.
Mid-poverty	72.9	1.05 (0.54, 2.01)	94.2	93.7	1.94 (0.72, 5.21)	69.2	1.56 (0.83, 2.95)	7.0	0.68 (0.25, 1.89)	50.9	0.60 (0.33, 1.11)	80.8	0.65 (0.28, 1.56)
High-poverty	77.8	1.44 (0.65, 3.17)	94.4	93.7	1.71 (0.55, 5.27)	68.0	1.06 (0.51, 2.21)	15.2	1.32 (0.49, 3.60)	53.8	0.78 (0.39, 1.57)	89.9	1.93 (0.61, 6.06)
P-value ^d	0.66		0.12	0.47		0.66		0.09		0.49		0.11	

Full time school nurse													
Yes	76.5	1.37 (0.81, 2.34)	98.1	93.6	1.55 (0.65, 3.70)	68.9	0.95 (0.58, 1.56)	9.2	0.89 (0.43, 1.86)	53.7	1.09 (0.68, 1.73)	88.0	2.02 (1.05, 3.91)*
No	71.0	Ref.	90.5	90.7	Ref.	68.6	Ref.	9.5	Ref.	53.0	Ref.	76.6	Ref.
P-value ^d	0.23		p<.001	0.28		0.95		0.93		0.88		0.005	
School based health center													
Yes	74.4	1.06 (0.53, 2.15)	94.3	94.4	1.23 (0.30, 5.07)	75.5	1.59 (0.77, 3.28)	— ^e	1.49 (0.60, 3.71)	58.3	1.11 (0.59, 2.10)	89.5	1.97 (0.62, 6.31)
No	74.3	Ref.	95.3	92.1	Ref.	67.3	Ref.	8.5	Ref.	52.4	Ref.	82.3	Ref.
P-value ^d	0.99		0.72	0.51		0.21		0.22		0.41		0.17	

aOR = adjusted odds ratio, CI = confidence interval, NCES = National Center for Education Statistics

^aFor each COVID-19 prevention measure, models adjusted for school-level characteristics (school-based health center, school level, NCES locale, % of students eligible for free or reduced-price meals [FRPM], full-time school nurse) and the total number of new cases per 100,000 persons within the last 7 days in each county the school resides on September 23, 2021. Adjusted odds ratios, 95% confidence interval, and number of observations included are presented for each model.

^bAll percents are weighted.

^cModel estimates are not presented for “had a school-based system to report COVID-19 outcomes.” As the prevalence of this COVID-19 strategy was high among most subgroups, model estimates were unstable.

^dChi-square p-values are presented examining bivariate associations between each school-level characteristic and prevention strategy.

^eEstimate suppressed due to a relative standard error $\geq 30\%$.

*p<0.05, **p<0.01 ***p<0.001; bolding indicates any finding that is significant at p<0.05

Yes	73.9	1.40 (0.68, 2.87)	56.6	1.27 (0.67, 2.40)	61.6	1.35 (0.72, 2.54)	49.4	2.00 (1.03, 3.89)*	71.3	2.25 (1.18, 4.30)*	41.7	1.25 (0.67, 2.34)	73.8	1.87 (0.87, 3.99)
No	64.1	Ref.	40.9	Ref.	50.4	Ref.	27.2	Ref.	49.3	Ref.	32.0	Ref.	57.1	Ref.
P-value ^c	0.15		0.03		0.11		p<.001		0.002		0.15		0.01	

aOR = adjusted odds ratio, CI = confidence interval, NCES = National Center for Education Statistics

^aFor each COVID-19 prevention measure, models adjusted for school-level characteristics (school-based health center, school level, NCES locale, % of students eligible for free or reduced-price meals [FRPM], full-time school nurse) and the total number of new cases per 100,000 persons within the last 7 days in each county the school resides on September 23, 2021. Adjusted odds ratios, 95% confidence interval, and number of observations included are presented for each model.

^bAll percents are weighted.

^cChi-square p-values are presented examining bivariate associations between each school-level characteristic and prevention strategy.

*p<0.05, **p<0.01 ***p<0.001; bolding indicates any finding that is significant at p<0.05

Supplemental Table 1. Questionnaire items and operationalization for COVID-19 prevention strategies – National School COVID-19 Prevention Study, United States, October 5–November 19, 2021

COVID-19 prevention strategies	NSCPS survey question(s)	Operationalization
Required masks for students and staff	<ul style="list-style-type: none"> At the start of the 2021-2022 school year, did your school have a mask requirement? Mark one response. <p>Response options: Yes; No; Not applicable, my school was virtual at the start of the 2021-2022 school year</p> <ul style="list-style-type: none"> (Only shown to those who did not say “No” to previous question) For which of the following groups at your school was mask wearing required? Mark one response for each. <p>Response options: All individuals; Only individuals who are not fully vaccinated; No requirement; My school was virtual at the start of the 2021-2022 school year</p> <ul style="list-style-type: none"> Students Teachers and School Staff 	Yes (selected mask requirement for all individuals for both students and teachers and school staff) vs. No (No mask requirement or mask requirement only for some groups of students or teachers and school staff)
	Since the start of the COVID-19 pandemic, has your school taken the following steps to increase ventilation or filter/clean air in school? Mark one response for each. Response options: Yes; No; Don’t know; Not applicable, my school has been virtual since the start of the pandemic.	
Inspected and validated existing HVAC systems^a	<ul style="list-style-type: none"> Inspected and validated existing HVAC systems for cleanliness, function, and code-compliant operation 	Yes vs. no/don’t know
Replaced/upgraded HVAC^a	<ul style="list-style-type: none"> Replaced/upgraded HVAC systems 	Yes vs. no/don’t know
	At the start of the 2021-2022 school year, did your school take the following steps to increase ventilation or filter/clean air in school? Mark one response for each. Response options: Yes; No; Don’t know; Not applicable, my school has been virtual since the start of the pandemic.	
Installed or used HEPA filtration systems in classrooms^a	<ul style="list-style-type: none"> Installed or used HEPA filtration systems in classrooms 	Yes vs. no/don’t know
Opened doors when safe to do so^a	<ul style="list-style-type: none"> Opened doors to hallway or outside when safe to do so 	Yes vs. no/don’t know
Opened windows when safe to do so^a	<ul style="list-style-type: none"> Opened windows when safe to do so 	Yes vs. no/don’t know
Adhered to at least to daily or between use cleaning schedules	<p>Which of the following prevention strategies related to cleaning are being implemented at your school? Mark all that apply.</p> <ul style="list-style-type: none"> Adhering to at least daily or between use cleaning schedules 	Yes vs. No
Maintained physical distance in classrooms	<p>At the start of the 2021-2022 school year, for each of the following spaces, what distance between people did your school try to maintain? Mark one response for each.</p> <p>Response options: Less than 3 feet; At least 3 feet but less than 6 feet; 6 feet or more; Space not used; No physical distancing requirements; Not applicable, my school was virtual at the start of the 2021-2022 school year</p> <ul style="list-style-type: none"> Classrooms 	No physical distancing requirements or less than 3 feet physical distancing vs. 3 feet or more
Had a school-based system to report COVID-19 outcomes	<p>At the start of the 2021-2022 school year, was there a system for parents to self-report to school administration if any of the following are true? Mark one response for each.</p> <ul style="list-style-type: none"> Their child has been diagnosed with COVID-19 Their child is waiting for COVID-19 test results 	Yes to all three options vs. No/don’t know to any

	<ul style="list-style-type: none"> Their child has been exposed to someone with COVID-19 within the last 14 days 	
	Response options: Yes; No; Don't know	
Had a COVID-19 isolation space in school^a	At the start of the 2021-2022 school year, did your school have a separate space, away from the general population, to isolate individuals who may have exhibited symptoms related to COVID-19? Mark one response.	Yes vs. no/don't know
	Response options: Yes; No; Don't know	
Offered COVID-19 diagnostic testing to students and staff	At the start of the 2021-2022 school year, how was onsite COVID-19 testing used at your school? Mark all that apply. <ul style="list-style-type: none"> For symptomatic students (Q1A) For students identified as close contacts of persons with confirmed or probable COVID-19 (Q1B) For symptomatic teachers/staff (Q1C) For teachers/staff identified as close contacts of persons with confirmed or probable COVID-19 (Q1D) For screening all or a percentage of students (regardless of vaccination status) on a regular basis (Q1E) For screening all or a percentage of students who are not fully vaccinated on a regular basis (Q1F) For screening all or a percentage of teachers/staff (regardless of vaccination status) on a regular basis (Q1G) For screening all or a percentage of teachers/staff who are not fully vaccinated on a regular basis (Q1H) 	Yes to COVID-19 diagnostic testing of students (i.e., selected Q1A, Q1B, Q2A, or Q2B) <i>and</i> COVID-19 diagnostic testing to staff (i.e., selected Q1C, Q1D, Q2C, or Q2D) vs. No/don't know to COVID-19 diagnostic testing for students or staff
Offered COVID-19 screening testing to students and staff	At the start of the 2021-2022 school year, how was off-site COVID-19 testing used at your school? Mark all that apply. <ul style="list-style-type: none"> For symptomatic students (Q2A) For students identified as close contacts of persons with confirmed or probable COVID-19 (Q2B) For symptomatic teachers/staff (Q2C) For teachers/staff identified as close contacts of persons with confirmed or probable COVID-19 (Q2D) For screening all or a percentage of students (regardless of vaccination status) on a regular basis (Q2E) For screening all or a percentage of students who are not fully vaccinated on a regular basis (Q2F) For screening all or a percentage of teachers/staff (regardless of vaccination status) on a regular basis (Q2G) For screening all or a percentage of teachers/staff who are not fully vaccinated on a regular basis (Q2H) 	Yes to COVID-19 screening testing of students (i.e., selected Q1E, Q1F, Q2E, or Q2F) <i>and</i> COVID-19 screening testing of staff (i.e., selected Q1G, Q1H, Q2G, and Q2H) vs. No/don't know to COVID-19 diagnostic testing for students or staff
	Response options: Yes; No; Don't know	
Conducted contact tracing^a	Since the start of the 2021-2022 school year, has your school conducted (or partnered with another organization to conduct) contact tracing for COVID-19 infected students, teachers, or staff? Mark one response.	Yes vs. no/don't know
	Response options: Yes; No; Don't know	
Quarantined students identified as close contacts	At the start of the 2021-2022 school year, which of the following best described your school's protocols for quarantining students exposed to someone with COVID-19 at school or a school-related activity? Mark all that apply. <ul style="list-style-type: none"> All students who are not fully vaccinated and who are identified as close contacts of a COVID-19 case at school or a school-related activity are required to quarantine (i.e., stay at home and not attend school in-person) All students who are identified as close contacts of a COVID-19 case at school or a school-related activity are required to quarantine (i.e., stay at home and not attend school in-person), regardless of vaccination status 	Yes to either vs. No to both

Had a COVID-19 isolation space in school^a	At the start of the 2021-2022 school year, did your school have a separate space, away from the general population, to isolate individuals who may have exhibited symptoms related to COVID-19? Mark one response. Response options: Yes; No; Don't know	Yes vs. no/don't know
Provided information on COVID-19 vaccines to parents^a	Since the start of the 2021-2022 school year, has your school provided information about COVID-19 vaccinations? Response options: Yes; No; Don't know	Yes vs. no/don't know
Provided information on COVID-19 vaccines to students^a	<ul style="list-style-type: none"> Information for parents Information for students 	Yes vs. no/don't know
Provided parents or students with information about catching up on missed healthcare (e.g., routine vaccines)^a	Since the start of the 2021-2022 school year, has your school provided parents or students with information about catching up on any healthcare that may have been missed during the pandemic, including well-child visits and routine childhood/adolescent vaccinations? Response options: Yes; No; Don't know	Yes vs. no/don't know
Provided COVID-19 vaccines on-campus^a	<ul style="list-style-type: none"> Since the start of the 2021-2022 school year, has your school made COVID-19 vaccinations available to school staff, eligible students, or their families on your campus? Response options: Yes; No; Don't know	Yes vs. no/don't know
Provided COVID-19 vaccines through school district events	<ul style="list-style-type: none"> Does your school offer COVID-19 vaccines through school or district events (even if not on campus) to each of the following groups? Mark one response for each. <ul style="list-style-type: none"> Students Teachers or school staff Students' families/caregivers Response options: Yes; No; Don't know	Yes to students, teachers or school staff, or students' families/caregivers vs. no/don't know to students, teachers or school staff, and students' families/caregivers
For which groups is your school tracking COVID-19 vaccination status? Mark all that apply.		
Tracked vaccination status of students	<ul style="list-style-type: none"> Students 	Yes vs. No
Tracked vaccination status of teachers and other school staff	<ul style="list-style-type: none"> Teachers and other school staff 	Yes vs. No

HEPA = high-efficiency particulate air, HVAC = heating, ventilation, and air conditioning

^aFor descriptive purposes, the “don't know” category is presented as a separate category in Table 1. For subsequent models, the “don't know” category is combined with the “no” category.

Supplemental Table 2. School participation rates by school characteristics – National School COVID-19 Prevention Study, United States, October 7–November 19, 2021

Approach: Using data from the sampling frame and other extant data sources (MDR database), the association between school-level characteristics and participation in the study was modelled and used to inform the creation of nonresponse weight adjustments. Final survey weights incorporated these nonresponse adjustment classes, as well post-stratification based on the design strata, and were used in all analyses.

School Characteristic	Levels	Sampled Schools	Participating Schools	Non-Participating Schools	Response Rate	Chi-Square P-Value
School Level	Elementary	833	236	597	28.3%	0.98
	Middle	411	108	303	26.3%	
	High	358	93	265	26.0%	
Census Region	Northeast	260	69	191	26.5%	0.12
	Midwest	402	120	282	29.9%	
	South	551	132	419	24.0%	
	West	389	116	273	29.8%	
NCES Locale ^a	City	415	101	314	24.3%	0.42
	Suburb	462	129	333	27.9%	
	Town	179	57	122	31.8%	
	Rural	437	119	318	27.2%	
	Missing	109	31	78	28.4%	
Urban Status ^b	No	962	268	694	27.9%	0.52
	Yes	640	169	471	26.4%	
City ^c	City	445	109	336	24.5%	0.12
	Non-City	1,157	328	829	28.3%	
School Size ^d	Large	1,035	266	769	25.7%	0.06
	Small	567	171	396	30.2%	
Affluence ^e	Low/Below Avg	630	189	441	30.0%	0.05
	Avg/Above Avg/High	972	248	724	25.5%	
% ELL (English-limited)	Below median	789	218	571	27.6%	0.76
	Above median	813	219	594	26.9%	
Majority White	No	735	187	548	25.4%	0.13
	Yes	867	250	617	28.8%	
School % Black	Below median	802	230	572	28.7%	0.21
	Above median	800	207	593	25.9%	
School % Hispanic	Below median	801	232	569	29.0%	0.13
	Above median	801	205	596	25.6%	
School % Asian	Below median	803	219	584	27.3%	0.99
	Above median	799	218	581	27.3%	
Title I ^f	<\$150	370	104	266	28.1%	0.68

School Characteristic	Levels	Sampled Schools	Participating Schools	Non-Participating Schools	Response Rate	Chi-Square P-Value
	≥\$150	1,232	333	899	27.0%	
Poverty Level ^g	Below median	713	205	508	28.8%	0.24
	Above median	889	232	657	26.1%	
AIM Per Pupil Expenditure ^h	Below median	799	221	578	27.7%	0.73
	Above median	803	216	587	26.9%	
Current Per Pupil Expenditure ⁱ	Below median	694	191	503	27.5%	0.85
	Above median	908	246	662	27.1%	
AP Offered ^j	No	1,337	371	966	27.7%	0.32
	Yes	350	66	199	24.9%	
Student Computer Ratio ^k	Below median	617	173	444	28.0%	0.59
	Above median	985	264	721	26.8%	
Student Teacher Ratio ^l	Below median	694	188	506	27.1%	0.88
	Above median	908	249	659	27.4%	
Before/After school care ^m	No	1,252	343	909	27.4%	0.84
	Yes	350	94	256	26.9%	
% College bound ⁿ	Below median	778	201	577	25.8%	0.21
	Above median	824	236	588	28.6%	
Career and Technical Ed Offered ^o	No	1,237	348	889	28.1%	0.16
	Yes	365	89	276	24.4%	
Change in enrollment ^p	Decrease	629	179	450	28.5%	0.10
	No Change	425	99	326	23.3%	
	Increase	548	159	389	29.0%	
Library/Media Center ^q	No	312	81	231	26.0%	0.56
	Yes	1,290	356	934	27.6%	
Lunch Program ^r	Below median	807	228	579	28.3%	0.38
	Above median	795	209	586	26.3%	
Special Education ^s	Below median	638	171	467	26.8%	0.73
	Above median	964	266	698	27.6%	

^aThe National Center for Education Statistics (NCES) locale classifications categorizes the area where schools are located based on the U.S. Census Bureau's standard urban and rural designations.

^bUrban status is an alternate categorization of the NCES locale classification, such that "no" includes suburbs and rural locales and "yes" includes city and town locales.

^cCity is an alternate categorization of the NCES locale classification, such that "city" includes city areas and "non-city" includes suburb, town, and rural areas.

^dSmall schools contained fewer than 28 students at any grade level and large schools contained greater than or equal to 28 students at any grade level.

^eThe Affluence Indicator uses a proprietary algorithm developed to rank the socioeconomic status of a school.

^fSchools that allocated greater than or equal to \$150 of Title 1 funding per student were categorized as "≥\$150" and schools that allocated less than \$150 of Title 1 funding per student were categorized as "<\$150".

^gPoverty level data is sourced from the U.S. Census Bureau's Small Area Income and Poverty Estimates (SAIPE) program. Median poverty is determined by a formula (Orshansky Indicator) based on family income and size.

^hAIM Per Pupil Expenditure refers to the total dollar amount of instructional material expenditures. The per student data is determined by dividing the whole dollar for all instructional materials expenditures by district enrollment.

ⁱCurrent Per Pupil Expenditure represents the total operating cost for the district per student, including teacher salaries, instruction, support service, and food service. The per student data is determined by dividing the whole dollar current expenditures by district enrollment.

^jAP Offered refers to advanced placement courses offered within schools.

^kStudent Computer Ratio refers to total computers in a school per enrolled student.

^lStudent Teacher Ratio is the total number of students per teacher within a school.

^mBefore/After School Care refers to schools that provide care to students outside of school hours.

ⁿ% College bound is the percentage of 2- or 4-year college bound 12th grade students. Data is applied to all schools within a district.

^oCareer and Technical Ed Offered refers to schools within districts providing a broad scope of vocational subjects.

^pChange in enrollment describes the change in school or district enrollment from the previous year.

^qLibrary/Media Center refers to schools with a formal library or media center.

^rLunch Program is the percentage of students that are enrolled in a free/reduced price lunch (FRPL) program using 2020 MDR data.

^sSpecial Education identifies institutions that provide special education classes to children with special needs.