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# Public Support for Educators and In-Person Instruction During the Covid-19 Pandemic

David M. Houston
George Mason University

Matthew P. Steinberg
George Mason University

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# Public Support for Educators and In-Person Instruction During the Covid-19 Pandemic

David M. Houston
Assistant Professor of Education
College of Education and Human Development
George Mason University

Matthew P. Steinberg
Associate Professor of Education and Public Policy
College of Education and Human Development
Schar School of Policy and Government
George Mason University

Abstract:

In spring 2020, nearly every U.S. public school closed at the onset of the Covid-19 pandemic. Existing evidence suggests that local political partisanship and teachers union strength were better predictors of fall 2020 school re-opening status than Covid case and death rates. We replicate and extend these analyses using data collected over the 2020-21 academic year. We demonstrate that Covid case and death rates were meaningfully associated with initial rates of in-person instruction. We also show that all three factors—Covid, partisanship, and teachers unions—became less predictive of in-person instruction as the school year continued. We then leverage data from two nationally representative surveys of Americans' attitudes toward education and identify an as-yet-undiscussed factor that predicts in-person instruction: public support for increasing teacher salaries. We speculate that education leaders were better able to manage the logistical and political complexities of school re-openings in communities with greater support for educators.

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In response to the onset of the Covid-19 pandemic in spring 2020, nearly every K-12 school district in the U.S. closed school buildings and rapidly pivoted to online learning. As the next academic year began in fall 2020, educational leaders in school districts around the country reached dramatically different conclusions on whether to keep school buildings closed or to re-open for in-person instruction (Henderson et al., 2020; Lake & Dusseault, 2020). While some districts ushered students and educators back into their classrooms on the first day of school, others continued to embrace online learning. By the end of the 2020-21 academic year (AY2020-21), most K-12 students were back in school buildings (Gross et al., 2021; Henderson et al., 2021). This return to business-as-usual, however, was tenuous as the emergence of new and more infectious variants and strict quarantine rules frequently disrupted in-person instruction well into AY2021-22 (Cain Miller & Sanger-Katz, 2022).

With the benefit of hindsight, we may ultimately look favorably or unfavorably on educational leaders' decisions during this turbulent time. There is an emerging consensus, grounded in empirical research, that extended school closures were deeply detrimental to many students' academic progress and mental health and that the negative consequences were disproportionately experienced by low-income students and students of color (American Academy of Pediatrics et al., 2021; Goldhaber et al., 2022; Halloran et al., 2021; Lewis et al., 2021; Yard et al., 2021). However, it is worth remembering how challenging the decision-making context was at the time, with pervasive uncertainty and disagreement about the optimal course of action (Menasce Horowitz, 2020), inconsistent messaging from federal public health and education agencies (Mansoor, 2020), the public's increasingly politicized responses to government guidance (Milosh et al., 2021), sharp divergences in parental preferences for online versus in-person instruction (Haderlein et al., 2021), and the basic dilemma posed by a pathogen

that presented differential health risks to young students and older school employees (Centers for Disease Control and Prevention, 2021). Deciding whether or not to re-open schools for in-person instruction was, in many communities, a profoundly difficult choice with multiple and competing pressures. It was also a profoundly high-stakes choice with lasting implications for students, families, and educators. Understanding *why* some schools re-opened and others remained closed is an essential part of our collective effort to learn from this extraordinary event and to carry that knowledge forward to inform education policy responses to our next great challenge.

It is therefore an ideal time to revisit the early research on the factors that predicted school closure and re-opening decisions in AY2020-21. With more and better data on local in-person instruction rates during this period, we attempt to replicate and extend prior analyses. In many cases, our results reaffirm previous findings. For example, consistent with prior research (DeAngelis & Makridis, 2021; Grossmann et al., 2021; Harris & Oliver, 2021; Hartney & Finger, 2021), we find that local partisan politics and the strength of local teachers unions are meaningful predictors of in-person instruction rates during AY2020-21 (i.e., communities with a larger proportion of Democratic voters and communities with more influential teachers unions were less likely to re-open). However, we add important nuance to these conclusions, demonstrating that the relationships between these factors and the rate of in-person instruction are reduced in magnitude when we consider AY2020-21 in its entirety (rather than focusing on the first few weeks of school in fall 2020). We also note that, under certain conditions, the relative threat of the pandemic—as measured by cumulative Covid case and death rates—is negatively associated with in-person instruction rates. Some observers have suggested that the decision whether or not to re-open schools was simply a function of partisan politics (e.g., Bodenheimer, 2022; Chait, 2022; Murray, 2022; Nazaryan, 2020). We show that this was not the

case.

We also contribute to this literature by identifying an as-yet-undiscussed factor that reliably predicts AY2020-21 in-person instruction rates: pre-pandemic local public support for increasing teacher salaries. The relationship between these two phenomena—public opinion on teacher salaries and in-person instruction rates—is modest in magnitude, and we do not identify a specific causal mechanism in this analysis. However, this relationship is robust to the inclusion of a large set of covariates as well as differences in question wording, date of survey administration, and sampling strategy across two nationally representative surveys. We speculate that this survey item captures some variation with respect to local support for educators that is not otherwise accounted for by political party identification, political ideology, parental status, or a host of other potential confounding factors. It seems plausible that, compared to their counterparts in otherwise similar settings, educational leaders in communities with stronger pre-existing support for educators were better able to navigate the logistical and political challenges of re-opening schools for in-person learning.

As we reflect on the causes and consequences of pandemic-induced school closures, this analysis encourages us to widen our view of the relevant factors. As a field, we appropriately focus most of our attention on the effects of school closures on students' academic outcomes and broader well-being. We also justifiably scrutinize the politics and policies that made some outcomes more likely than others. We should not, however, omit from consideration the attitudes of the communities in which our schools are embedded. Compared to otherwise similar locations, communities with a deeper well of public support for educators were more likely to send their children back to school during a difficult time. As we navigate a new period of deepening debate over the goals and methods of public education, this analysis highlights the

importance of building and sustaining positive relationships between public schools and the communities in which they are located.

## Evidence on School Closures and Re-Openings During the Pandemic

A nascent empirical literature has emerged describing the factors associated with districts' decisions to re-open for in-person instruction during AY2020-21. Multiple research teams have demonstrated that school districts' initial decisions in fall 2020 were either unrelated or only modestly related to local Covid case and death rates (DeAngelis & Makridis, 2021; Grossmann et al., 2021; Harris & Oliver, 2021; Hartney & Finger, 2021; Valant, 2020). Compared to the severity of the pandemic, political partisanship was a more reliable predictor of districts' re-opening decisions (DeAngelis & Makridis, 2021; Grossmann et al., 2021; Haderlein et al., 2021; Harris & Oliver, 2021; Hartney & Finger, 2021; Valant, 2020). Independent of local Covid positivity rates, Republican-leaning districts were more likely to re-open for in-person instruction while Democratic-leaning districts were more likely to offer only remote learning options. In addition to partisanship, researchers have identified other factors associated with higher initial rates of in-person instruction: weaker local teachers unions (DeAngelis & Makridis, 2021; Grossmann et al., 2021; Harris & Oliver, 2021; Hartney & Finger, 2021), the racial/ethnic and economic composition of the community (Camp & Zamarro, 2021; Grossmann et al., 2021; Haderlein et al., 2021; Harris & Oliver, 2021; Hartney & Finger, 2021), and the availability of more alternatives to traditional district schools in the area (Hartney & Finger, 2021; but see Cohodes & Pitts, 2022, for evidence that charter schools were less likely to offer in-person instruction than their district counterparts). With a few exceptions, the existing literature focuses primarily on the predictors of in-person instruction at the very beginning of AY2020-21.

Public opinion on the desirability of re-opening schools for in-person instruction was split

along political and demographic lines, and there is evidence that decisions regarding school closures were at least somewhat aligned to local preferences. For instance, there was a stark partisan divide in support for re-opening schools during AY2020-21: Republicans expressed greater enthusiasm for resuming in-person instruction than Democrats (Collins, 2021; Haderlein et al., 2021). Survey researchers also observed similar differences by race/ethnicity (greater White support for in-person instruction), income (greater support for re-opening schools among more affluent individuals), and urbanicity (greater rural and suburban support for a return to the classroom) (Collins, 2021; Haderlein et al., 2021). When asked in January 2021 about the type of instruction their child was receiving versus the type of instruction that they preferred, fully three-quarters of a nationally representative sample of parents of school-age children indicated that their child was receiving the type of instruction that they wanted (Barnum, 2021; Haderlein et al., 2021). However, the causal direction—whether local leaders were responding to public opinion or whether public opinion was shaped by local decision-making—is unclear. When tracking parents' attitudes toward instructional modality over time, preferences for remote-only instruction tended to decline after the child's school re-opened, suggesting that public opinion was, in part, reacting to cues about the safety of in-person instruction implied by the decision to re-open or remain closed (Kogan, 2021).

Despite Progressive Era institutional reforms designed to buffer educational leaders from partisan politics (Tyack, 1974) and recurring calls to keep politics out of schools (e.g., Mann, 1848; Chubb & Moe, 1990; Cubberley, 1916), educational leadership at the local level has long been subject to political pressures (Hess, 1999; Howell, 2005; Kogan, 2022)—a trend that only appears to be increasing in our polarized era (Henig et al., 2019). During the Covid-19 pandemic, these pressures intensified. Superintendents reported strong public reactions to operational

decisions—whether to re-open for in-person instruction, require facemasks, mandate vaccines for teachers, etc.—that tracked closely with constituents' partisan identities (Cash et al., 2022). In ways that resembled the fierce debates over busing for school desegregation (Delmont, 2016), sex education (Boryczka, 2009), and the teaching of evolution (Berkman & Plutzer, 2010), school board meetings became battlegrounds for opposing political factions (Saul, 2021).

In the midst of this turbulence, educational leaders faced a larger-than-usual list of logistical and administrative concerns, such as ensuring that students had access to adequate technology to participate in remote learning, tracking attendance across multiple modes of instruction, scheduling staggered in-person instruction for districts attempting a hybrid model, screening students for illness and enforcing quarantine policies, revamping sanitation procedures, renovating ventilation systems, maintaining physical distance between students in schools and on buses, administering assessments over the internet, and communicating with families about re-opening plans as well as any newly-developed resources available to help make up for lost learning time (Edgerton et al., 2021; Gill & Dusseault, 2021; Lake, 2021; Leung et al., 2021; McCann & Dusseault, 2021; Ondrasek et al., 2021). In short, an increase in the professional demands of district-level leadership coincided with an increase in the contentiousness of the political environment.

## Our Contribution

The prior research suggests that school re-opening decisions at the height of the Covid-19 pandemic were primarily political in nature. When deciding whether local students would be learning together in their classrooms or learning at home via their computers, educational leaders' choices more closely aligned with the preferences of their communities than with the relative threat of the novel coronavirus. While we agree that school re-opening decisions were

intensely politicized, the current conventional wisdom is limited by A) its focus on initial conditions in fall 2020 rather than the changing landscape as the pandemic progressed, B) its underestimation of the continued salience of public health concerns, and C) its high-level conceptualization of politics that obscures meaningful differences between communities' local political cultures. The existing empirical accounts are unable to offer insight into the factors that made in-person instruction manageable in the face of the significant, multiple, and overlapping logistical demands of pandemic-era schooling—even when the political conditions were conducive to returning students and teachers to their classrooms. Moreover, although many of the individual studies we cite are candid about the difficulty of estimating these descriptive relationships accurately given the limited data available on instructional modality during the pandemic, the overarching inference that many observers have gleaned from this literature—that school closures and re-openings were about politics, not Covid—understates the sensitivity of these results to the myriad decisions that researchers must make when analyzing imperfect data.

We contribute to this literature in three ways. First, we conduct an extensive replication analysis of initial re-opening decisions in fall 2020 using a finer-grained measure of instructional modality: the estimated percentage of students learning in-person at the county level. We re-affirm some of the core findings of the prior literature. Specifically, we find that higher rates of in-person instruction occurred in communities that lean Republican and that have weaker local teachers unions. However, in contrast to some of the previous research, we also find evidence that, in certain circumstances, communities with higher Covid case and death rates had lower rates of in-person instruction.

Second, we extend this analysis beyond the first few weeks of AY2020-21 to identify the factors that predict the average rate of in-person instruction over the course of the entire school

year. As we extend the time horizon, Covid case and death rates, partisan politics, and teachers union strength all become less powerful predictors of in-person instruction. Conversely, the relationship between average student achievement and the rate of in-person instruction increases in magnitude and consistency across multiple model specifications. As the school year progressed, communities with a history of higher standardized test scores were more likely to re-open school buildings. Given the accumulating evidence on the detrimental effects of remote learning, this pattern has important and troubling implications for growing opportunity and achievement gaps between more and less privileged communities.

Third, we identify an as-yet-undiscussed factor that reliably predicts in-person instruction rates during AY2020-21: local public support for teachers as measured by public opinion in favor of increasing teacher salaries. We argue that greater support for raising teacher salaries is not a consequence of re-opening local public schools. Rather, across multiple polls conducted at different times with different sampling strategies and with different question wordings, pre-pandemic public opinion regarding teacher salaries is consistently associated with higher pandemic-era in-person instruction rates. In light of evidence describing the intense and often conflicting demands placed on teachers and school administrators during the pandemic, we speculate that education leaders were better able to manage the logistical and political complexities of in-person instruction in communities with a stronger valuation of the services educators provide.

## Data and Methods

### Replication and Extension Analyses

Our replication and extension analyses are structured similarly to many of the studies we cite in the previous section. In brief, we regress a measure of school re-opening status on a large

set of educational and demographic predictors with the objective of identifying factors that are associated with re-opening status, independent of all other included factors. While much of the earlier research adopts this same basic approach, each study employs slightly different variable choices and model specifications. As such, we use the terms "replication" and "extension" broadly. We do not seek to replicate or extend any one particular study; rather, we seek to re-examine the general conclusions of the prior literature using an analogous approach that incorporates a more granular measure of school re-opening status collected over a longer period of time.

There is, however, one way in which our analysis systematically differs from previously published studies. Most prior analyses were conducted at the district level, with the primary outcome of interest measured dichotomously (Was the school district open for in-person instruction or not?) or trichotomously (Was the school district offering in-person instruction, online instruction, or a hybrid option?). We focus instead on the county-level percentage of students receiving in-person instruction. This analytic choice has some strengths and weaknesses. It allows us to capture more subtle variation in the level of in-person instruction from place to place. Moreover, by conducting the analysis at the county level, we are better able to align our empirical strategy with the most relevant unit of analysis for two theoretically important predictors of school re-opening decisions: 1) Covid case and death rates and 2) political partisanship as measured by the most recent presidential election (both of which are measured and reported at the county level—not the school district level). On the other hand, in most of the country, counties consist of multiple school districts, making it difficult to draw inferences about the specific decision-making process in a typical district. Therefore, the reader should view our replication and extension analyses as explorations into how larger

communities—often composed of more than one school district—responded to the competing pressures of the pandemic when deciding whether to re-open schools for in-person instruction.

***In-Person Instruction Rates in AY2020-21***

Our data on in-person instruction rates during AY2020-21 come from the data aggregation firm Burbio. During AY2020-21, Burbio audited over 1,200 school districts representing 47% of the U.S. K-12 student enrollment in over 35,000 schools in 50 states. Districts were checked every 72 hours for changes. School district learning modes were categorized as either traditional (in-person every day), hybrid (2-3 days in-person and 2-3 days virtual per week), or virtual. Burbio assigned a learning mode to a school district based on the most in-person option available to the general student population. Thus, if a district offered both traditional and virtual options, the district was categorized as traditional. If a district offered different learning modes by grade level, Burbio estimated the percent of students in each mode. These estimates were then used to generate county-level learning mode estimates, with each audited district in the county weighted by district enrollment. Burbio released these county-level estimates on a weekly basis from August 14, 2020 to June 25, 2021.

When conducting our replication analyses—re-examining the factors that predict school re-opening decisions in fall 2020—we rely on Burbio's estimates of in-person instruction rates for the week of October 2, 2020 (i.e., at the beginning of AY2020-21 but after the initial chaos of the first days of school). When conducting our extension analyses—examining the factors that predict school re-opening decisions over the entirety of AY2020-21—we calculate the average weekly in-person instruction rate within each county over the full time period (August 14, 2020 to June 25, 2021).

***Teachers Union Strength***

There is considerable debate in the prior literature over the best way to measure local teachers union strength (DeAngelis & Makridis, 2021; Hartney & Finger, 2021; Marianno et al., 2022). Many of the preferred metrics are only available at the state level or are only available for a handful of districts. Following Hartney and Finger (2021), we use the total number of students in the largest school district by enrollment in each county (collected from the National Center for Education Statistics' Common Core of Data) as a measure of teachers union strength that is readily available for every county in the country. Hartney and Finger (2021) argue that, within a given state, larger school districts tend to have stronger teachers unions. This relationship, however, only holds within states. Across the country as a whole, many of the largest school systems are county-wide districts located in Southern states with regulatory environments that are less favorable to labor unions. Because we conduct both within-state and across-state analyses, we supplement our investigation with an additional measure: the U.S. Census Bureau Current Population Survey's estimate of the percentage of labor union members among all employed adults, which is available for the 280 most populous counties.

***Other County-Level Predictors***

For our measures of county-level Covid cases and deaths, we use data collected by the *New York Times*. Specifically, we employ the cumulative number of cases and deaths in each county as of October 2, 2020 (for the replication analysis) or June 25, 2021 (for the extension analysis). We rely on the MIT Election Lab for our measure of Trump 2020 presidential vote share by county. For our measures of average per-pupil spending, average teacher salaries, and the percentages of all K-12 students in each county that attend a private school or a charter school, we use the National Center for Education Statistics' Common Core of Data (for the two fiscal variables, we focus on the values for the largest district by enrollment in each county). We

use the Stanford Education Data Archive for standardized county-level estimates of average test scores in reading and math in grades 3-8. For our measures of county demographics, we collect the following data from the U.S. Census Bureau's American Community Survey 2015-2019 (5-year estimates): percentage of non-Hispanic White residents, median household income, population size, population density, percentage of residents under age 18, percentage of residents over age 25 with a BA degree or higher, percentage of residents over age 3 who are currently in school, and the Gini index (a common measure of income inequality).

***Empirical Strategy***

To examine the predictors of AY2020-21 in-person instruction rates, we estimate variants of the following ordinary least squares (OLS) regression specification:

$$Y_{cs} = \beta \boldsymbol{X}_{cs} + \theta_s + \varepsilon_{cs}, \quad (1)$$

where $Y$ is the rate of in-person instruction (either for the week of October 2, 2020 or the weekly average from August 14, 2020 to July 25, 2021) in county $c$ and state $s$, $\boldsymbol{X}$ is a vector of county-level predictors, $\theta$ are state fixed effects, and $\varepsilon$ is the error term. We cluster standard errors at the county level.

**Public Opinion and In-Person Instruction Rates**

We advance this line of inquiry by expanding the range of potential predictors of in-person instruction. To do so, we merge the county-level dataset described above with two ongoing, nationally representative surveys of Americans' attitudes toward education issues that were conducted before and during AY2020-21: the annual Education Next (EN) poll and the quarterly Murmuration poll. We consider two elements of public opinion that were consistently polled in both surveys: public support for increased education spending in general and public support for increased teacher salaries in particular.

### *Education Next Poll*

The EN poll is designed by the Harvard Program on Education Policy and Governance and administered by Ipsos Public Affairs via its KnowledgePanel®, a nationally representative panel of American adults who agree to participate in a limited number of online surveys. Ipsos provides internet access and/or an appropriate device to KnowledgePanel® members who lack the necessary technology to participate. For individual surveys—like the EN poll—Ipsos samples respondents from the KnowledgePanel®. Respondents can elect to complete the EN poll in English or Spanish. The polls from 2016-2021 collect precise location information for each participant, allowing us to link respondents to other data based on their geography. The EN poll also collects detailed demographic information for each participant (parental status, race/ethnicity, gender, political party identification, political ideology, age, family income, and educational attainment).

Each year, every EN poll participant is asked about education spending and teacher salaries. For each item, the participant is randomly assigned to receive one of two possible questions. Regarding education spending, the two options are as follows:

1. "According to the most recent available information, $[INSERT VALUE] is being spent each year per child attending public schools in your district. Do you think that government funding for public schools in your district should increase, decrease, or stay about the same?" (Response options: greatly increase, increase, stay about the same, decrease, greatly decrease)
2. "Do you think that government funding for public schools in your district should increase, decrease, or stay about the same?" (Response options: greatly increase, increase, stay about the same, decrease, greatly decrease)

Regarding teacher salaries, the two options are as follows:

1. "Public school teachers in your state are paid an average annual salary of $[INSERT VALUE]. Do you think that public school teacher salaries should increase, decrease, or stay about the same?" (Response options: greatly increase, increase, stay about the same, decrease, greatly decrease)
2. "Do you think that public school teacher salaries should increase, decrease, or stay about the same?" (Response options: greatly increase, increase, stay about the same, decrease, greatly decrease)

We code both survey items dichotomously ("increase/greatly increase" coded 1, otherwise 0). To maximize sample size for each item, we combine responses from both questions into a single variable and create a separate dummy variable indicating whether or not the participant received the first version of the question. We control for this dummy variable in every EN poll analysis.

***Murmuration Poll***

The Murmuration National Polling Project is a quarterly, nationally representative survey of America's registered voters. Each iteration of the Murmuration poll includes about 1,500 live-caller surveys administered to roughly half landlines and half cell phones, with bilingual callers for Spanish-speaking respondents. In addition to using live telephone callers, Murmuration collects responses from approximately 1,500 voters through pre-registered panels of online participants. Similar to the EN poll, The Murmuration poll also collects precise location and demographic information for each participant (parental status, race/ethnicity, gender, and political party identification).

In the Murmuration poll, the question about education spending reads: "Would you be willing to pay more local taxes if the money went to increase funding to improve the public

schools in your local area?" (Response options: yes, no, don't know). The question about teacher salaries reads: "Do you support or oppose your state and local governments using more taxpayer money to increase pay for public school teachers?" (Response options: support, oppose, don't know). We code both survey items dichotomously (spending: "yes" coded 1, otherwise 0; salaries: "support" coded 1, otherwise 0).

***Empirical Strategy***

To examine the relationship between public support for education/educators and county-level rates of in-person instruction during AY2020-21, we estimate variants of the following OLS regression specification:

$$Y_{c,t=AY2020-21} = \beta_1 Support_{ict} + \beta_2 \boldsymbol{X}_{ict} + \beta_3 \boldsymbol{Z}_{c,t=AY2020-21} + \pi_t + \varepsilon_{ict}, \quad (2)$$

where $Y$ is the mean weekly rate of in-person instruction in county $c$ during AY2020-21, $Support$ equals 1 if survey respondent $i$ located in county $c$ supports increased education spending/teacher salaries (and 0 otherwise) in survey period $t$, $\boldsymbol{X}$ is a vector of individual-level characteristics for survey respondent $i$ in county $c$ and survey period $t$; $\boldsymbol{Z}$ is a vector of county-level characteristics for county $c$ measured in AY2020-21 or the most recent available data collection period, $\pi$ are survey fixed effects, and $\varepsilon$ is the error term. We cluster standard errors at the county level. The analyses in the text do not include the survey weights generated by each survey research firm (nearly all of the information embedded in the weights is already accounted for by the individual-level covariates). However, the results are robust to the inclusion of survey weights.

Please note that equation (2) does not include state fixed effects. Neither the EN poll nor the Murmuration poll is designed to be representative at the state level, so within-state analyses generate potentially inaccurate representations of public opinion dynamics. This has important

implications for our primary measure of local teachers union strength (the number of students enrolled in the largest district in the county), which only captures this construct well when considered within a given state. We consider alternative measures of this potential confounder in the analyses to follow.

## Findings

### Replication Analysis

When describing the results of our replication analysis, our goal is not to report and interpret each coefficient of every model. Rather, we seek to identify general patterns that emerge across multiple analytical approaches. Table 1 displays the results of eight variations on the same basic analysis: with and without state fixed effects, with and without county population weights, as well as with and without an alternative measure of local teachers union strength (which is only available for a subset of highly populous counties).

[Table 1]

The first and most important finding is just how sensitive the results are to model specification. Depending on the model, factors that other scholars have identified as important predictors of initial school re-opening decisions fluctuate from positive to negative, significant to non-significant. This is not to suggest that there are no meaningful predictors of school re-opening decisions. Rather, we seek to impress upon the reader the extent to which minor analytic decisions—which may have nontrivial implications for the interpretation of the results—are important in the pursuit of this line of inquiry. We describe the general patterns that we observe below and conclude with our synthesis and interpretation of those patterns.

Some of the prior research suggests that Covid cases and deaths were essentially unrelated to initial fall 2020 re-opening decisions. This is not, in fact, what we observe. It is

more accurate to say that the magnitude and direction of these relationships are dependent on a series of reasonable alternative choices that researchers can make when analyzing these data. In a county-level analysis (but omitting county population weights, thereby making "county" the simple unit of analysis—i.e., Model 1 in Table 1), higher Covid case rates are associated with higher in-person instruction rates after adjusting for a range of other potentially relevant factors. When we include county population weights (which places greater emphasis on more populous counties, making the results more representative of the average student's experience) and/or restrict our analysis to the most populous counties, this relationship increases in magnitude. However, when we introduce state fixed effects (thereby altering our analysis to consider the average relationship between Covid case rates and in-person instruction rates within states), this relationship is generally negative. This pattern suggests that, overall, counties in states with higher Covid case rates also had higher in-person instruction rates. However, within a given state, counties with higher Covid case rates had lower in-person instruction rates.

The relationship between Covid deaths and in-person instruction rates follows a different pattern. In the absence of state fixed effects, there is a negative relationship between Covid death rates and in-person instruction rates when focusing on the most populous counties and/or including county population weights. However, this finding only holds when thinking about the country as a whole. Our within-state analyses generate mostly non-significant results.

Our replication analysis resoundingly affirms the prior literature's conclusion that political partisanship was a reliable predictor of fall 2020 re-opening decisions. Regardless of model specification, county-level Trump 2020 presidential election vote share is positively and consistently related to in-person instruction rates. More Republican counties were more likely to re-open for in-person instruction in fall 2020—both within a given state and across the country,

both when placing equal weight on all counties and when placing greater weight on more populous counties.

We also observe a relatively consistent relationship between local teachers union strength and in-person instruction rates. We employ two different measures of this construct in our analyses. Our first approach employs the number of students in the largest district by enrollment within the county. As previously discussed, this measure is most effective at capturing differences in the relative influence of teachers unions between communities in the same state. Accordingly—and in line with the prior literature—this measure reveals a consistently negative relationship between teachers union strength and in-person instruction rates in the models that employ state fixed effects. In the absence of state fixed effects, this relationship is modest in size and typically non-significant. We also employ a second measure of teachers union strength: the percentage of employees who belong to any labor union. This measure offers a more precise indicator of local labor union power—albeit not limited to teachers—but it is only available for the 280 most populous counties in the country. Most states include at least one of these populous counties, but the geographic dispersion makes within-state analyses less relevant. Models 3-4 indicate that higher union membership rates are also negatively related to in-person instruction rates.

There is less prior research on the relationship between educational inputs/outputs and initial fall 2020 re-opening decisions (although such factors are often included as control variables in other researchers' analyses). Within a given a state, we generally observe a positive relationship between per-pupil spending and in-person instruction rates. However, this pattern does not hold across the country as a whole. We do not observe a consistent relationship between average teacher salaries and in-person instruction rates. With respect to student achievement,

counties with higher average test scores had higher in-person instruction rates. Yet, once we look within states, this relationship reverses and is not always statistically significant.

In contrast to prior findings, we note that counties with larger private school market shares generally had lower rates of in-person instruction—although this finding, like many of the others, is dependent on the model specification. Moreover, the direction and statistical significance of the relationship between charter school market share and in-person instruction rates both vary from model to model.

Lastly, we also consider how county demographics—specifically race and income—are related to fall 2020 rates of in-person instruction. After adjusting for all of the aforementioned factors, neither county-level percentage of non-Hispanic White residents nor median household income are consistently related to school re-opening status.

In short, the results of our replication analysis are largely aligned with two of the major findings of the prior literature: both political partisanship and local teachers union strength are consistent predictors of fall 2020 in-person instruction rates. However, we also challenge one of the broad conclusions of the existing research: that initial re-opening decisions were primarily about politics and not the threat of the pandemic. When comparing counties in the same state—in other words, thinking about the decisions of educational leaders all subject to the same statewide policies and procedures—counties with higher Covid case rates had lower in-person instruction rates after adjusting for many other potentially relevant factors. This suggests that, within the constraints set at the state level, local educational leaders appear to have incorporated both political and public health concerns into their decision-making processes. Moreover, when comparing counties across the whole county—an empirical strategy that may also reveal state or regional differences unaccounted for by county-level covariates—counties with higher Covid

death rates also had lower in-person instruction rates. Since we generally do not observe the same pattern within states, this suggests that large swaths of the country that disproportionately suffered high death tolls during the first wave of the pandemic were less likely to re-open schools for in-person instruction in fall 2020. This dynamic also suggests that local educational leaders were attending to both political and public health concerns.

**Extension Analysis**

One of the limitations of the existing research on school re-opening decisions is that most published studies focus on educational leaders' initial decisions at the beginning of AY2020-21. However, the decision to re-open schools for in-person instruction was not a discrete choice at a single point in time; it was updated over and over again as the school year progressed. In this section, we report the results of our analysis of the predictors of county-level mean weekly in-person instruction rates over the course of the entire academic year. Table 2 displays these estimates. When describing the results of our extension analysis, we seek to highlight instances where the general patterns clearly diverge from those observed in the replication analysis.

[Table 2]

Many of the relationships previously estimated in the replication analysis are reduced in size and, in some cases, rendered non-significant. This is true for Covid case and death rates (which are updated to include the period up to June 25, 2021), political partisanship, and teachers union strength. While these factors may have been influential guideposts for educational leaders' initial decisions in fall 2020, their salience appears to have waned as the school year wore on. This is not to suggest that communities' decisions regarding in-person instruction became less predictable and more dependent on other idiosyncratic factors—unaccounted for by the variables in our data—over time. To the contrary, the predictive power of our analysis, as measured by the

$R^2$ statistic, is more robust in this extension. The independent variables in Model 8 in Table 2, for example, collectively explain 89% of the variation in county-level in-person instruction rates (reduced to 86% when adjusting for our large set of predictors). It appears that other factors besides politics and Covid rose in importance as AY2020-21 continued.

In our replication analysis, the relationship between per-pupil spending and in-person instruction rates is modest in magnitude and inconsistent. When considering AY2020-21 in its entirety, we note that, after adjusting for other potentially relevant factors, higher spending counties typically had lower in-person instruction rates. Yet this pattern only holds across the country as a whole, not within states. This suggests that relatively high-spending states were less likely to re-open for in-person instruction during AY2020-21.

A different dynamic emerges with respect to average student achievement. In the replication analysis, average test scores are positively associated with in-person instruction rates across the country as a whole, but not in the within-state analyses. In the extension analysis, we observe this relationship in nearly every model. Moreover, the magnitude of the relationship is substantively large. On average across all eight models, a one standard deviation increase in average test scores is associated with about a 36 percentage-point increase in the in-person instruction rate during the school year. In fall 2020, higher-scoring states were more likely to re-open for in-person instruction after adjusting for other factors, but this pattern did not translate to higher-scoring counties within a given state tending toward more in-person instruction. As the school year continued, however, counties with a history of higher test scores were more likely to have students return to their classrooms—no matter the geographic lens through which one analyzes the data.

**Public Opinion and In-Person Instruction Rates**

By extending our analysis of AY2020-21 school re-opening decisions through the entirety of the school year, we provide a more comprehensive picture of the educational, social, economic, political, and public health factors that were associated with in-person instruction rates during this pivotal time. But there are more general limitations to this type of analysis that cannot be remedied merely by expanding the timeline. The approach that appears in much of the prior literature and that we have also employed thus far tells us relatively little about the cultural and interpersonal factors that shaped educational leaders' decisions to keep their schools closed or to re-open their buildings for in-person instruction. In this section, we report the results of a novel empirical strategy that merges the county-level data described above with geo-coded public opinion data collected before and during AY2020-21.

We begin by briefly describing the unadjusted individual-level and county-level predictors of support for increased teacher salaries (see Tables A1-A2 in the appendix). Individuals who support raising teacher salaries are more likely be parents/caretakers of young children, members of a racial/ethnic group other than white, females, Democrats, liberals, younger, more affluent (peaking in the $50,000-$100,000 range), and to have completed more years of formal schooling. Such individuals are also more likely to live in counties with a lower Covid death rate, a lower Trump vote share in 2020, a lower labor union membership rate, a lower average teacher salary, a higher charter school market share, and a lower proportion of white residents. In all subsequent analyses, we include controls for these factors as well as other variables described in our Data and Methods section.

The results displayed in Table 3 document the relationship between individual-level support for increased teacher salaries as measured in the annual EN poll and local in-person instruction rates. Models 1-6 display the results of a series of analyses that merge a single year of

EN poll data with the pandemic-era county characteristics described above. For example, in Model 1 we observe that, on average, an individual who supported increased teacher salaries in 2016 lived in a county that went on to have about a four percentage-point higher AY2020-21 in-person instruction rate than their contemporaries who did not support increased teacher salaries—even after adjusting for a variety of individual-level and county-level characteristics. This relationship is remarkably consistent regardless of whether one considers pre-pandemic polling data (2016-19) or pandemic-era polling data (2020-21). Given the relatively time-invariant nature of this relationship, we pool these six survey waves together to generate a more precise estimate of this relationship (see Model 7, in which the relevant coefficient is modestly reduced to 3.27). Due to the increased sample size of this pooled analysis, we are also able to incorporate our alternative measure of local teachers union strength (see Model 8, in which the relevant coefficient is again modestly reduced to 2.42).

[Table 3]

One might be concerned that this relationship is an artifact of the question wording or sampling strategy of the EN poll. We replicate our analyses using data from the quarterly Murmuration poll, which features a nationally representative sample of registered voters rather than all adults and which asks about attitudes toward teacher salaries with a distinctly different question. Table 4 displays these results. While we observe more variation in the magnitude of the relationship between support for increased teacher salaries and local in-person instruction rates when focusing on different quarterly Murmuration poll data, the results of the two pooled analyses (Models 7-8) are consistent with their EN poll counterparts (coefficients of 3.23 and 2.68, respectively).

[Table 4]

We also present these results visually in Figure 1, which displays the unadjusted differences over time in support for increased teacher salaries between individuals who live in counties where schools were mostly closed during AY2020-21 (< 50% in-person on average) and individuals who live in counties where schools were mostly open during AY2020-21 (≥ 50% in-person on average). Even without statistical adjustments, this relationship is quite vivid using the EN poll data as well as visually detectable using the Murmuration poll data.

[Figure 1]

In short, there appears to be something noteworthy about counties with greater support for increased teacher salaries that may have facilitated higher rates of AY2020-21 in-person instruction, but which is conceptually distinct from the other factors known to be associated with pandemic-era school re-opening decisions. We speculate that communities with a deeper well of public support for educators—even if those communities faced an equivalent threat from Covid, share a common political persuasion, feature a comparable demographic composition, or support a local public school system that is similar across multiple dimensions—were better able to navigate the many inter-connected and overlapping challenges inherent in the task of bringing students back into school buildings during the first full school year of the pandemic.

The relationship that we document above is specific to attitudes about teacher salaries. We also conduct a parallel set of analyses that explore the relationship between support for increased education spending in general and local AY2020-21 in-person instruction rates (see Table A3-A4 in the appendix). Across a variety of model specifications, this analogous relationship is reduced in size and, with few exceptions, non-significant. It is not, therefore, the case that communities with greater generalized public support for public *education* that were more likely to return to in-person instruction. Rather, communities with greater public support

for public *educators* were more likely to bring students back into the classroom.

Lastly, we consider the extent to which the relationship between support for increased teacher salaries and in-person instruction rates varies along three theoretically important dimensions: Covid case rates, political partisanship, and average teacher salaries. The first two heterogeneity analyses are motivated by the core findings from our replication and extension analyses that both politics and the threat of the virus to public health factored into school re-opening decisions. It is therefore important to investigate whether public support for educators potentially played a mediating role in either of these two dynamics. The third heterogeneity analysis is motivated by the nature of our measure of public support for educators. We seek to understand whether the relationship between support for increased teacher salaries and in-person instruction rates is particularly pronounced in communities with relatively high or low teacher compensation. Table 5 displays the results of a series of analyses in which the dichotomous indicator for support for increased teacher salaries is sequentially interacted with the measures representing these three other factors.

[Table 5]

With one partial exception, we do not observe much evidence of heterogeneity across these three dimensions. The partial exception applies to local partisanship. When analyzing data from the EN poll, it appears that the relationship between support for increased teacher salaries and in-person instruction rates is particularly pronounced in counties with a higher Trump vote share in the 2020 presidential election. In other words, in Republican-leaning communities, greater public support for educators may have played a more prominent role in facilitating the return to in-person instruction. Conversely, it may also be the case that, in Democratic-leaning communities, the relative absence of public support for educators further reduced the likelihood

of bringing students back into their classrooms. On the other hand, this pattern of heterogeneity does not appear when analyzing the Murmuration poll data. We are therefore hesitant to draw strong inferences from these results.

## Conclusion

Why did some communities' public schools re-open for in-person instruction during AY2020-21 and others did not? The prevailing narrative has been that school re-opening decisions reflected political partisanship and the strength of teachers unions more than the local risks of Covid. By re-analyzing initial decisions in fall 2020 using a finer-grained measure of re-opening status and by extending this analysis to incorporate the entire 2020-21 school year, we demonstrate that the story is more complicated than that. We reaffirm previous findings that local political partisanship and local teachers union strength were important predictors of fall 2020 school re-opening decisions. However, we also demonstrate that Covid case and death rates played a role as well. When controlling for state-of-residence and when placing greater weight on more populous communities, counties with higher Covid case rates tended to have lower in-person instruction rates. In other words, within a given state, your average student living in a county with greater exposure to the virus was less likely to attend school in-person. Moreover, across the country as a whole—but not within states—counties with higher Covid death rates were also less likely to return to in-person instruction. This suggests that entire states and regions that experienced the most severe effects of the first wave of the pandemic subsequently had lower in-person instruction rates. These findings attest to the fact that educational leaders responded to both political and public health pressures when deciding to keep schools closed or re-open them for in-person instruction.

But these were not static, binary, open-or-closed choices. As AY2020-21 proceeded, the

decision-making context repeatedly shifted. Covid positivity rates during the first wave of the pandemic peaked in January 2021 (Moser, 2021). Only a few months later, vaccines became widely available to the public (Weintraub & Weise, 2021). The risks posed by the pandemic were in constant flux. Much of the prior literature is focused on school districts' initial re-opening decisions in fall 2020, but there is less evidence available regarding how the predictors of in-person instruction changed over time. We build on this body of research by conducting a similar set of analyses that alters the dependent variable to capture the average weekly in-person instruction rate during AY2020-21. We find that Covid case and death rates, political partisanship, and teachers union strength become less potent predictors of in-person instruction. Instead, we begin to see a pattern in which communities with a history of higher standardized test scores were notably more likely to re-open school buildings than their lower-achieving counterparts. This pattern may help us understand the widening test score gaps that have emerged in the wake of the pandemic (Kuhfeld et al., 2022).

In order to examine the cultural and attitudinal factors that shaped these decisions, we merged our data with two ongoing, nationally representative public opinion polls that were conducted before and during the time period in question. We find that pre-pandemic public attitudes about teacher salaries have a modest positive relationship with AY2020-21 in-person instruction rates. Specifically, the average U.S. adult who thinks that teachers ought to be paid more is also more likely to live in a county where kids were learning in-person for a larger proportion of the school year. This relationship is remarkably consistent across different sampling strategies, date (and even year) of survey administration, and question wording. There appears to be something noteworthy about places with higher public valuations of the services educators provide that may have contributed to higher rates of in-person instruction. Given the

enormous challenges of in-person schooling during a pandemic, we speculate that such environments lowered the social, economic, and political transaction costs of bringing students and teachers back to their classrooms.

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## Tables

Table 1. Fall 2020 Replication Analysis

| | Outcome: % In-Person (October 2, 2020) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** |
| Covid Cases (%) | 5.82* | 7.09* | 10.43* | 6.15* | 1.62* | -2.78* | -4.12 | -9.41* |
| | (0.70) | (0.83) | (3.08) | (2.83) | (0.60) | (0.81) | (3.51) | (3.65) |
| Covid Deaths (%) | 7.99 | -80.85* | -188.69* | -141.66* | -40.30* | 37.61 | -51.00 | 17.54 |
| | (19.13) | (18.03) | (63.81) | (52.34) | (15.69) | (19.62) | (75.96) | (71.57) |
| Trump 2020 (%) | 0.23* | 0.37* | 0.66* | 0.64* | 0.48* | 0.47* | 0.85* | 0.92* |
| | (0.03) | (0.04) | (0.13) | (0.16) | (0.08) | (0.07) | (0.29) | (0.29) |
| Student Enrollment (10k) | 0.18 | -0.51* | 0.65 | -0.33 | -1.28* | -1.43* | -1.08 | -1.70* |
| | (0.60) | (0.14) | (0.66) | (0.36) | (0.50) | (0.15) | (0.66) | (0.45) |
| Union Membership (%) | | | -0.27* | -0.46* | | | -0.02 | 0.01 |
| | | | (0.14) | (0.17) | | | (0.11) | (0.14) |
| Per-Pupil Spending ($1k) | -0.22 | -0.73* | 0.02 | 0.07 | -0.11 | 0.64* | 0.64* | 0.78* |
| | (0.13) | (0.12) | (0.31) | (0.29) | (0.10) | (0.11) | (0.28) | (0.28) |
| Avg Teacher Salary ($10k) | -0.99* | -1.29* | -1.20 | -2.15 | 0.15 | -0.61 | 0.98 | 0.04 |
| | (0.50) | (0.32) | (1.26) | (1.20) | (0.87) | (0.63) | (2.33) | (2.03) |
| Avg Test Scores (SD) | 16.12* | 42.31* | 49.89* | 31.38 | -5.37 | -8.83 | -17.67 | -46.43* |
| | (5.39) | (4.98) | (19.39) | (17.47) | (4.85) | (4.95) | (19.78) | (18.03) |
| Private Market Share (%) | -0.53* | -0.54* | -1.20* | -1.62* | 0.05 | -0.17 | -0.69 | -1.71* |
| | (0.16) | (0.16) | (0.60) | (0.58) | (0.13) | (0.14) | (0.53) | (0.55) |
| Charter Market Share (%) | -0.14 | 0.48* | 0.16 | 0.08 | -0.06 | -0.61* | -0.59 | -1.00* |
| | (0.14) | (0.11) | (0.35) | (0.32) | (0.11) | (0.11) | (0.34) | (0.34) |
| White, Non-Hispanic (%) | -0.06 | 0.03 | 0.10 | 0.11 | 0.11 | 0.42* | 0.26 | 0.22 |
| | (0.07) | (0.06) | (0.23) | (0.19) | (0.07) | (0.07) | (0.25) | (0.23) |
| Median HH Income ($10k) | -5.89* | -4.75* | -3.29 | -3.49 | -1.72 | -0.19 | 0.45 | 1.83 |
| | (1.05) | (0.85) | (2.89) | (2.64) | (0.91) | (0.81) | (2.72) | (2.48) |
| Other Demographics | X | X | X | X | X | X | X | X |
| State Fixed Effects | | | | | X | X | X | X |
| Population Weights | | X | | X | | X | | X |
| $R^2$ | 0.09 | 0.22 | 0.34 | 0.36 | 0.52 | 0.58 | 0.71 | 0.73 |
| Adjusted $R^2$ | 0.09 | 0.22 | 0.29 | 0.31 | 0.51 | 0.57 | 0.62 | 0.65 |
| $N$ (Counties) | 3,080 | 3,080 | 261 | 261 | 3,080 | 3,080 | 261 | 261 |

Notes. Each cell reports OLS coefficients with robust standard errors in parentheses (clustered at the county level), * $p < 0.05$.

Table 2. AY2020-21 Extension Analysis

| | Outcome: Weekly Average % In-Person (AY2020-21) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** |
| Covid Cases (%) | 1.43* | 2.59* | 2.41* | 3.02* | 0.75* | 1.06* | 0.44 | 0.05 |
| | (0.21) | (0.24) | (0.94) | (0.75) | (0.17) | (0.20) | (0.88) | (0.77) |
| Covid Deaths (%) | 46.51* | -13.08 | -48.65 | -119.39* | 10.98* | 8.86 | -43.10 | -68.55* |
| | (5.72) | (8.34) | (32.30) | (27.31) | (4.41) | (6.53) | (29.38) | (27.07) |
| Trump 2020 (%) | 0.15* | 0.26* | 0.37* | 0.48* | 0.32* | 0.34* | 0.45* | 0.66* |
| | (0.02) | (0.03) | (0.10) | (0.11) | (0.05) | (0.04) | (0.19) | (0.17) |
| Student Enrollment (10k) | 1.58* | -0.12 | 0.84 | -0.46 | -0.34 | -0.72* | -0.53 | -1.20* |
| | (0.40) | (0.11) | (0.50) | (0.26) | (0.32) | (0.09) | (0.44) | (0.27) |
| Union Membership (%) | | | -0.31* | -0.46* | | | -0.04 | 0.03 |
| | | | (0.10) | (0.12) | | | (0.07) | (0.08) |
| Per-Pupil Spending ($1k) | -0.25* | -1.29* | -0.60* | -0.64* | -0.06 | -0.14* | -0.06 | -0.12 |
| | (0.09) | (0.08) | (0.23) | (0.20) | (0.06) | (0.07) | (0.18) | (0.16) |
| Avg Teacher Salary ($10k) | -0.36 | -1.61* | -1.62 | -2.92* | 0.71 | -0.47 | 1.67 | -0.19 |
| | (0.34) | (0.24) | (0.95) | (0.84) | (0.55) | (0.40) | (1.52) | (1.21) |
| Avg Test Scores (SD) | 14.15* | 52.86* | 64.48* | 79.28* | -1.47 | 17.04* | 30.83* | 34.15* |
| | (3.64) | (3.57) | (14.20) | (11.91) | (3.08) | (3.10) | (12.86) | (10.65) |
| Private Market Share (%) | -0.43* | -0.16 | -0.24 | 0.01 | -0.07 | 0.11 | 0.27 | -0.03 |
| | (0.11) | (0.12) | (0.45) | (0.40) | (0.08) | (0.09) | (0.35) | (0.33) |
| Charter Market Share (%) | 0.02 | 0.74* | 0.69* | 0.73* | 0.06 | 0.12 | 0.18 | 0.10 |
| | (0.09) | (0.08) | (0.26) | (0.23) | (0.07) | (0.07) | (0.22) | (0.20) |
| White, Non-Hispanic (%) | -0.05 | -0.14* | -0.00 | -0.18 | 0.18* | 0.26* | 0.21 | -0.06 |
| | (0.04) | (0.04) | (0.17) | (0.13) | (0.04) | (0.04) | (0.16) | (0.13) |
| Median HH Income ($10k) | -5.39* | -6.52* | -4.49* | -4.35* | -2.15* | -0.90 | -1.67 | -0.43 |
| | (0.71) | (0.61) | (2.18) | (1.83) | (0.58) | (0.49) | (1.80) | (1.45) |
| Other Demographics | X | X | X | X | X | X | X | X |
| State Fixed Effects | | | | | X | X | X | X |
| Population Weights | | X | | X | | X | | X |
| $R^2$ | 0.18 | 0.44 | 0.45 | 0.64 | 0.61 | 0.78 | 0.82 | 0.89 |
| Adjusted $R^2$ | 0.17 | 0.44 | 0.41 | 0.62 | 0.6 | 0.77 | 0.76 | 0.86 |
| $N$ (Counties) | 3,085 | 3,085 | 261 | 261 | 3,085 | 3,085 | 261 | 261 |

Notes. Each cell reports OLS coefficients with robust standard errors in parentheses (clustered at the county level), * $p < 0.05$.

Table 3. Support for Increased Teacher Salaries and Local AY2020-21 In-Person Rates – EN Poll

| | Outcome: Weekly Average % In-Person (AY2020-21) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** |
| Support Increased Teacher Salaries | 4.41* (1.41) | 2.91* (1.06) | 4.10* (1.08) | 2.80* (1.20) | 2.64* (1.00) | 3.89* (1.74) | 3.27* (0.83) | 2.42* (0.90) |
| Covid | X | X | X | X | X | X | X | X |
| Partisanship | X | X | X | X | X | X | X | X |
| Unions 1 | X | X | X | X | X | X | X | X |
| Unions 2 | | | | | | | | X |
| Spending | X | X | X | X | X | X | X | X |
| Test Scores | X | X | X | X | X | X | X | X |
| School Choice | X | X | X | X | X | X | X | X |
| Individual Demo. | X | X | X | X | X | X | X | X |
| County Demo. | X | X | X | X | X | X | X | X |
| Survey FE | | | | | | | X | X |
| Time Period(s) | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | All Years | All Years |
| $R^2$ | 0.46 | 0.44 | 0.44 | 0.44 | 0.45 | 0.45 | 0.44 | 0.64 |
| Adjusted $R^2$ | 0.45 | 0.44 | 0.44 | 0.43 | 0.44 | 0.44 | 0.44 | 0.64 |
| $N$ (Respondents) | 1,982 | 3,851 | 4,253 | 2,875 | 4,079 | 1,346 | 18,386 | 8,018 |
| $N$ (Counties) | 779 | 1122 | 1150 | 905 | 1074 | 621 | 1790 | 261 |

Notes. Each cell reports OLS coefficients with robust standard errors in parentheses (clustered at the county level), * $p < 0.05$.

Table 4. Support for Increased Teacher Salaries and Local AY2020-21 In-Person Rates – Murmuration Poll

| | Outcome: Weekly Average % In-Person (AY2020-21) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
| Support Increased | 2.27* | 6.11* | 1.03 | 3.34* | 6.21* | 2.45 | 1.76 | 2.16 | 3.23* | 2.68* |
| Teacher Salaries | (1.12) | (1.47) | (1.56) | (1.69) | (1.69) | (1.37) | (1.48) | (1.65) | (0.67) | (0.78) |
| Covid | X | X | X | X | X | X | X | X | X | X |
| Partisanship | X | X | X | X | X | X | X | X | X | X |
| Unions 1 | X | X | X | X | X | X | X | X | X | X |
| Unions 2 | | | | | | | | | | X |
| Spending | X | X | X | X | X | X | X | X | X | X |
| Test Scores | X | X | X | X | X | X | X | X | X | X |
| School Choice | X | X | X | X | X | X | X | X | X | X |
| Individual Demo. | X | X | X | X | X | X | X | X | X | X |
| County Demo. | X | X | X | X | X | X | X | X | X | X |
| Survey FE | | | | | | | | | X | X |
| Time Period(s) | Sp19 | Su19 | Fa19 | Wi20 | Sp20 | Su20 | Fa20 | Wi21 | All | All |
| $R^2$ | 0.41 | 0.42 | 0.44 | 0.44 | 0.43 | 0.50 | 0.48 | 0.43 | 0.43 | 0.64 |
| Adjusted $R^2$ | 0.40 | 0.41 | 0.43 | 0.43 | 0.42 | 0.49 | 0.47 | 0.42 | 0.43 | 0.64 |
| $N$ (Respondents) | 2,829 | 1,473 | 1,431 | 1,428 | 1,391 | 1,823 | 1,396 | 1,496 | 13,267 | 5,470 |
| $N$ (Counties) | 1,107 | 714 | 732 | 675 | 668 | 712 | 660 | 677 | 2,008 | 261 |

Notes. Each cell reports OLS coefficients with robust standard errors in parentheses (clustered at the county level), * $p < 0.05$.

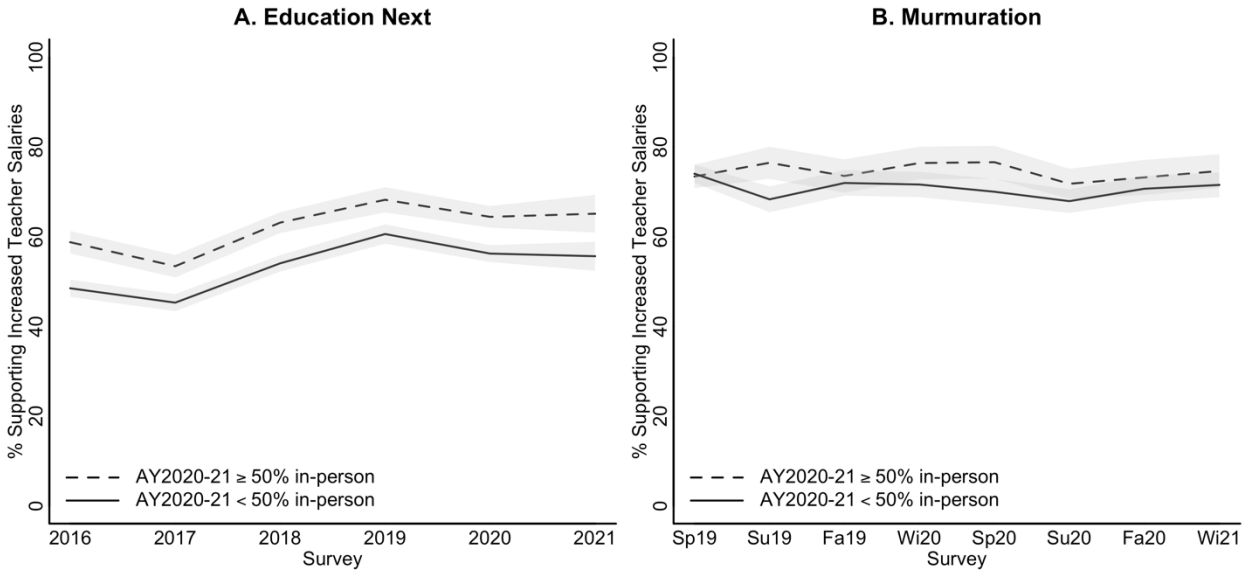
Table 5. Heterogeneity Analyses

| | Outcome: Weekly Average % In-Person (AY2020-21) | | | | | |
|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | **6** |
| Support Increased Teacher Salaries | 1.27 | 0.07 | 6.78* | 0.98 | 3.01* | 4.53* |
| | (3.24) | (1.60) | (2.37) | (2.35) | (1.32) | (1.67) |
| Covid Cases (%) | 1.96* | 2.09* | 2.08* | 2.61* | 2.78* | 2.77* |
| | (0.51) | (0.49) | (0.49) | (0.47) | (0.46) | (0.46) |
| Trump 2020 (%) | 0.28* | 0.23* | 0.28* | 0.27* | 0.27* | 0.27* |
| | (0.05) | (0.05) | (0.05) | (0.05) | (0.05) | (0.05) |
| Average Teacher Salary ($10k) | -1.51 | -1.50 | -1.21 | -1.15 | -1.14 | -1.01 |
| | (1.09) | (1.09) | (0.99) | (0.99) | (0.99) | (0.95) |
| Support × Covid Cases (%) | 0.19 | | | 0.22 | | |
| | (0.28) | | | (0.22) | | |
| Support × Trump 2020 (%) | | 0.08* | | | 0.01 | |
| | | (0.03) | | | (0.03) | |
| Support × Average Salary ($10k) | | | -0.53 | | | -0.20 |
| | | | (0.34) | | | (0.24) |
| All Other Covariates | X | X | X | X | X | X |
| Survey FE | X | X | X | X | X | X |
| Poll | EN | EN | EN | Murm. | Murm. | Murm. |
| Time Periods | 2016-2021 | 2016-2021 | 2016-2021 | Sp19-Wi21 | Sp19-Wi21 | Sp19-Wi21 |
| $R^2$ | 0.44 | 0.44 | 0.44 | 0.43 | 0.43 | 0.43 |
| Adjusted $R^2$ | 0.44 | 0.44 | 0.44 | 0.43 | 0.43 | 0.43 |
| $N$ (Respondents) | 18,386 | 18,386 | 18,386 | 13,267 | 13,267 | 13,267 |
| $N$ (Counties) | 1,790 | 1,790 | 1,790 | 2,008 | 2,008 | 2,008 |

Notes. Each cell reports OLS coefficients with robust standard errors in parentheses (clustered at the county level), * $p < 0.05$.

# Figures

Figure 1. Public Support for Increased Teacher Salaries and AY2020-21 In-Person Rates




Notes. Shaded areas represent 95% confidence intervals; *AY2020-21 ≥ 50% in-person* and *AY2020-21 < 50% in-person* refer to residents of counties where the relevant inequality holds; analyses incorporate survey weights.

# Appendix

Table A1. Individual-Level Predictors of Support for Increased Teacher Salaries – EN Poll

| | Outcome: Support for Increased Teacher Salaries | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** |
| Child < 18 in House | 0.025* | | | | | | | | 0.020* |
| | (0.007) | | | | | | | | (0.008) |
| Hispanic[1] | | 0.057* | | | | | | | 0.052* |
| | | (0.009) | | | | | | | (0.010) |
| Black, Non-Hispanic[1] | | 0.142* | | | | | | | 0.091* |
| | | (0.010) | | | | | | | (0.010) |
| Other Race, Non-Hispanic[1] | | 0.009 | | | | | | | -0.039* |
| | | (0.015) | | | | | | | (0.015) |
| Female[2] | | | 0.085* | | | | | | 0.069* |
| | | | (0.007) | | | | | | (0.007) |
| Democrat[3] | | | | 0.197* | | | | | 0.111* |
| | | | | (0.018) | | | | | (0.020) |
| Republican[3] | | | | -0.017 | | | | | -0.023 |
| | | | | (0.018) | | | | | (0.021) |
| Liberal[4] | | | | | 0.125* | | | | 0.066* |
| | | | | | (0.008) | | | | (0.009) |
| Conservative[4] | | | | | -0.122* | | | | -0.059* |
| | | | | | (0.008) | | | | (0.009) |
| Age (Years) | | | | | | -0.001* | | | 0.000 |
| | | | | | | (0.000) | | | (0.000) |
| Income $50 - $100k[5] | | | | | | | 0.048* | | 0.035* |
| | | | | | | | (0.008) | | (0.008) |
| Income > $100k[5] | | | | | | | 0.037* | | 0.009 |
| | | | | | | | (0.009) | | (0.009) |
| High School[6] | | | | | | | | -0.003 | 0.031 |
| | | | | | | | | (0.16) | (0.017) |
| Some College[6] | | | | | | | | 0.043* | 0.077* |
| | | | | | | | | (0.016) | (0.017) |
| College[6] | | | | | | | | 0.126* | 0.160* |
| | | | | | | | | (0.015) | (0.017) |
| Survey FE | X | X | X | X | X | X | X | X | X |
| Time Period(s) | ‘16-21 | ‘16-21 | ‘16-21 | ‘16-21 | ‘16-21 | ‘16-21 | ‘16-21 | ‘16-21 | ‘16-21 |
| $R^2$ | 0.04 | 0.05 | 0.04 | 0.08 | 0.08 | 0.04 | 0.04 | 0.05 | 0.12 |
| $N$ (Respondents) | 19,632 | 19,632 | 19,632 | 19,629 | 19,097 | 19,632 | 19,632 | 19,632 | 19,096 |
| $N$ (Counties) | 1,841 | 1,841 | 1,841 | 1,841 | 1,816 | 1,841 | 1,841 | 1,841 | 1,816 |

Notes. Each cell reports OLS coefficients with robust standard errors in parentheses; [1] compared to White, non-Hispanic; [2] compared to male; [3] compared to independent, [4] compared to moderate, [5] compared to income < $50k; [6] compared to less than high school; * $p < 0.05$.

Table A2. County-Level Predictors of Support for Increased Teacher Salaries – EN Poll

| | Outcome: Support for Increased Teacher Salaries | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** |
| Mean In-Person Rate (%) | 0.001* | | | | | | | | | | | | | 0.001* | 0.001* |
| | (0.000) | | | | | | | | | | | | | (0.000) | (0.000) |
| Covid Cases (%) | | 0.001 | | | | | | | | | | | | 0.000 | 0.001 |
| | | (0.003) | | | | | | | | | | | | (0.003) | (0.005) |
| Covid Deaths (%) | | | -0.355* | | | | | | | | | | | -0.277* | -0.352 |
| | | | (0.088) | | | | | | | | | | | (0.102) | (0.194) |
| Trump 2020 (%) | | | | -0.002* | | | | | | | | | | -0.001* | -0.001* |
| | | | | (0.000) | | | | | | | | | | (0.000) | (0.001) |
| Student Enrollment (10k) | | | | | 0.001 | | | | | | | | | 0.000 | -0.001 |
| | | | | | (0.002) | | | | | | | | | (0.002) | (0.002) |
| Union Membership (%) | | | | | | -0.003* | | | | | | | | | 0.000 |
| | | | | | | (0.001) | | | | | | | | | (0.001) |
| Per-Pupil Spending ($1k) | | | | | | | -0.007 | | | | | | | -0.005 | -0.004 |
| | | | | | | | (0.004) | | | | | | | (0.003) | (0.003) |
| Avg Teacher Salary ($10k) | | | | | | | | -0.017* | | | | | | -0.009* | -0.013 |
| | | | | | | | | (0.004) | | | | | | (0.004) | (0.007) |
| Avg Test Scores (SD) | | | | | | | | | -0.056 | | | | | -0.074 | -0.089 |
| | | | | | | | | | (0.030) | | | | | (0.039) | (0.080) |
| Private Market Share (%) | | | | | | | | | | -0.001 | | | | -0.002 | 0.000 |
| | | | | | | | | | | (0.001) | | | | (0.001) | (0.003) |
| Charter Market Share (%) | | | | | | | | | | | 0.005* | | | 0.003* | 0.004* |
| | | | | | | | | | | | (0.001) | | | (0.001) | (0.002) |
| White, Non-Hispanic (%) | | | | | | | | | | | | -0.002* | | -0.001* | -0.001 |
| | | | | | | | | | | | | (0.000) | | (0.000) | (0.001) |
| Median HH Income ($10k) | | | | | | | | | | | | | -0.004 | -0.012 | -0.015 |
| | | | | | | | | | | | | | (0.004) | (0.007) | (0.013) |
| Other County Demo. | | | | | | | | | | | | | | X | X |
| Survey FE | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Time Period(s) | ‘16-21 | ‘16-21 | ‘16-21 | ‘16-21 | ‘16-21 | ‘16-21 | ‘16-21 | ‘16-21 | ‘16-21 | ‘16-21 | ‘16-21 | ‘16-21 | ‘16-21 | ‘16-21 | ‘16-21 |
| $R^2$ | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.07 | 0.16 |
| $N$ (Respondents) | 19,612 | 19,211 | 19,211 | 19,532 | 19,579 | 8,878 | 19,062 | 18,973 | 19,612 | 19,632 | 19,632 | 19,632 | 19,612 | 18,893 | 8,018 |
| $N$ (Counties) | 1,839 | 1,834 | 1,834 | 1,832 | 1,834 | 271 | 1,823 | 1,822 | 1,839 | 1,841 | 1,841 | 1,841 | 1,839 | 1,815 | 261 |

Notes. Each cell reports OLS coefficients with robust standard errors in parentheses (clustered at the county level), * $p < 0.05$.

Table A3. Support for Education Spending and Local AY2020-21 In-Person Rates – EN Poll

| | Outcome: Weekly Average % In-Person (AY2020-21) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** |
| Support Increased Edu. Spending | 0.40 (0.92) | 2.05* (0.96) | 0.79 (0.89) | -0.51 (1.10) | 0.53 (0.89) | -2.57 (1.53) | 0.51 (0.56) | 1.13 (0.65) |
| Covid | X | X | X | X | X | X | X | X |
| Partisanship | X | X | X | X | X | X | X | X |
| Unions 1 | X | X | X | X | X | X | X | X |
| Unions 2 | | | | | | | | X |
| Spending | X | X | X | X | X | X | X | X |
| Test Scores | X | X | X | X | X | X | X | X |
| School Choice | X | X | X | X | X | X | X | X |
| Individual Demo. | X | X | X | X | X | X | X | X |
| County Demo. | X | X | X | X | X | X | X | X |
| Survey FE | | | | | | | X | X |
| Time Period(s) | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | All Years | All Years |
| $R^2$ | 0.45 | 0.44 | 0.44 | 0.44 | 0.45 | 0.45 | 0.44 | 0.64 |
| Adjusted $R^2$ | 0.45 | 0.44 | 0.43 | 0.43 | 0.44 | 0.43 | 0.44 | 0.64 |
| $N$ (Respondents) | 4,016 | 3,851 | 4,253 | 2,875 | 4,079 | 1,346 | 20,420 | 8,887 |
| $N$ (Counties) | 1,118 | 1,122 | 1,150 | 905 | 1,074 | 621 | 1,850 | 261 |

Notes. Each cell reports OLS coefficients with robust standard errors in parentheses (clustered at the county level), * $p < 0.05$.

Table A4. Support for Increased Education Spending and Local AY2020-21 In-Person Rates – Murmuration Poll

| | Outcome: Weekly Average % In-Person (AY2020-21) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
| Support Increased | 0.42 | 3.90* | 1.13 | 0.08 | 1.08 | 0.56 | 0.95 | -2.35 | 0.78 | 1.21 |
| Edu. Spending | (1.01) | (1.35) | (1.39) | (1.39) | (1.40) | (1.17) | (1.39) | (1.37) | (0.50) | (0.61) |
| Covid | X | X | X | X | X | X | X | X | X | X |
| Partisanship | X | X | X | X | X | X | X | X | X | X |
| Unions 1 | X | X | X | X | X | X | X | X | X | X |
| Unions 2 | | | | | | | | | | X |
| Spending | X | X | X | X | X | X | X | X | X | X |
| Test Scores | X | X | X | X | X | X | X | X | X | X |
| School Choice | X | X | X | X | X | X | X | X | X | X |
| Individual Demo. | X | X | X | X | X | X | X | X | X | X |
| County Demo. | X | X | X | X | X | X | X | X | X | X |
| Survey FE | | | | | | | | | X | X |
| Time Period(s) | Sp19 | Su19 | Fa19 | Wi20 | Sp20 | Su20 | Fa20 | Wi21 | All | All |
| $R^2$ | 0.40 | 0.41 | 0.43 | 0.44 | 0.42 | 0.49 | 0.48 | 0.43 | 0.43 | 0.64 |
| Adjusted $R^2$ | 0.40 | 0.40 | 0.42 | 0.43 | 0.41 | 0.49 | 0.47 | 0.42 | 0.43 | 0.64 |
| $N$ (Respondents) | 2,832 | 1,471 | 1,435 | 1,435 | 1,392 | 1,823 | 1,398 | 1,492 | 13,278 | 5,479 |
| $N$ (Counties) | 1,106 | 712 | 734 | 677 | 667 | 711 | 660 | 676 | 2,008 | 261 |

Notes. Each cell reports OLS coefficients with robust standard errors in parentheses (clustered at the county level), * $p < 0.05$.