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Revisiting Ethnic Differences in In-Person Learning During 2021-2022

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Abstract

During the 2020-21 school year, Black and Hispanic students were less likely to attend school in-person than white students. Prior research indicated multiple factors helped explain this gap. In this study, we revise these observed racial gaps in in-person learning to examine whether the relationship between these gaps and explanatory factors observed earlier in the pandemic changed during the 2021-2022 school year. We find that, while in-person gaps decreased, Black respondents continued to be less likely to report in-person learning than white respondents. Political leanings and COVID-19 health risks, which helped explain observed gaps in 2020-2021, lose explanatory power. But the availability of learning options remains an important factor in helping explain the observed in-person gaps. In this respect, our results suggest the presence of a mismatch between the preferences that Black families have and what they are being offered.

Keywords: COVID-19, Racial Gaps, Schooling Modality

Introduction

A growing body of research shows gaps across racial and ethnic groups in the use of in-person learning in the United States during the 2020-2021 school year, with Black and Hispanic students returning to in-person learning at lower rates than white students (Camp & Zamarro, 2021; Kurmann & Lalé, 2022). This in-person learning gap raises serious equity concerns as emerging research illustrates how remote and hybrid learning was associated with larger decreases in academic performance and widening racial achievement gaps during the pandemic (Goldhaber et al., 2022).

Several factors appear to explain these racial and ethnic gaps during the 2020-2021 school year including the availability of in-person learning options (Camp & Zamarro, 2021; Kurmann & Lalé, 2022), which was associated with communities' racial and ethnic demographics, socioeconomic status, and political leanings (Grossmann et al., 2021; Hartney & Finger, 2022; Kurmann & Lalé, 2022). Additionally, individuals' political preferences, trust in media, community spread of COVID-19, and perceived health risks were meaningfully associated with and plausibly explained these racial and ethnic in-person learning gaps (Camp & Zamarro, 2021; Harris and Oliver, 2021). Little is known, however, about how these observed gaps continued to evolve as the pandemic progressed and which factors continued to be associated with them.

In this paper, we study how the racial and ethnic in-person learning gaps observed early in the pandemic continued to evolve during the 2021-2022 school year as in-person offerings increased dramatically. We address the following research questions:

1. What racial and ethnic gaps, if any, existed in schooling modality during the 2021-2022 school year?
2. How did school district modality offerings relate to racial and ethnic in-person learning gaps during the 2021-2022 school year?
3. To what extent did factors separate from school district offerings, such as political leanings, trust in media, local COVID-19 spread, and COVID-19 health risks, remain relevant predictors in the 2021-2022 school year?

Answering these questions is of great policy relevance as they contribute to our understanding of how racial inequalities in education have been exacerbated by the pandemic. As the current policy focus moves from COVID mitigation and prevention toward academic recovery, understanding the characteristics of families who are reluctant to return to in-person learning is especially important, given available evidence that remote learning during the pandemic was associated with dramatic declines in student achievement (Goldhaber et al., 2022).

During the 2021-2022 school year, in-person learning became the default mode of instruction and public health institutions urged schools to provide an in-

person option. While 67 percent of parents reported access to remote instruction in September 2020 (National Center for Education Statistics, 2021a), only 34 percent of schools offered a remote learning option in September 2021 (National Center for Education Statistics, 2021b). The National Center for Education Statistics (2021b) reports that by September 2021 in-person learning was the default mode of schooling with all U.S. public schools surveyed offering in-person learning. Additionally, the wide availability of COVID-19 vaccines for everyone over 12 years of age at the beginning of the 2021-22 school year may have reduced individuals' perceived health risks and, consequentially, reduced families' preferences for remote or hybrid learning. As a result of these factors, we would expect the prevalence of remote learning to decrease from the 2020-2021 to 2021-2022 school year.

However, there are reasons to believe that families from minoritized communities may remain hesitant to return to in-person learning and that racial and ethnic gaps observed in 2020-2021 could, to some degree, persist. Black and Hispanic individuals have been disproportionately affected by the pandemic, with hospitalization rates at least two times that of whites for both groups (Centers for Disease Control and Prevention, 2022). Families from these communities may prefer remote or hybrid learning due to both the disproportionate impact of COVID-19 on their communities and historic abuse by government and medical establishments.

To examine these racial and ethnic gaps in the use of in-person learning during the 2021-2022 school year, we use nationally representative survey data from the Understanding America Study (UAS). The UAS has collected information on respondents' schooling experiences and choices throughout the pandemic. Specifically, we use survey waves[1] from summer 2021 and fall 2021 to examine both the intended and actual schooling modes, respectively. The summer 2021 data give us information on families' learning mode preferences, which are likely less affected by the supply of options, while the data from fall 2021 allow us to study realized racial and ethnic gaps in attendance, which may have been influenced by both families' preferences and the availability of remote options.

We find that the Black-white gap in the use of in-person learning persisted during the 2021-2022 school year but was smaller than the gap reported in 2020-2021. Our results also suggest the presence of a mismatch between the preferences that Black families have and what they are being offered. As a result, concerted efforts may be needed to ensure a quality education for families from minoritized communities with a preference for remote learning.

[1] The summer 2021 survey (UAS 348) was fielded from June 9th to July 21st, 2021 while the fall 2021 survey (UAS 350) was fielded from September 23rd to October 31st, 2021.

Prior Research

While the effects of schooling challenges during the pandemic are not yet fully understood, evidence indicates that students from low-income and minoritized communities were disproportionally impacted. Studies using cell-phone location data, surveys of districts, and surveys of families all indicate that schools serving these communities were far less likely to be offered in-person learning options during the 2020-2021 school year (Camp & Zamarro, 2021; Grossmann et al., 2021; Kurmann & Lalé, 2022; Parolin & Lee, 2021).

The unequal access to in-person learning is important because, even before the pandemic, remote learning appears associated with large academic deficits relative to in-person learning (Fitzpatrick et al., 2020; Woodworth et al., 2015). Studies of pandemic-era learning losses associated with remote learning reaffirm this pre-pandemic negative relationship (Darling-Aduana et al., 2022; Kogan & Lavertu, 2022). For example, Goldhaber et al., (2022) find that while remote learning was associated with decreased achievement relative to expected progress for all students, the declines were greatest among mid- and high-poverty schools. Taken together, the research indicates that low-income and minoritized students were more likely to learn remotely during the 2020-21 school year and experienced the greatest learning losses.

Given this concerning finding, researchers have sought to understand why a gap in modality exists by searching for factors that explain the observed racial and ethnic modality gaps. Much of the research has highlighted the role that school districts' offerings have played in explaining the in-person learning gap. Camp and Zamarro (2021) and Kurmann and Lalé (2022) find that the availability of in-person learning was a significant predictor of choosing in-person learning during the 2020-21 school year, which suggests that more families would choose in-person learning if given the chance. Districts' offerings appear to be shaped by local political leanings more than other factors, such as COVID-19 incidence (Grossmann et al., 2021; Hartney & Finger, 2022; Kurmann & Lalé, 2022), leading many to note the role that politics likely played in reopening decisions.

However, the offerings of districts did not fully explain differences in learning modalities as most districts allowed families to choose a modality from several options (Camp & Zamarro, 2021). For example, Chua et al., (2021) find that parents who reported their child being at high risk for COVID-19 were less likely to choose in-person learning than families that didn't report their child at high risk. Camp and Zamarro (2021) use nationally representative survey data from the UAS and find that, in addition to school offerings, factors such as political leanings, local COVID-19 spread, perceived health risks from COVID-19, and student grade-level explained distinct portions of the racial and ethnic in-person learning gaps during 2020-2021. Similar results were observed by Harris

and Oliver (2021) who found some evidence that school districts in areas with higher COVID incidence rates were more likely to have remote instruction.

Prior research examining modality gaps has focused almost exclusively on the 2020-21 school year. However, the pandemic response from schools, public health agencies, and families changed significantly by the 2021-22 school year. The widespread availability of in-person learning in the 2021-2022 school year significantly reduces the likelihood that minoritized students engaging in remote learning at higher rates would continue doing so simply because they had no other choice. Conversely, reduced availability of remote learning (IES, 2021b) could prevent families with a preference for remote learning from accessing it. Furthermore, some factors that previously predicted schooling modality may no longer be strong predictors as political messaging changed following the 2020 U.S. presidential election and vaccines against COVID-19 became more available.

To our knowledge, this paper is the first to use nationally representative data to examine whether the racial and ethnic gaps observed in the first pandemic school year persisted into the 2021-2022 school year and explore what factors explain these gaps.

Data and Descriptive Statistics

Since March 2020, the Dornsife Center for Economic and Social Research at the University of Southern California has collected data about the impact of the COVID-19 pandemic on American households through the Understanding Coronavirus in America (UCA) tracking survey. Participants in the UCA were recruited from the Understanding America Study[2] (UAS), a probability-based household internet panel with a nationally representative sample of approximately 9,000 U.S. respondents[3]. To date, the UCA has collected information about the pandemic at semi-regular intervals over 32 waves with an average of 7,000 respondents per wave. Each wave includes respondents' demographics such as gender, race and ethnicity, education level, household income, and marital status as well as information about respondents' experiences with the pandemic.

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[2] https://uasdata.usc.edu/index.php

[3] Importantly, the UAS research team provides internet access and hardware (e.g., tablets) to respondents who do not have computer hardware or internet access so all households in the panel may participate. Respondents receive compensation for their time spent answering questions at a rate of $20 per 30 minutes of interview time. The surveys are conducted both in English and Spanish.

Additionally, several waves collect information about the educational experiences of children in the respondent's household.[4]

We use two waves of the UCA collected during the summer of 2021 and fall of 2021 in our analysis. These separate waves allow us to examine factors relating to both respondents' intended and actual schooling modalities. In both waves, respondents answered a series of questions about the educational experiences of a randomly selected school-aged child living in their household. We restrict our sample to UCA respondents with at least one school-aged child in the household who is not homeschooled. Additionally, the UAS was designed to capture information about American households and so may include multiple respondents per household. As a result, some households provide multiple responses per student. In these cases, we retain only one observation per student in a household by keeping the primary respondent's survey response[5]. After these

[4] Our sample includes any adult living in a household with a child in K-12 schooling which may include extended family members or adult siblings. As a robustness check, we repeat our analyses for summer and fall samples restricted to parents of K-12 students as identified from the separate "My Household" survey in Appendix B.

[5] For a small number of households (13) across both waves, there were multiple responses but no primary respondent. For these cases, we randomly select only one response per student in each household and wave and exclude the others from our analytic sample.

restrictions have been made, our analytic samples for the summer and fall of 2021 include 1,225 and 1,458 respondents, respectively[6].

The summer 2021 survey asks respondents to indicate if their household plans on sending the selected child to attend school in person while the fall 2021 survey asks respondents if the selected child, at the time of the survey, was attending school in person only (92%), remote only (5% of the sample), both in-person and remote (hybrid) (3%) or other (0.1%). Given the low incidence of remote and hybrid learning, we combine this information to create a dummy variable that takes value one if the respondent reported their child attending in-person only and value zero if they reported attending remotely only or both in-person and remote (hybrid)[7]. We exclude those who reported "other" from our analytic sample.

The UAS collects respondent race in six categories (white, Black, AIAN, Asian, Hawaiian/Pacific Islander, and mixed) as well as an indicator for

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[6] Throughout our analysis our sample size changes somewhat due to some missingness in survey responses. In Appendix C, we show that our findings are robust to these changes in sample composition by performing our analysis with each specification limited to the most restricted analytic sample.

[7] While we combine remote and hybrid learning for fall of 2021 into a single variable, we explore these as separate outcomes using a multinomial logit model following the logit specification described in the next section. Full results for this multinomial analysis are presented as average marginal effects in Appendix D.

identifying as Hispanic/Latino. We use these variables to construct a single indicator for race/ethnicity with five discrete categories (Asian, Black, Hispanic/Latino, white, and other race/ethnicity)[8].

<< Figure 1 >>

As shown in Figure 1, 85 percent of respondents from the summer of 2021 reported that they planned on using in-person learning for the upcoming school year while during the fall of 2021, 93 percent of respondents reported currently using in-person learning. Across nearly all races/ethnicities, a higher proportion of respondents reported using in-person learning than planning to. Still, clear racial/ethnic gaps exist in both intentions to use and actual use of in-person learning. In line with prior research, we observe that Black respondents were 11 percentage points less likely to report intending to use in-person learning than the all-respondent average and 15 percentage points less likely than white respondents during the summer of 2021. While most racial/ethnic groups report similar levels of in-person learning use during the fall of 2021 (approximately 93

[8] Due to sample size limitations, we include non-Hispanic AIAN, Hawaiian/Pacific Islander, and mixed-race individuals in this other race category.

percent), only 86 percent of Black respondents report using in-person learning during this time.

We use other UAS and UCA information to construct variables representing respondents' levels of education (high school or lower education, some postsecondary with no earned degree, and postsecondary degree attained) and household incomes (less than $40,000, $40,000-$100,000, and more than $100,000 per year) to capture some socio-economic circumstances of the household. Additionally, as supporting remote learning for younger children may require adult supervision, we include controls for the selected child's school level (elementary, middle, or high school) and household composition (e.g., if the respondent is married or living with a partner).

Trust in institutions and political leanings were factors that explained decisions about learning modality during the 2020-2021 school year. To capture these, we include several measures of trust constructed using principal components factor analysis[9] from questions asked during the summer 2021 survey. We first construct a variable representing trust in public health institutions

[9] Detailed results from these factor analyses can be found in the technical appendix.

using respondents' assessments of the trustworthiness of the CDC, the US Department of Health and Human Services, and local public health officials. Next, we construct a measure of trust in mainstream media sources using assessments of the trustworthiness of CNN, MSNBC, NBC, CBS, ABC, and national newspapers. Finally, following the results of our exploratory factor analysis, we include a separate measure of trust in Fox News.[10] To capture political leanings we categorize respondents as Biden, Trump, third-party, or undecided/non-voters using UAS election polls and post-election surveys.

Moreover, we construct measures of individual and household vulnerabilities to COVID-19 using respondents' reported health conditions which may be COVID-19 comorbidities[11], respondent's vaccination status, and a binary variable indicating if everyone in the household was eligible for vaccination[12].

Finally, we include a measure of urbanicity to proxy for different factors associated with geographies such as the availability of high-speed internet. We

[10] As this is constructed from one question, we are unable to build the measure using factor analysis. Instead, we include this as a continuous variable with lower values indicating lower levels of trust.
[11] Comorbidities in the UCA survey include diabetes, cancer, heart disease, high blood pressure, asthma or a chronic lung disease, kidney disease, autoimmune disorders, and obesity.
[12] When both surveys were fielded, individuals aged 12 and up were eligible for vaccination.

also capture contextual information using the county-level COVID-19 incidence rates in each wave.

To examine school characteristics, we include controls for the type of school attended[13] (traditional public, charter, or private) as well as the availability of remote learning options in our fall 2021 analysis. We construct an indicator for the availability of remote learning based on a question asking respondents to estimate what percentage of students at a school are currently learning in person. If respondents indicate that any proportion of students in the child's school is attending remotely, we infer that a remote learning option must be available.

A full description of the variables can be found in the technical appendix A. We report descriptive statistics for our summer and fall 2021 analytic samples using sampling weights in tables 1 and 2, below.

<< Table 1 – Summer 2021 Sample Characteristics>>

<< Table 2 – Fall 2021 Sample Characteristics>>

[13] 45 respondents indicated that their child attended a "virtual school" but did not differentiate between virtual schools operated by a public school district or charters. We exclude these individuals from our analysis.

Analytic Strategy

We use logit models to predict the likelihood of a respondent planning to (summer 2021) or attending (fall 2021) school full in-person controlling for sets of covariates. Our first model includes only race/ethnicity as the independent variable of interest and documents the initial racial and ethnic gap in the 2021-2022 school year. The outcome (in-person learning) is a binary variable that takes on a value of one if the respondent i reports planning or sending their child to school fully in-person in season *s* (i.e. summer or fall 2021), or zero if the respondent reports their child attends school remotely or using a hybrid model. The model for this logistic regression is as follows:

$$InPerson_{is} = \Lambda(\beta_1 Race_i) \quad \text{(A)}$$

Where $\Lambda(.)$ indicates the logistic cumulative function.

Following Camp and Zamarro (2021), we estimate additional models where we sequentially add controls to study which factors help explain the initial observed racial and ethnic gaps. In all these additional models (B-D/E) we add controls for respondents' sociodemographic and family context including the respondent's reported household income, level of education, employment status, and a variable indicating if respondents are married or live with their partner (represented in our model as X_i). Additionally, we include controls for grade level (high school and middle-school student, with elementary student as the reference

category) and urbanicity in all additional model specifications B-D/E. Similarly, to capture differences stemming from school offerings we include controls for the school sector (e.g., charter and private schools, with public as the reference category) in specifications B-D/E of the fall 2021 analysis[14]. In specification C of the fall 2021 analysis, we add a variable capturing the reported availability of remote learning at the child's school. Bolded terms in the following model specifications refer to variables only available for the fall 2021 analysis.

$$InPerson_{is} = \Lambda(\beta_1 Race_i + \beta_2 StudentGrade_i + \boldsymbol{\beta_3 Charter_i} + \boldsymbol{\beta_4 Private_i} + \beta_5 Urbanicity_i + \mathrm{X_i}) \quad \text{(B)}$$

$$InPerson_{is} = \Lambda(\beta_1 Race_i + \beta_2 StudentGrade_i + \boldsymbol{\beta_3 Charter_i} + \boldsymbol{\beta_4 Private_i} + \beta_5 Urbanicity_i + \boldsymbol{\beta_6 RemoteOptionAvailable_i} + \mathrm{X_i}) \quad \text{(C)}$$

For both summer 2021 and fall 2021, we next add variables indicating political leanings (whether the respondent is a Trump voter, a third-party voter,

[14] We are unable to include these controls for the summer 2021 analysis.

undecided or non-voter, with Biden voter as the reference), and our measures of trust in media public health institutions.

$$
\begin{aligned}
InPerson_{is} = \Lambda(&\beta_1 Race_i + \beta_2 StudentGrade_i \\
&+ \boldsymbol{\beta_3 Charter_i} + \boldsymbol{\beta_4 Private_i} \\
&+ \beta_5 Urbanicity_i \\
&+ \boldsymbol{\beta_6 RemoteOptionAvailable_i} \\
&+ \beta_7 Vote2020_i + \beta_8 PublicHealthTrust_i \\
&+ \beta_9 MediaTrust_i + \beta_9 FoxNewsTrust_i \\
&+ \mathrm{X_i})
\end{aligned}
\tag{D}
$$

Our final model includes an indicator for respondent's COVID-19 comorbidities, full vaccination status, whether all members of the household are eligible for the vaccine, and local COVID-19 incidence rates:

$$
\begin{aligned}
InPerson_{is} = \Lambda(&\beta_1 Race_i + \beta_2 StudentGrade_i \\
&+ \boldsymbol{\beta_3 Charter_i} + \boldsymbol{\beta_4 Private_i} \\
&+ \beta_5 Urbanicity_i \\
&+ \boldsymbol{\beta_6 RemoteOptionAvailable_i} \\
&+ \beta_7 Vote2020_i + \beta_8 PublicHealthTrust_i \\
&+ \beta_9 MediaTrust_i + \beta_9 FoxNewsTrust_i \\
&+ \beta_{11} Comorbidities_i \\
&+ \beta_{12} FullyVaccinated_i \\
&+ \beta_{13} HouseholdOver12_i \\
&+ \beta_{14} LocalCOVIDActivity_i + \mathrm{X_i})
\end{aligned}
\tag{E}
$$

Results

<< Tables 3 and 4 Here>>

Tables 3 and 4 show results for factors associated with the probability of planning to send the child for full in-person learning in summer 2021 and the probability of the child attending fully in person in 2021, respectively. In the summer of 2021, we find that Black respondents were 16 percentage points less likely to report they plan to send the child for full in-person learning during the 2021-2022 school year (Column A). Encouragingly, this gap is smaller than the 18 percentage point gap in in-person school attendance that Camp and Zamarro (2021) documented for fall 2020. In addition, we do not generally find statistically significant differences in the probability of planning for in-person learning in summer 2021 for Hispanic, Asian, or other race respondents as compared to white respondents. This contrasts with documented gaps of 15-16 percentage points, for Hispanic and Asian/Other Race, in the probability of attending in-person learning in the Fall of 2020 (Camp & Zamarro, 2021).

The observed Black-white gaps in the intentions of in-person learning in summer 2021 shrink as we sequentially add controls and becomes statistically insignificant with a point estimate of 8 percentage points when controlling for political leanings and institutional trust (column C). Political leanings and trust in both public and national media health institutions are statistically significant

predictors of the probability of planning for in-person learning. Undecided or non-voters were between 11 and 13 percentage points more likely than Biden voters to plan to send their child to school in person. Interestingly, while prior research noted large differences in in-person learning between Trump and Biden voters in the fall of 2020 (Camp & Zamarro, 2021), it appears these differences diminished by the summer of 2021, as we do not find any statistically significant differences between Trump and Biden voters.

In contrast, trust in media and public health institutions continued to be important factors underlying school modality intentions during the summer of 2021. We find that a one standard deviation increase in trust in public health institutions is associated with an increase in a respondent's likelihood of planning to send their child to school in person of about 6 percentage points and a one standard deviation increase in trust in media sources is associated with an approximately 9 percentage point decrease in a respondent's likelihood of planning to send their child to school in person.

Our estimates for fall 2021, presented in Table 4, represent the realized racial and ethnicity gaps in in-person schooling once the school's learning modality options have been revealed and families' decisions made. In this case, we find that the initial gap between Black and white respondents in in-person learning attendance decreased to about 9 percentage points, with Black

respondents still less likely to report their child attending school fully in person in the fall (Column A). The Hispanic-white and Asian-white gaps remain small in size and statistically insignificant. The Other Race-white gap, however, increases in size but is imprecisely estimated.

Interestingly, the Black-white gap in in-person learning in the fall does not appear to change substantially when we add controls in our models for the fall of 2021 and Black respondents remain between 6 and 10 percentage points less likely than white respondents to report their child is attending school in person in the fall. Similar to findings for the 2020-21 school year (Camp & Zamarro, 2021), in fall 2021, high school students remained approximately 5 percentage points less likely to attend school in person than elementary school students. Interestingly, these differences were not observed when parents declared planning to send their child to school in person in the summer suggesting that some of these differences could be driven by the different learning options offered to students in different grade levels.

Charter schools were more likely to remain fully online earlier in the pandemic (Cohodes & Pitts, 2022; Singer, 2022; Camp & Zamarro, 2021; Harris & Oliver, 2021) and our results show that those attending charter schools remained less likely to attend school in person also during the second year of the pandemic as compared to those attending public schools. All else equal, students

attending charter schools were 15-16 percentage points less likely to attend school in person than public school students. In contrast with earlier findings (Camp & Zamarro, 2021), we do not find a significant difference in the probabilities of attending school in person between private and public school students in the fall of 2021.

While no statistically significant differences were found in intentions for in-person learning by urbanicity in our summer analysis, during the fall of 2021 respondents living in rural areas were between 7 and 12 percentage points less likely to report their children were attending school in person. This result is in contrast to what was observed in the first year of the pandemic where rural schools offered more in-person learning than urban areas (Camp & Zamarro, 2021). While we are unable to further explore the reasons for this different finding, research of school staff labor markets during the pandemic provides some potential explanations for this result. Goldhaber et al., (2022) analyze online job postings from Washington state and find that rural schools were more likely to report unfilled positions during the fall of 2021. Apparent shortages were particularly acute for transportation and facilities jobs. Similarly, Camp et al., (2022) document increased turnover for rural teachers entering the 2021-22 school year as compared to urban teachers in Arkansas. These results suggest that school labor shortages may be driving the negative correlation between rurality and in-person learning.

As in the first year of the pandemic (Camp & Zamarro, 2021; Kurmann & Lalé, 2022), the supply of learning options appears to be a significant predictor of modality choice in the fall of 2021. All else equal, respondents reporting some access to remote learning in their child's school were 9-10 percentage points less likely to report their child was attending fully in person than respondents without remote learning options.

While we did not observe differences between Trump and Biden voters in their intentions to use in-person learning during the summer, in fall 2021 we do observe that Trump voters were about 5 percentage points more likely to report their children attended school fully in-person (column D). These differences in the estimated effects of political leanings between summer and fall 2021 may reflect differences in the supply of learning options available to families depending on local political leanings as it was noted by others (Grossmann et al., 2021; Hartney & Finger, 2022; Kurmann & Lalé, 2022). The observed effect is, however, about half the size of the difference that was observed between Trump and Biden voters during the first year of the pandemic (Camp & Zamarro, 2021), and only marginally significant.

Finally, we do not observe statistically significant differences between vaccinated and unvaccinated respondents. However, COVID-19 incidence rates are marginally significantly associated with a reduced probability of attending

school in person. This relationship might reflect more school interruptions (e.g., temporary closures) in counties with a high number of COVID-19 cases.

Robustness Checks

We conduct two primary robustness checks. Firstly, in Appendix E, we repeat the above analysis but disaggregate Hispanic respondents into three separate groups based on respondents' reported personal/ancestral geographic origin.

We find evidence of meaningful differences in Hispanic subgroups with Mexican-identifying respondents more likely to report in-person attendance than white respondents in the fall of 2021. Conversely, we find evidence that respondents identifying as being from Central and South America were less likely to prefer in-person learning during the summer of 2021. These differences point to the importance of understanding how individual communities engage with schooling during the pandemic.

Secondly, we explore the sensitivity of various racial and ethnic groups to remote availability in Appendix F by estimating models in which indicator variables for each race and ethnic group are interacted with the indicator variable for remote learning availability during the fall of 2021 described above. Due to issues related to the interpretation of interaction terms in non-linear models (Ai & Norton, 2003), we estimate these interactions using linear probability models. We find evidence that Black respondents were most responsive to remote availability,

further suggesting that they may have unmet preferences for different learning modalities.

Discussion

Camp and Zamarro (2021) documented Black-White gaps in in-person learning of about 18 percentage points during the fall of the first pandemic school year. They also documented Hispanic-white and Asian/Other Race-white gaps between 15 and 16 percentage points in the probability of attending in-person learning in the fall of 2020. A combination of factors including the offering of in-person learning options, political views, COVID-19 health risks, and local COVID-19 activity were significant predictors and helped explain these observed gaps in the fall of 2020.

This follow-up analysis examines the summer and fall of 2021 and suggests that racial in-person gaps decreased during the second pandemic school year, but Black respondents remained 16 percentage points less likely to plan to send their children for fully in-person learning in the summer of 2021. Once school offerings were revealed in the fall of 2021, the observed Black-white gaps in in-person learning decreased but remained statistically significant at nearly 9 percentage points. In contrast to the reported Hispanic-white and Asian/other race gaps in the fall of 2020, we only observe small and statistically insignificant Hispanic-white and Asian-white gaps during the second pandemic school year in

both intentions and actual use of in-person learning during the summer and fall of 2021.

Respondents who report that remote options were available to them were about 9 percentage points less likely to report their child is attending fully in person than respondents who do not report any access to remote options. This estimated difference persists in all specifications, indicating that some families maintained a preference for remote or hybrid learning during the fall of 2021. However, controlling for the availability of remote options does not reduce the observed Black-white gap in in-person attendance during the fall of 2021. Taken together, our estimated Black-white gaps in in-person attendance during the summer and fall of 2021 may indicate a mismatch between the preferences that Black families have and what they are being offered. Indeed, this mismatch has been documented in popular reporting (Samuels, 2022). This finding is of practical importance for state- and district-level leaders as taking away remote options could harm the relationships between school districts and their families, especially Black families.

Political leanings appear to have lost explanatory power in observed in-person learning gaps during the second full academic year of the pandemic, especially the observed differences between Trump and Biden voters. Trust in media and public health institutions remained statistically significant factors

related to intentions for in-person learning in the summer of 2021 but were only marginally significantly associated with reported attendance fully in-person in fall 2021.

COVID-19 health risks also appear to have less explanatory power for the Black-white gaps in-person learning gaps between the summer and fall of 2021. We also do not observe that having been vaccinated or living in a household where all members are vaccinated were meaningfully associated with in-person learning. This lack of statistical significance could have several potential explanations such as individuals who had not been fully vaccinated might be indifferent to COVID-19 risks while those who were fully vaccinated were sensitive to health concerns. In this scenario, being vaccinated may have increased respondents' propensity to choose in-person school to the same level as the unvaccinated.

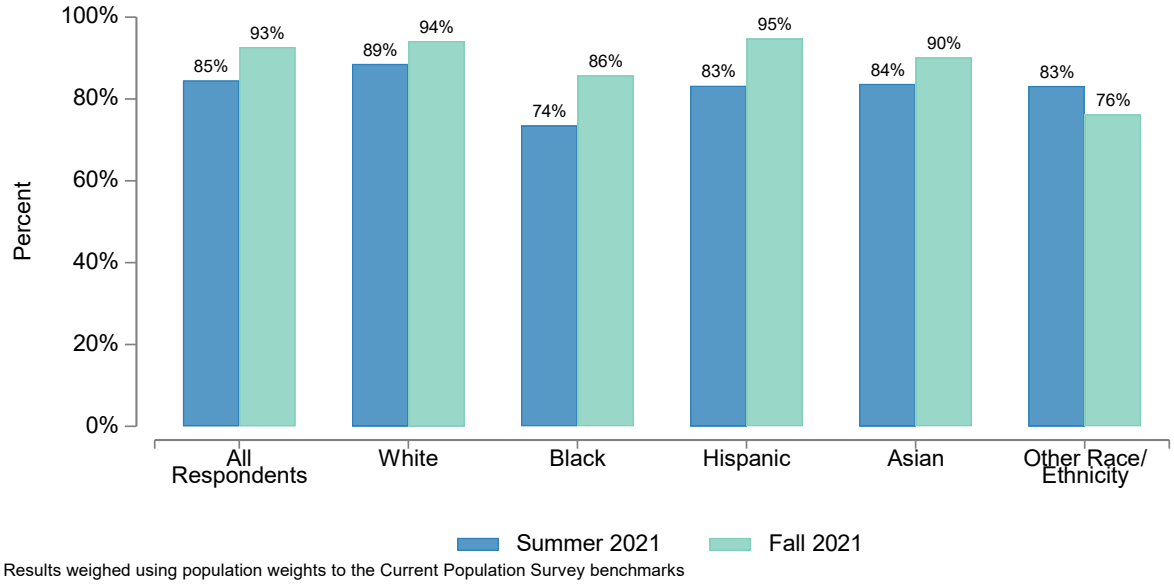
Another interesting finding from our October 2021 analysis is that rural respondents were 7-12 percentage points less likely to report in-person learning, in contrast with what was observed earlier in the pandemic. This different result could be due to higher education shortages documented for rural schools in this second pandemic year.

Although our results indicate that the Black-white gap in the use of in-person learning was smaller than the gaps reported in 2020-2021 to some degree

they persisted during the 2021-2022 school year. Our results also suggest a potential mismatch between Black families' preferences and what they are being offered. Given documented widening academic achievement gaps between Black and White students, as public policy focus moves from COVID mitigation and prevention toward academic recovery, understanding the concerns of families who are reluctant to return to in-person learning is especially important. Concerted efforts may also be needed to ensure a quality education for those families from minority communities with a preference for remote learning.

Figures

Figure 1. *Percentage of respondents intending and sending their school-age children for in-person learning in summer and fall 2021*



Source. Data from waves UAS348 and UAS350 of the Understanding Coronavirus in America Tracking Survey. Note. Results weighted using population weights to the Current Population Survey Benchmarks

Tables

Table 1 - Summer 2021 Sample Characteristics

	All N=1225	White N=709	Black N=134	Hispanic N=263	Asian N=96	Other N=23
Student Characteristics						
Elementary Student	0.456	0.473	0.390	0.449	0.463	0.748
Middle School Student	0.324	0.322	0.358	0.332	0.228	0.232
High School Student	0.220	0.205	0.252	0.219	0.309	0.020
Urbanicity						
Rural	0.221	0.280	0.207	0.113	0.068	0.069
Suburban/Mixed	0.519	0.562	0.420	0.468	0.489	0.851
Urban	0.260	0.158	0.373	0.419	0.443	0.080
Political Leanings						
Undecided/Non-voter	0.012	0.012	0.003	0.020	0.002	0.009
Trump Voter	0.381	0.543	0.040	0.236	0.215	0.507
Biden Voter	0.577	0.413	0.957	0.689	0.777	0.484
Third-Party Voter	0.030	0.032	0.000	0.055	0.006	0.000
Institutional Trust						
Public Health Trust	0.016	-0.116	0.030	0.232	0.362	-0.221
Fox News Trust	1.564	1.472	1.741	1.642	1.602	1.480
National Media Trust	0.043	-0.168	0.351	0.203	0.527	-0.328
COVID-19 Risk						
COVID-19 Incidence Rate	0.002	0.002	0.002	0.002	0.003	0.003
COVID-19 Comorbidity	0.442	0.456	0.518	0.392	0.290	0.486
Fully Vaccinated	0.456	0.446	0.389	0.495	0.615	0.250
Household Vaccine Eligible	0.346	0.302	0.427	0.345	0.547	0.135
Planning on In-Person Learning	**0.845**	**0.888**	**0.726**	**0.833**	**0.838**	**0.832**

Sampling Weights Used. Sample restricted to respondent in households with school-aged children enrolled in a public, private, or charter school.

Table 2 - Fall 2021 Sample Characteristics

	All N=1458	White N=877	Black N=143	Hispanic N=315	Asian N=101	Other N=22
Student Characteristics						
Elementary Student	0.386	0.413	0.401	0.317	0.379	0.368
Middle School Student	0.318	0.312	0.287	0.371	0.228	0.504
High School Student	0.295	0.275	0.312	0.313	0.393	0.128
Attends Charter School	0.056	0.040	0.056	0.088	0.086	0.000
Attends Private School	0.066	0.078	0.019	0.069	0.067	0.081
Urbanicity						
Rural	0.201	0.237	0.243	0.108	0.031	0.201
Suburban/Mixed	0.518	0.573	0.399	0.440	0.537	0.684
Urban	0.281	0.189	0.358	0.452	0.433	0.115
Political Leanings						
Undecided/Non-voter	0.014	0.014	0.016	0.014	0.012	0.016
Trump Voter	0.367	0.510	0.089	0.235	0.145	0.236
Biden Voter	0.585	0.434	0.880	0.719	0.835	0.749
Third-Party Voter	0.034	0.042	0.015	0.031	0.008	0.000
Institutional Trust						
Public Health Trust	0.049	-0.032	-0.011	0.186	0.387	-0.308
Fox News Trust	1.567	1.502	1.724	1.615	1.569	1.932
National Media Trust	0.075	-0.120	0.437	0.194	0.483	0.229
COVID-19 Risk						
COVID-19 Incidence Rate	0.030	0.030	0.037	0.027	0.029	0.032
COVID-19 Comorbidity	0.430	0.444	0.523	0.361	0.341	0.302
Fully Vaccinated	0.573	0.575	0.448	0.631	0.647	0.504
Household Vaccine Eligible	0.365	0.297	0.493	0.401	0.536	0.315
Remote Option Available	**0.605**	**0.612**	**0.633**	**0.577**	**0.586**	**0.598**
Attending In-Person	**0.927**	**0.941**	**0.857**	**0.948**	**0.902**	**0.762**

Sampling Weights Used. Sample restricted to respondent in households with school-aged children enrolled in a public, private, or charter school.

Table 3 – Factors Associated with Preference for In-Person Learning (Summer 2021)

	(A)	(B)	(C)	(D)
	N=1225	**N=983**	**N=948**	**N=905**
Black	-0.162***	-0.111**	-0.083	-0.082
	(0.049)	(0.055)	(0.056)	(0.054)
Hispanic	-0.057	-0.063	-0.049	-0.069
	(0.039)	(0.044)	(0.042)	(0.043)
Asian	-0.051	0.012	0.031	0.037
	(0.059)	(0.049)	(0.045)	(0.043)
Other Race/Ethnicity	-0.056	-0.022	-0.019	0.023
	(0.111)	(0.105)	(0.103)	(0.076)
Middle School Student		0.005	0.014	0.017
		(0.039)	(0.039)	(0.043)
High School Student		0.008	0.006	-0.013
		(0.035)	(0.035)	(0.037)
Rural		-0.005	-0.004	0.023
		(0.042)	(0.042)	(0.040)
Urban		-0.028	-0.037	-0.009
		(0.034)	(0.035)	(0.036)
Undecided/Non-voter			0.125***	0.108**
			(0.031)	(0.043)
Trump Voter			-0.004	-0.000
			(0.040)	(0.038)
Third-Party Voter			(dropped)	(dropped)
Public Health Trust Factor			0.063**	0.063**
			(0.026)	(0.027)
Trust in Fox News			0.006	0.001
			(0.023)	(0.023)
National Media Trust Factor			-0.085***	-0.087***
			(0.025)	(0.026)
COVID-19 Comorbidity Risk				-0.013
				(0.031)
Fully Vaccinated				0.046
				(0.040)
Household Vaccine Eligible				-0.052
				(0.041)
Incidence Rate				-1.192
				(3.187)
Demographic Controls	No	Yes	Yes	Yes
Pseudo R^2	0.028	0.098	0.134	0.147

Note: .01 - ***; .05 - **; .1 - *; Sampling weights used. Demographic controls include respondent employment status, married or living with partner, household income, and respondents' education.

Table 4 – Factors Associated with In-Person Learning (Fall 2021)

	(A)	(B)	(C)	(D)	(E)
	N=1458	**N=1074**	**N=1073**	**N=805**	**N=705**
Black	-0.086**	-0.061	-0.078*	-0.074	-0.097*
	(0.037)	(0.038)	(0.040)	(0.056)	(0.058)
Hispanic	0.005	0.011	0.006	0.026	0.012
	(0.022)	(0.030)	(0.031)	(0.026)	(0.031)
Asian	-0.041	-0.001	0.004	-0.014	-0.020
	(0.048)	(0.044)	(0.039)	(0.042)	(0.044)
Other Race/Ethnicity	-0.181	-0.169	-0.167	-0.145	-0.248
	(0.140)	(0.139)	(0.132)	(0.140)	(0.175)
Middle School Student		-0.016	-0.020	-0.012	0.006
		(0.024)	(0.021)	(0.022)	(0.027)
High School Student		-0.047*	-0.045	-0.052*	-0.048*
		(0.027)	(0.028)	(0.028)	(0.029)
Charter School Student		-0.161**	-0.169***	-0.149**	-0.122
		(0.068)	(0.060)	(0.071)	(0.078)
Private School Student		0.015	-0.028	-0.009	(dropped)
		(0.038)	(0.053)	(0.066)	
Rural		-0.111***	-0.117***	-0.087**	-0.069*
		(0.039)	(0.039)	(0.039)	(0.037)
Urban		0.002	0.005	0.007	-0.005
		(0.019)	(0.017)	(0.020)	(0.025)
Remote Option Available			-0.085***	-0.100***	-0.100***
			(0.018)	(0.019)	(0.020)
Undecided/Non-voter				-0.237*	0.008
				(0.126)	(0.077)
Trump Voter				0.050*	0.046
				(0.026)	(0.029)
Third-Party Voter				-0.067	-0.107
				(0.104)	(0.115)
Public Health Trust Factor				-0.007	-0.016
				(0.016)	(0.017)
Trust in Fox News				0.019	0.032*
				(0.018)	(0.019)
National Media Trust Factor				0.019	0.021
				(0.017)	(0.017)
COVID-19 Comorbidity Risk					0.001
					(0.028)
Fully Vaccinated					0.046
					(0.028)
Household Vaccine Eligible					-0.024
					(0.035)
Incidence Rate					-1.206*
					(0.716)
Demographic Controls	No	Yes	Yes	Yes	Yes
Pseudo R^2	0.025	0.172	0.228	0.284	0.300

Note: .01 - ***; .05 - **; .1 - *; Sampling weights used. Demographic controls include respondent employment status, married or living with partner, household income, and respondents' education.

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Appendix A: Data and Variable Construction

We use two waves of UAS[15] survey data from summer 2021 (UAS 348; June and July) and fall 2021 (UAS 350; September and October). The UAS panel consists of a national sample of American households using an address-based sample frame. The UAS team recruits participants through several sample batches. The UAS team uses an adaptative sampling design where addresses from zip codes across the US are randomly selected for recruitment. Each sample batch, however, is adjusted to account for differential nonresponse in prior waves, and zip codes with higher proportions of non-respondents are sampled more heavily than those with proportions similar to or greater than population proportions. The UAS also includes separate oversamples for Native American respondents, respondents from Los Angeles County, and California populations. For each completed survey in the UAS, the UAS team provides wave-specific sample weights. We use sample weights in our analysis and descriptive statistics that keep the representativeness of the sample to the U.S population aged 18 and older concerning gender, race/ethnicity, education, and geographical location[16].

In-Person Learning

In our summer analysis, we use an indicator of whether the parent answers "yes" to the question "*Are you planning to send (selected child) to school in person at the beginning of the 2021-22 school year?*" If the respondent answers "no" or "unsure," we code them as a zero. In the fall, we

[15] https://uasdata.usc.edu/index.php

[16] Note that weights aligned to the characteristics of U.S households with K–12 or higher education students are not provided in the UAS. Provided sample weights bring the sample in line with the U.S. adult population.

use an indicator of whether the parent selects "in-person only" in response to the question "*How is (selected child) currently attending school?*" If the respondent selects "remote only," "both in-person and remote (hybrid)," or "other, please specify," we code them as a zero.

Demographics

In our primary analysis, we control for the self-reported race/ethnicity of the respondents by using four binary variables: Black, Hispanic, Asian, and other race/ethnicity. In appendix C, we provide results with the Hispanic category disaggregated by geographic origin. In all analyses, self-identified white respondents are our reference category. We also control for gender using a binary variable for self-reported gender (male or female). As household composition may affect the ability of families to facilitate remote learning, we use a binary variable that indicates whether respondents report being married or living with their partner.

Education

We control for the self-reported education level of the respondent with two binary variables: "no college" and "some college" (with "college" as the omitted category). If the respondent reports having a high school degree or less, with no post-secondary education, we categorize them as "no college." If the respondent reports having some postsecondary experience but does not have a bachelor's degree, we categorize them as "some college." If the respondent reports having a bachelor's degree or higher, we categorize them as "college."

Household Income

Our analysis also includes controls for household income with two binary variables: low-income and mid-income. We define low-income respondents as those who report a household income of under $50,000 per year, mid-income respondents as those who report a household income of

$50,000 to $100,000 per year, and high-income respondents, the reference category, as those who report a household income of over $100,00 per year.

Political Leanings

We control for political leanings using three binary variables (Trump voter, third-party voter, undecided/non-voter, with Biden voter as the omitted category) built from election data from the UAS 2020 Presidential Election surveys. We merge in data from the post-election survey, which indicates whether respondents voted for Biden, Trump, a third-party candidate, or were non-voters. Among our summer 2021 sample, 213 respondents did not answer the post-election survey. Among our fall 2021 sample, there were 154. For these missing respondents, we impute data from pre-election polling surveys, which indicates which candidate respondents planned to vote for in October or November of 2020, or if they were undecided/non-voters. In total, we impute 213 values for specification C in our summer 2021 analysis and 154 values for specification D in our fall 2021 analysis.

Public Health and Media Trust

The summer survey (UAS 348) asked respondents to rate their trustworthiness of public health institutions and mainstream news sources on a scale of one (do not trust) to four (fully trust). We develop an index of trust in public health institutions by conducting a factor analysis of three variables: trust in the Center for Disease Control and Prevention (CDC), in the Department of Health and Human Services (HHS), and in local public health officials. The results of the factor analysis are shown below.

Factor Analysis for Public Health Trust

Variable	**Factor 1**	**Uniqueness**
Local Public Health	0.891	0.207

HHS	0.931	0.134
CDC	0.923	0.149

In contrast to similar analysis results by Camp and Zamarro (2021), we find that a unique factor was retained including similar weight for all media sources but Fox News, which was weighted far lower than other factors and appeared to capture a different construct. Therefore, we use two media trust variables. Firstly, we construct a media trust factor that combines trust in CNN, MSNBC, NBC, ABC, CBS, and national newspapers using an orthogonal rotation of the factor analysis results. Secondly, we include a separate variable indicating the respondent's trust in Fox News on a four-point scale from one (do not trust) to four (fully trust). We report the results of our factor analyses for trust in national media below.

Factor Analysis for National Media Trust

Variable	**Factor 1**	**Uniqueness**
CNN	0.939	0.119
MSNBC	0.950	0.098
NBC	0.951	0.095
CBS	0.953	0.093
ABC	0.938	0.120
National Newspapers	0.908	0.176

COVID-19 Comorbidities

In both the summer and fall surveys, respondents indicate whether they have a significant COVID-19 health risk due to diabetes, high blood pressure, kidney disease, autoimmune disease, lung diseases such as COPD, or obesity. We build a binary variable to indicate if the respondent reports having been diagnosed with any of these conditions.

Fully Vaccinated

In both the summer and the fall, the UAS asks whether the survey respondents are vaccinated, how many doses they have received, and which vaccine they received (Pfizer, Moderna, Johnson & Johnson, or other). If the respondent answered these questions in a previous survey, the survey asks them to confirm the information they previously provided. As of summer and fall 2021, to be fully vaccinated with the Johnson & Johnson vaccine, only one dose was necessary, and boosters were unavailable. Some respondents may therefore have only received one Johnson & Johnson COVID-19 vaccine dose yet be fully vaccinated according to FDA standards. We code respondents with a one for fully vaccinated if the respondent indicated receiving at least two doses of the Pfizer or Moderna COVID-19 vaccines or one dose of the Johnson & Johnson COVID-19 vaccine.

Household Vaccine Eligibility

A household's decisions about in-person learning may involve weighing risks to other family members, particularly those under the age of 12 who were ineligible for any COVID vaccine at the time of the survey. To better capture these dynamics, we include an indicator variable that takes a value of 1 if all members of the household are older than 12 years old in our final specification. The ages of household members are captured using quarterly surveys administered by the UAS and so, there may be some measurement error if a respondent's child has turned 12 between the completion of the quarterly survey and the survey used for analysis, but we think this error will affect only a very limited number of cases.

Local COVID-19 Activity

We merge our survey data with information on county-level COVID-19 incidence collected by the New York Times and use population information from the U.S Census Bureau to construct

local COVID-19 incidence rates. Due to constraints stemming from maintaining identifiability, these incidence rates represent the proportion of a county's residents that have been confirmed to have been infected with COVID-19 between the first day of each consecutive survey wave. Values for the summer 2021 survey thus represent the proportion of respondents' home county residents infected between May 12th and June 9th, 2021. Values for the fall 2021 survey similarly represent the proportion of respondents' home county residents infected between June 9th and September 23rd, 2021.

Urbanicity

We include a measure of urbanicity to proxy for different factors associated with geographies such as the availability of high-speed internet and alternative schooling options. Our measure is constructed from UAS data which categorizes respondents based on the share of residents in a respondent's zip code tabulation area (ZCTA) that live in census-designated urbanized areas. If all individuals within a ZCTA reside in an urbanized area, the respondent is considered an urban respondent whereas if no individuals within a ZCTA reside in an urbanized area they are rural respondents. Those respondents who live within a ZCTA which has a mixture of individuals residing in urbanized and non-urbanized areas are considered mixed/suburban respondents.

Remote Learning Available

We control for the availability of remote learning using self-reported data from parents. The fall 2021 survey asks respondents to estimate what percentage of the students in their child's K-12 school were currently attending school in person at that time. We infer that parents who report less than 100 percent of students in their school attend in-person likely are aware that remote or hybrid learning are available options in their school. We use this data to create a binary variable

for the availability of remote options that takes the value of zero if respondents report 100 percent of students in their child's school attending in-person and one if respondents report any other percentage.

Type of School Attended

Prior research has found that students attending charter schools were less likely to attend school in-person than public school students in the 2020-21 school year while students attending private schools were more likely to attend in person than public school students (Cohodes & Pitts, 2022; Singer, 2022; Camp & Zamarro, 2021; Harris & Oliver, 2021). The fall 2021 survey asks respondents to indicate if their child attends either a public school, charter school, private school, or virtual school. As virtual schools may be public, charter, or private schools, we exclude respondents who select this answer (N=45) from our analysis.

We then construct indicator variables indicating the sector (public, charter, or private) of each student's school and include these binary indicators in specifications B, C, and D of our analysis for fall 2021. We exclude the indicator for private school students in specification E as the reduced sample size results in the variable perfectly predicting in-person learning (e.g., all private school students attend in-person) in that specification

Grade Level

In both survey waves, respondents are asked to identify which grade the randomly selected child they are asked about is in. The options range from kindergarten to 12th grade. We construct a categorical variable with three levels. Children in fourth grade and lower are categorized as attending an elementary school. Middle school children are defined as being in 5th – 8th grades. High school children are defined as being in 9th – 12th grades.

Appendix B: Summary Statistics and Results Restricting Sample to Parents

As the Understanding America Study (UAS) is a household survey eligible to anyone aged 18 or over who resides in the household, respondents may not necessarily be the parent of the child questions are being asked about. In our primary analysis, we do not limit our analytic sample to parents (biological, adoptive, or stepparent) because all respondents in a household may contribute to care responsibilities and might be aware of the child's learning modality, as they are living with the child. As a robustness check, we repeat our analysis described in the analytic strategy section with a sample limited to parents of a school-aged child living in the household.

While the UAS waves of data we use in the analysis do not identify respondents if they are the parent of the randomly selected child whom questions are asked of, the UAS does collect household information via a quarterly "My Household" survey. This survey asks each respondent to list the age of each member of the household along with their relation to that household member. We define parents as anyone who indicates that a household member is a "child (including step/adopted)" aged 5-18. We additionally include households where the respondent is a grandparent with a grandchild aged 5-18, but no child, living in the household. This sample restriction would thus exclude responses from older siblings, extended family, and unmarried partners who do not claim the child as their own. Descriptive statistics, results, and a brief discussion of those results can be found below.

Appendix Table B.1
Summer 2021 Sample Characteristics

	All	White	Black	Hispanic	Asian	Other
	N=869	N=551	N=78	N=164	N=62	N=14
Student Characteristics						
Elementary Student	0.450	0.458	0.315	0.517	0.420	0.706
Middle School Student	0.327	0.326	0.429	0.288	0.235	0.265
High School Student	0.222	0.216	0.256	0.195	0.345	0.029
Urbanicity						
Rural	0.214	0.253	0.190	0.131	0.097	0.103
Suburban/Mixed	0.573	0.595	0.506	0.562	0.493	0.776
Urban	0.213	0.152	0.304	0.308	0.410	0.120
Political Leanings						
Undecided/Non-voter	0.011	0.015	0.000	0.007	0.002	0.016
Trump Voter	0.412	0.540	0.041	0.272	0.235	0.840
Biden Voter	0.546	0.415	0.959	0.662	0.755	0.144
Third-Party Voter	0.031	0.031	0.000	0.059	0.009	0.000
Institutional Trust						
Public Health Trust	-0.081	-0.126	-0.128	-0.058	0.500	-0.117
Fox News Trust	1.511	1.468	1.702	1.498	1.570	1.364
National Media Trust	-0.056	-0.208	0.257	0.006	0.683	-0.543
COVID-19 Risk						
COVID-19 Incidence Rate	0.002	0.002	0.002	0.002	0.003	0.006
COVID-19 Comorbidity	0.420	0.429	0.491	0.386	0.264	0.365
Fully Vaccinated	0.448	0.456	0.356	0.485	0.473	0.287
Household Vaccine Eligible	0.217	0.205	0.241	0.199	0.382	0.043
Plans on In-Person Learning	**0.887**	**0.916**	**0.751**	**0.872**	**0.980**	**0.871**

Sampling weights used. Sample restricted to respondent in households with school-aged children enrolled in a public, private, or charter school.

Appendix Table B.2
Fall 2021 Sample Characteristics

	All N=1108	White N=720	Black N=86	Hispanic N=215	Asian N=72	Other N=15
Student Characteristics						
Elementary Student	0.389	0.404	0.292	0.405	0.379	0.206
Middle School Student	0.308	0.319	0.321	0.307	0.161	0.514
High School Student	0.303	0.277	0.386	0.288	0.460	0.280
Attends Charter School	0.055	0.044	0.021	0.088	0.122	0.000
Attends Private School	0.072	0.088	0.012	0.068	0.046	0.000
Urbanicity						
Rural	0.209	0.235	0.259	0.130	0.041	0.409
Suburban/Mixed	0.540	0.568	0.451	0.505	0.538	0.337
Urban	0.251	0.197	0.291	0.365	0.421	0.254
Political Leanings						
Undecided/Non-voter	0.011	0.016	0.000	0.000	0.016	0.036
Trump Voter	0.401	0.513	0.070	0.282	0.178	0.470
Biden Voter	0.554	0.432	0.930	0.675	0.795	0.494
Third-Party Voter	0.034	0.039	0.000	0.044	0.011	0.000
Institutional Trust						
Public Health Trust	0.005	-0.032	-0.072	0.016	0.490	-0.252
Fox News Trust	1.538	1.489	1.767	1.533	1.576	1.895
National Media Trust	0.032	-0.132	0.400	0.120	0.635	0.084
COVID-19 Risk						
COVID-19 Incidence Rate	0.030	0.031	0.037	0.026	0.027	0.024
COVID-19 Comorbidity	0.425	0.433	0.532	0.368	0.347	0.317
Fully Vaccinated	0.578	0.578	0.434	0.645	0.604	0.490
Household Vaccine Eligible	0.252	0.225	0.298	0.260	0.411	0.222
Remote Option Available	**0.589**	**0.605**	**0.583**	**0.567**	**0.520**	**0.542**
Attending In-Person	**0.937**	**0.948**	**0.888**	**0.943**	**0.893**	**0.971**

Sampling weights used. Sample restricted to respondent in households with school-aged children enrolled in a public, private, or charter school.

Appendix Table B.3
Factors Associated with Preference for In-Person Learning (Summer 2021)

	(A)	(B)	(C)	(D)
	N=869	**N=719**	**N=692**	**N=658**
Black	-0.146**	-0.161*	-0.117	-0.134*
	(0.061)	(0.085)	(0.074)	(0.077)
Hispanic	-0.041	-0.024	-0.008	-0.026
	(0.041)	(0.042)	(0.043)	(0.042)
Asian	0.067***	0.047*	0.057*	0.059*
	(0.019)	(0.028)	(0.030)	(0.030)
Other Race/Ethnicity	-0.043	0.016	-0.053	0.073***
	(0.121)	(0.095)	(0.128)	(0.025)
Middle School Student		-0.009	0.011	-0.008
		(0.043)	(0.044)	(0.064)
High School Student		-0.001	0.012	-0.003
		(0.038)	(0.036)	(0.038)
Rural		0.030	0.022	0.043
		(0.044)	(0.044)	(0.040)
Urban		0.027	0.020	0.051
		(0.037)	(0.036)	(0.033)
Undecided/Non-voter			0.110***	0.082
			(0.033)	(0.051)
Trump Voter			0.035	0.018
			(0.043)	(0.043)
Third-Party Voter			(dropped)	(dropped)
Public Health Trust Factor			0.078***	0.073***
			(0.030)	(0.028)
Trust in Fox News			0.004	0.009
			(0.026)	(0.028)
National Media Trust Factor			-0.068**	-0.075**
			(0.030)	(0.032)
COVID-19 Comorbidity Risk				-0.005
				(0.032)
Fully Vaccinated				0.068
				(0.042)
Household Vaccine Eligible				-0.015
				(0.060)
Incidence Rate				0.503
				(3.327)
Demographic Controls	No	Yes	Yes	Yes
Pseudo R^2	0.038	0.120	0.158	0.188

Note: .01 - ***; .05 - **; .1 - *; Sampling weights used. Demographic controls include respondent employment status, married or living with partner, household income, and respondents' education.

Appendix Table B.4
Factors Associated with In-Person Learning (Fall 2021)

	(A)	(B)	(C)	(D)	(E)
	N=1108	**N=839**	**N=839**	**N=638**	**N=555**
Black	-0.060	-0.044	-0.066	-0.045	-0.076
	(0.044)	(0.042)	(0.043)	(0.047)	(0.059)
Hispanic	-0.005	-0.012	-0.021	0.004	-0.009
	(0.026)	(0.036)	(0.039)	(0.039)	(0.045)
Asian	-0.055	-0.031	-0.024	-0.025	-0.062
	(0.062)	(0.053)	(0.049)	(0.044)	(0.054)
Other Race/Ethnicity	0.023	0.039	0.041**	0.035	-0.007
	(0.032)	(0.024)	(0.019)	(0.026)	(0.064)
Middle School Student		-0.021	-0.027	-0.037**	-0.042*
		(0.023)	(0.019)	(0.018)	(0.023)
High School Student		-0.070**	-0.080***	-0.084***	-0.073***
		(0.030)	(0.030)	(0.026)	(0.025)
Charter School Student		-0.137*	-0.153**	-0.249***	-0.237***
		(0.077)	(0.069)	(0.070)	(0.073)
Private School Student		0.019	-0.047	-0.058	
		(0.044)	(0.077)	(0.091)	
Rural		-0.130***	-0.143***	-0.109**	-0.118*
		(0.043)	(0.042)	(0.050)	(0.062)
Urban		-0.008	-0.004	-0.007	-0.021
		(0.020)	(0.019)	(0.022)	(0.023)
Remote Option Available			-0.085***	-0.104***	-0.110***
			(0.018)	(0.020)	(0.020)
Undecided/Non-voter				-0.251*	0.016
				(0.136)	(0.078)
Trump Voter				0.046*	0.049*
				(0.024)	(0.025)
Third-Party Voter				-0.086	-0.095
				(0.124)	(0.108)
Public Health Trust Factor				-0.020	-0.027**
				(0.014)	(0.014)
Trust in Fox News				0.011	0.018
				(0.018)	(0.019)
National Media Trust Factor				0.013	0.018
				(0.014)	(0.016)
COVID-19 Comorbidity Risk					-0.021
					(0.025)
Fully Vaccinated					-0.000
					(0.030)
Household Vaccine Eligible					0.025
					(0.022)
Incidence Rate					-0.588
					(0.805)
Demographic Controls	No	Yes	Yes	Yes	Yes
Pseudo R^2	0.015	0.231	0.304	0.388	0.391

Note: .01 - ***; .05 - **; .1 - *; Sampling weights used. Demographic controls include respondent employment status, married or living with partner, household income, and respondents' education.

Examining the results reported in appendix table B.3, we find that most estimated coefficients are similar to those reported in table 3 of our primary analysis. We find that factors such as trust in public health institutions and national media trust organizations remain associated with intentions to use in-person learning at similar levels, although standard errors are somewhat larger, which is expected given our reduced sample size. While point estimates for the association between being an undecided or non-voter and intentions to use in-person learning are similar in direction, they are attenuated somewhat and no longer statistically distinguishable from zero in column D.

Finally, we now find statistically significant differences between Black and white and Asian and white families. All else equal, Asian parents are 5-6 percentage points more likely than white parents to report intending to use in-person learning. However, this estimate is only significant at the 90% confidence level. The most notable difference from our main result, however, is that the estimated coefficient for Black parents remains at nearly the same magnitude throughout all four specifications. While these coefficients are imprecisely estimated, they do indicate that Black parents might be especially hesitant for their children to return to in-person learning.

As shown in appendix table B.4, however, this difference between Black and white parents no longer appears significant when comparing actual attendance modality. Indeed, no estimates for Black respondents are significant in this supplementary analysis as compared to three for our primary analysis. Additionally, we now find stronger evidence that middle and high school students are less likely to be attending school in-person than in our primary analysis. Similarly, point estimates for attending a charter school and living in a rural area have grown in magnitude compared to our primary analysis. The estimated association between charter school

attendance and in-person learning is now relatively large. All else equal, attending a charter school is associated with an approximately 24 percentage point decrease in the probability of reporting in-person learning. This estimate is significant at the 99% confidence level. Finally, we now find marginally significant, positive, associations between voting for Donald Trump in the 2020 election and reporting in-person learning.

Appendix C: Sensitivity to Changes in Sample Composition

Our analyses draw from multiple data sources and Understanding America Study surveys to construct a comprehensive set of covariates and plausibly explanatory factors. However, because we draw from several data sources the size and composition of our analytic sample change somewhat in each specification. Tables C.1 and C.2, below, repeat the same analysis we use in our primary results; however, each table is limited to the final analytic sample for the summer and fall of 2021, respectively. These robustness checks allow us to compare how stable our estimates are and what proportion may be attributable to changes in the sample. Overall, the results presented below are quite similar to those we select as our main results, indicating that the relationships we find between specifications are not caused by changes in sample composition.

Appendix Table C.1
Factors Associated with Preference for In-Person Learning (Summer 2021)

	(A)	(B)	(C)	(D)
	N=904	**N=904**	**N=904**	**N=904**
Black	-0.137**	-0.097*	-0.070	-0.061
	(0.054)	(0.055)	(0.055)	(0.052)
Hispanic	-0.097*	-0.081*	-0.062	-0.061
	(0.050)	(0.048)	(0.042)	(0.043)
Asian	0.031	0.007	0.031	0.043
	(0.036)	(0.052)	(0.046)	(0.043)
Other Race/Ethnicity	-0.053	0.026	0.027	0.030
	(0.127)	(0.076)	(0.079)	(0.077)
Middle School Student		-0.017	-0.010	0.016
		(0.041)	(0.040)	(0.043)
High School Student		-0.009	-0.012	-0.009
		(0.037)	(0.034)	(0.036)
Rural		0.013	0.018	0.023
		(0.043)	(0.041)	(0.040)
Urban		-0.017	-0.025	-0.013
		(0.036)	(0.036)	(0.037)
Undecided/Non-voter			0.107***	0.108**
			(0.041)	(0.043)
Trump Voter			-0.010	0.003
			(0.039)	(0.038)
Third-Party Voter			(dropped)	(dropped)
Public Health Trust Factor			0.069**	0.063**
			(0.028)	(0.027)
Trust in Fox News			-0.006	0.002
			(0.022)	(0.023)
National Media Trust Factor			-0.090***	-0.089***
			(0.027)	(0.026)
COVID-19 Comorbidity Risk				-0.014
				(0.031)
Fully Vaccinated				0.053
				(0.039)
Household Vaccine Eligible				-0.054
				(0.041)
Incidence Rate				-1.331
				(3.178)
Demographic Controls	No	Yes	Yes	Yes
Pseudo R^2	0.033	0.092	0.137	0.148

Note: .01 - ***; .05 - **; .1 - *; Sampling weights used. Demographic controls include respondent employment status, married or living with partner, household income, and respondents' education.

Appendix Table C.2
Factors Associated with In-Person Learning (Fall 2021)

	(A)	(B)	(C)	(D)	(E)
	N=704	**N=704**	**N=704**	**N=704**	**N=704**
Black	-0.100*	-0.055*	-0.074**	-0.080**	-0.098*
	(0.054)	(0.030)	(0.032)	(0.039)	(0.058)
Hispanic	0.015	0.012	0.014	0.027	0.012
	(0.031)	(0.046)	(0.042)	(0.044)	(0.031)
Asian	-0.016	-0.024	-0.023	-0.031	-0.020
	(0.069)	(0.042)	(0.038)	(0.040)	(0.044)
Other Race/Ethnicity	-0.228	-0.087	-0.110*	-0.125*	-0.248
	(0.215)	(0.064)	(0.065)	(0.072)	(0.176)
Middle School Student		0.005	0.004	0.005	0.006
		(0.033)	(0.029)	(0.027)	(0.027)
High School Student		-0.057**	-0.052*	-0.046*	-0.048*
		(0.028)	(0.027)	(0.027)	(0.029)
Charter School Student		-0.084**	-0.091**	-0.084**	-0.122
		(0.038)	(0.039)	(0.037)	(0.078)
Private School Student		(dropped)	(dropped)	(dropped)	(dropped)
Rural		-0.065**	-0.060**	-0.069**	-0.069*
		(0.031)	(0.031)	(0.030)	(0.037)
Urban		0.004	0.004	-0.002	-0.005
		(0.031)	(0.029)	(0.027)	(0.025)
Remote Option Available			-0.143***	-0.152***	-0.100***
			(0.054)	(0.045)	(0.020)
Undecided/Non-voter				0.026	0.008
				(0.073)	(0.077)
Trump Voter				0.051	0.046
				(0.037)	(0.029)
Third-Party Voter				-0.059	-0.107
				(0.061)	(0.115)
Public Health Trust Factor				-0.012	-0.016
				(0.016)	(0.017)
Trust in Fox News				0.030	0.032*
				(0.021)	(0.019)
National Media Trust Factor				0.026	0.021
				(0.018)	(0.017)
COVID-19 Comorbidity Risk					0.001
					(0.028)
Fully Vaccinated					0.046
					(0.028)
Household Vaccine Eligible					-0.024
					(0.035)
Incidence Rate					-1.208*
					(0.717)
Demographic Controls	No	Yes	Yes	Yes	Yes
Pseudo R^2	0.041	0.150	0.231	0.275	0.300

Note: .01 - ***; .05 - **; .1 - *; Sampling weights used. Demographic controls include respondent employment status, married or living with partner, household income, and respondents' education.

Appendix D: Multinomial Logit Estimates for Fall 2021

Our primary analysis focuses on factors associated with in-person learning during the 2021-22 school year. However, factors included in our primary analysis may also explain the choice of remote and hybrid learning options differently. To explore how factors included in our binary logit analysis for the fall of 2021[17] relate to different modalities, we code the learning modality (e.g., remote, hybrid, or in-person) reported by each respondent as a single categorical outcome and use a series of multinomial logit models following the models presented in table 4. We then estimate the average marginal effects for these models and report the association between each factor and the probability of selecting in-person, remote, and hybrid modalities in tables D.1-D.3, below.

The descriptive results presented in these tables provide some insights into apparent preferences between fully remote and hybrid learning. For example, while we find in our primary analysis and appendix table D.1 that Black respondents are 10-14 percentage points less likely than white respondents to report in-person learning at the time of the survey, we see from table D.3 that this difference appears to be driven entirely by Black respondents being more likely to do remote learning via a hybrid modality as compared to white respondents. Similarly, the results of this multinomial analysis appear to indicate that white Asian respondents were more likely to report in-person learning, this difference appears to be driven by a lower propensity for hybrid

[17] The summer survey did not ask respondents about their preference for remote or hybrid learning separately.

learning among these respondents as we find no statistically significant difference between Asian and white respondents in table D.2.

Additionally, we find strong evidence of differences in modality by sector in results reported in tables D.1 and D.2. Here, we see that respondents who report using a charter school are approximately 12 percentage points less likely to report in-person learning and 13 percentage points more likely to report remote learning than respondents who use traditional public schools. Finally, the results of this multinomial analysis offer some insight into the counterintuitive negative association between rural respondents and in-person attendance we find in our primary analysis. As shown in table D.3, this difference appears to be driven by hybrid learning with rural respondents being 6-10 percentage points more likely to report hybrid learning than suburban respondents.

Appendix Table D.1
Factors Predictive of In-Person Learning (Fall 2021)

	(A)	(B)	(C)	(D)	(E)
	N=1458	**N=1074**	**N=1073**	**N=805**	**N=705**
Black	-0.084**	-0.068*	-0.084**	-0.109	-0.140**
	(0.037)	(0.040)	(0.042)	(0.067)	(0.064)
Hispanic	0.006	0.009	0.005	0.030	0.024
	(0.022)	(0.031)	(0.032)	(0.020)	(0.020)
Asian	-0.040	0.040*	0.041**	0.044***	0.029
	(0.048)	(0.021)	(0.021)	(0.017)	(0.021)
Other Race/Ethnicity	-0.180	-0.172	-0.185	-0.138	-0.169
	(0.140)	(0.136)	(0.136)	(0.087)	(0.111)
Middle School Student		-0.016	-0.019	-0.019	0.000
		(0.023)	(0.021)	(0.023)	(0.026)
High School Student		-0.046*	-0.043	-0.041	-0.043
		(0.027)	(0.028)	(0.028)	(0.026)
Charter School Student		-0.120**	-0.130**	-0.123**	-0.112*
		(0.058)	(0.053)	(0.061)	(0.065)
Private School Student		0.009	-0.035	-0.011	
		(0.043)	(0.061)	(0.074)	
Rural		-0.102***	-0.107***	-0.068**	-0.042
		(0.038)	(0.039)	(0.032)	(0.031)
Urban		0.004	0.006	0.014	0.013
		(0.018)	(0.017)	(0.019)	(0.022)
Remote Option Available			-0.087***	-0.104***	-0.110***
			(0.019)	(0.019)	(0.018)
Undecided/Non-voter				-0.175*	-0.044
				(0.104)	(0.118)
Trump Voter				0.056**	0.054
				(0.027)	(0.034)
Third-Party Voter				-0.143	-0.192
				(0.107)	(0.150)
Public Health Trust Factor				0.002	-0.002
				(0.015)	(0.017)
Trust in Fox News				0.025	0.032*
				(0.018)	(0.019)
National Media Trust Factor				0.015	0.012
				(0.015)	(0.020)
COVID-19 Comorbidity Risk					0.002
					(0.027)
Fully Vaccinated					0.041
					(0.028)
Household Vaccine Eligible					-0.013
					(0.035)
Incidence Rate					-0.579
					(0.805)
Demographic Controls	No	Yes	Yes	Yes	Yes
Pseudo R^2	0.032	0.208	0.258	0.380	0.424

Note: .01 - ***; .05 - **; .1 - *; Sampling weights used. Demographic controls include respondent employment status, married or living with partner, household income, and respondents' education.

Appendix Table D.2
Factors Predictive of Remote Learning (Fall 2021)

	(A)	(B)	(C)	(D)	(E)
	N=1458	**N=1074**	**N=1073**	**N=805**	**N=705**
Black	0.032	0.003	0.007	-0.004	-0.006
	(0.020)	(0.013)	(0.013)	(0.011)	(0.014)
Hispanic	0.016	0.006	0.007	0.012	0.009
	(0.015)	(0.019)	(0.018)	(0.017)	(0.017)
Asian	0.042	0.002	0.000	0.000	0.005
	(0.034)	(0.018)	(0.018)	(0.013)	(0.018)
Other Race/Ethnicity	0.129	0.110	0.131	0.165*	0.149*
	(0.129)	(0.096)	(0.104)	(0.085)	(0.086)
Middle School Student		-0.000	0.000	0.007	0.004
		(0.014)	(0.013)	(0.012)	(0.017)
High School Student		0.000	-0.005	0.004	0.003
		(0.012)	(0.011)	(0.014)	(0.015)
Charter School Student		0.128**	0.131**	0.140**	0.128**
		(0.056)	(0.052)	(0.057)	(0.057)
Private School Student		-0.022***	-0.021***	-0.026***	
		(0.006)	(0.007)	(0.006)	
Rural		0.008	0.008	0.006	0.008
		(0.019)	(0.017)	(0.014)	(0.014)
Urban		0.002	0.003	0.008	0.008
		(0.011)	(0.010)	(0.010)	(0.012)
Remote Option Available			0.032***	0.039***	0.044***
			(0.010)	(0.009)	(0.011)
Undecided/Non-voter				-0.035***	-0.036***
				(0.008)	(0.009)
Trump Voter				-0.030***	-0.029***
				(0.009)	(0.011)
Third-Party Voter				-0.035***	-0.036***
				(0.008)	(0.009)
Public Health Trust Factor				-0.014*	-0.014
				(0.008)	(0.009)
Trust in Fox News				0.001	0.002
				(0.006)	(0.008)
National Media Trust Factor				0.013*	0.013*
				(0.007)	(0.007)
COVID-19 Comorbidity Risk					0.004
					(0.012)
Fully Vaccinated					0.015
					(0.014)
Household Vaccine Eligible					-0.005
					(0.015)
Incidence Rate					-0.312
					(0.454)
Demographic Controls	No	Yes	Yes	Yes	Yes
Pseudo R^2	0.032	0.208	0.258	0.380	0.424

Note: .01 - ***; .05 - **; .1 - *; Sampling weights used. Demographic controls include respondent employment status, married or living with partner, household income, and respondents' education.

Appendix Table D.3
Factors Predictive of Hybrid Learning (Fall 2021)

	(A)	(B)	(C)	(D)	(E)
	N=1458	**N=1074**	**N=1073**	**N=805**	**N=705**
Black	0.052	0.064*	0.077*	0.113*	0.145**
	(0.032)	(0.038)	(0.039)	(0.066)	(0.063)
Hispanic	-0.022	-0.015	-0.012	-0.042***	-0.033***
	(0.017)	(0.025)	(0.028)	(0.010)	(0.010)
Asian	-0.002	-0.043***	-0.041***	-0.044***	-0.035***
	(0.036)	(0.011)	(0.011)	(0.010)	(0.010)
Other Race/Ethnicity	0.051	0.062	0.054	-0.027*	0.019
	(0.080)	(0.092)	(0.079)	(0.016)	(0.062)
Middle School Student		0.017	0.019	0.012	-0.005
		(0.019)	(0.018)	(0.020)	(0.019)
High School Student		0.046*	0.048*	0.038	0.039*
		(0.024)	(0.025)	(0.024)	(0.022)
Charter School Student		-0.008	-0.001	-0.016	-0.016
		(0.030)	(0.032)	(0.030)	(0.034)
Private School Student		0.012	0.055	0.037	
		(0.043)	(0.061)	(0.073)	
Rural		0.095***	0.099***	0.062**	0.034
		(0.034)	(0.036)	(0.029)	(0.027)
Urban		-0.006	-0.010	-0.022	-0.021
		(0.015)	(0.013)	(0.015)	(0.019)
Remote Option Available			0.055***	0.065***	0.066***
			(0.016)	(0.017)	(0.015)
Undecided/Non-voter				0.210**	0.080
				(0.104)	(0.118)
Trump Voter				-0.026	-0.025
				(0.026)	(0.033)
Third-Party Voter				0.178*	0.229
				(0.107)	(0.150)
Public Health Trust Factor				0.012	0.016
				(0.013)	(0.015)
Trust in Fox News				-0.026	-0.034**
				(0.017)	(0.017)
National Media Trust Factor				-0.028**	-0.025
				(0.013)	(0.018)
COVID-19 Comorbidity Risk					-0.005
					(0.024)
Fully Vaccinated					-0.056**
					(0.025)
Household Vaccine Eligible					0.018
					(0.032)
Incidence Rate					0.891
					(0.681)
Demographic Controls	No	Yes	Yes	Yes	Yes
Pseudo R^2	0.032	0.208	0.258	0.380	0.424

Note: .01 - ***; .05 - **; .1 - *; Sampling weights used. Demographic controls include respondent employment status, married or living with partner, household income, and respondents' education.

Appendix E: Summary Statistics and Results with Hispanic/Latino Disaggregated

In social science research, it is common to report results for Hispanic and Latin American groups aggregated into a single category. However, this aggregation may hide substantial variation between groups with different countries of origin or lived experiences[18]. The Understanding America Study (UAS) asks Hispanic respondents if they identify as one of several subgroups (Mexican, Puerto Rican, Cuban, Central/South American, or other Spanish). In this appendix, we present our analysis described in the analytic strategy section with these Hispanic or Latin American groups disaggregated into three subgroups based on respondents' self-reported membership in various Hispanic groups. Due to sample size constraints, we combine Puerto Rican, Cuban, and other Spanish respondents into a single other Hispanic/Spanish group. Descriptive statistics, results, and a brief discussion of those results can be found below.

[18] See "How to 'QuantCrit:' Practices and Questions for Education Data Researchers and Users" by Castillo and Gillborn (2022) for a more thorough discussion on this topic. https://edworkingpapers.com/ai22-546.

Appendix Table E.1
Summer 2021 Sample Characteristics

	All N=1225	White N=709	Black N=134	Mexican N=195	Central/SA N=39	Other Hisp. N=29	Asian N=96	Other N=23
Student Characteristics								
Elementary Student	0.457	0.473	0.395	0.448	0.561	0.384	0.463	0.748
Middle School Student	0.323	0.323	0.351	0.351	0.208	0.358	0.229	0.232
High School Student	0.220	0.204	0.255	0.201	0.231	0.257	0.308	0.020
Urbanicity								
Rural	0.221	0.278	0.211	0.117	0.248	0.000	0.068	0.069
Suburban/Mixed	0.517	0.561	0.410	0.549	0.350	0.251	0.489	0.851
Urban	0.263	0.161	0.379	0.334	0.402	0.749	0.443	0.080
Political Leanings								
Undecided/Non-voter	0.012	0.012	0.003	0.007	0.000	0.073	0.002	0.009
Trump Voter	0.382	0.543	0.041	0.228	0.444	0.149	0.215	0.507
Biden Voter	0.576	0.413	0.956	0.740	0.556	0.601	0.777	0.484
Third-Party Voter	0.030	0.031	0.000	0.025	0.000	0.177	0.006	0.000
Institutional Trust								
Public Health Trust	0.015	-0.117	0.034	0.127	0.058	0.602	0.353	-0.221
Fox News Trust	1.562	1.469	1.750	1.578	1.844	1.684	1.582	1.480
National Media Trust	0.041	-0.169	0.350	0.082	0.431	0.369	0.517	-0.328
COVID-19 Risk								
COVID-19 Incidence Rate	0.002	0.002	0.002	0.003	0.003	0.002	0.003	0.003
COVID-19 Comorbidity	0.442	0.454	0.524	0.424	0.173	0.445	0.291	0.486
Fully Vaccinated	0.455	0.446	0.382	0.462	0.402	0.639	0.616	0.250
Household Vaccine Eligible	0.346	0.300	0.432	0.329	0.286	0.424	0.567	0.135
Plans on In-Person Learning	**0.846**	**0.887**	**0.735**	**0.879**	**0.707**	**0.789**	**0.837**	**0.832**

Sampling weights used. Sample restricted to respondent in households with school-aged children enrolled in a public, private, or charter school.

Appendix Table E.2
Fall 2021 Sample Characteristics

	All N=1458	White N=877	Black N=143	Mexican N=241	Central/SA N=41	Other Hisp. N=33	Asian N=101	Other N=22
Student Characteristics								
Elementary Student	0.386	0.412	0.401	0.335	0.514	0.166	0.379	0.368
Middle School Student	0.319	0.313	0.287	0.366	0.131	0.494	0.228	0.504
High School Student	0.295	0.275	0.312	0.299	0.355	0.340	0.393	0.128
Attends Charter School	0.056	0.040	0.056	0.067	0.109	0.152	0.086	0.000
Attends Private School	0.066	0.077	0.019	0.050	0.124	0.109	0.067	0.081
Urbanicity								
Rural	0.202	0.238	0.243	0.084	0.180	0.175	0.031	0.201
Suburban/Mixed	0.518	0.574	0.399	0.523	0.226	0.197	0.537	0.684
Urban	0.280	0.188	0.358	0.393	0.594	0.629	0.433	0.115
Political Leanings								
Undecided/Non-voter	0.014	0.014	0.016	0.001	0.000	0.071	0.012	0.016
Trump Voter	0.367	0.509	0.089	0.241	0.422	0.142	0.145	0.236
Biden Voter	0.585	0.435	0.880	0.738	0.578	0.701	0.835	0.749
Third-Party Voter	0.034	0.042	0.015	0.020	0.000	0.087	0.008	0.000
Institutional Trust								
Public Health Trust	0.046	-0.037	-0.011	0.033	-0.159	0.744	0.387	-0.308
Fox News Trust	1.567	1.502	1.724	1.523	2.050	1.633	1.569	1.932
National Media Trust	0.076	-0.119	0.437	0.073	0.431	0.388	0.483	0.229
COVID-19 Risk								
COVID-19 Incidence Rate	0.030	0.030	0.037	0.027	0.031	0.024	0.029	0.032
COVID-19 Comorbidity	0.429	0.444	0.523	0.391	0.132	0.362	0.341	0.302
Fully Vaccinated	0.573	0.574	0.448	0.602	0.595	0.749	0.647	0.504
Household Vaccine Eligible	0.366	0.298	0.493	0.407	0.272	0.441	0.536	0.315
Remote Option Available	**0.606**	**0.613**	**0.633**	**0.615**	**0.603**	**0.434**	**0.586**	**0.598**
Attending In-Person	**0.928**	**0.943**	**0.857**	**0.990**	**0.880**	**0.831**	**0.902**	**0.762**

Sampling weights used. Sample restricted to respondent in households with school-aged children enrolled in a public, private, or charter school.

Appendix Table E.3
Factors Associated with Preference for In-Person Learning (Summer 2021)

	(A)	(B)	(C)	(D)
	N=1225	**N=983**	**N=947**	**N=904**
Black	-0.161***	-0.110**	-0.078	-0.080
	(0.049)	(0.056)	(0.056)	(0.055)
Mexican	-0.009	-0.017	-0.000	-0.023
	(0.037)	(0.044)	(0.042)	(0.045)
Central/South American	-0.181	-0.275**	-0.227*	-0.236**
	(0.120)	(0.137)	(0.116)	(0.112)
Other Hispanic/Spanish	-0.098	-0.096	-0.107	-0.120
	(0.090)	(0.106)	(0.106)	(0.100)
Asian	-0.049	-0.003	0.031	0.038
	(0.058)	(0.054)	(0.047)	(0.044)
Other Race/Ethnicity	-0.056	-0.015	-0.011	0.028
	(0.111)	(0.101)	(0.102)	(0.075)
Middle School Student		0.005	0.011	0.013
		(0.039)	(0.038)	(0.044)
High School Student		0.006	0.003	-0.016
		(0.035)	(0.034)	(0.036)
Rural		0.007	0.009	0.034
		(0.042)	(0.042)	(0.040)
Urban		-0.022	-0.029	-0.003
		(0.035)	(0.036)	(0.037)
Undecided/Non-voter			0.128***	0.107**
			(0.030)	(0.045)
Trump Voter			0.002	0.005
			(0.039)	(0.037)
Third-Party Voter			(dropped)	(dropped)
Public Health Trust Factor			0.059**	0.060**
			(0.026)	(0.027)
Trust in Fox News			0.009	0.004
			(0.023)	(0.024)
National Media Trust Factor			-0.084***	-0.088***
			(0.024)	(0.025)
COVID-19 Comorbidity Risk				-0.018
				(0.031)
Fully Vaccinated				0.050
				(0.040)
Household Vaccine Eligible				-0.045
				(0.041)
Incidence Rate				-1.094
				(3.167)
Demographic Controls	No	Yes	Yes	Yes
Pseudo R^2	0.035	0.110	0.146	0.158

Note: .01 - ***; .05 - **; .1 - *; Sampling weights used. Demographic controls include respondent employment status, married or living with partner, household income, and respondents' education.

Appendix Table E.4
Factors Associated with In-Person Learning (Fall 2021)

	(A)	(B)	(C)	(D)	(E)
	N=1458	**N=1075**	**N=1074**	**N=805**	**N=706**
Black	-0.086**	-0.058	-0.074*	-0.079	-0.107**
	(0.037)	(0.037)	(0.039)	(0.056)	(0.054)
Mexican	0.047***	0.052***	0.050***	0.058***	0.051***
	(0.012)	(0.014)	(0.014)	(0.014)	(0.014)
Central/South American	-0.063	-0.125	-0.075	-0.116	-0.208
	(0.096)	(0.120)	(0.091)	(0.101)	(0.131)
Other Hispanic/Spanish	-0.112	-0.087	-0.161	-0.011	-0.047
	(0.078)	(0.101)	(0.116)	(0.064)	(0.085)
Asian	-0.041	-0.003	0.001	-0.018	-0.025
	(0.048)	(0.045)	(0.041)	(0.043)	(0.043)
Other Race/Ethnicity	-0.181	-0.160	-0.153	-0.149	-0.250
	(0.140)	(0.128)	(0.117)	(0.144)	(0.172)
Middle School Student		-0.015	-0.017	-0.011	0.010
		(0.023)	(0.022)	(0.021)	(0.027)
High School Student		-0.049*	-0.044*	-0.053*	-0.051*
		(0.026)	(0.025)	(0.028)	(0.030)
Charter School Student		-0.131*	-0.141**	-0.151**	-0.123*
		(0.070)	(0.062)	(0.072)	(0.075)
Private School Student		0.019	-0.033	-0.017	
		(0.037)	(0.054)	(0.070)	
Rural		-0.094***	-0.104***	-0.089**	-0.076**
		(0.032)	(0.032)	(0.037)	(0.035)
Urban		0.006	0.008	0.007	-0.000
		(0.020)	(0.018)	(0.021)	(0.025)
Remote Option Available			-0.091***	-0.103***	-0.101***
			(0.017)	(0.019)	(0.018)
Undecided/Non-voter				-0.207*	0.017
				(0.122)	(0.069)
Trump Voter				0.052**	0.050
				(0.026)	(0.031)
Third-Party Voter				-0.097	-0.141
				(0.100)	(0.114)
Public Health Trust Factor				-0.005	-0.013
				(0.016)	(0.017)
Trust in Fox News				0.030	0.044**
				(0.019)	(0.020)
National Media Trust Factor				0.019	0.021
				(0.017)	(0.017)
COVID-19 Comorbidity Risk					-0.010
					(0.026)
Fully Vaccinated					0.052**
					(0.026)
Household Vaccine Eligible					-0.031
					(0.037)
Incidence Rate					-1.095
					(0.688)
Demographic Controls	No	Yes	Yes	Yes	Yes
Pseudo R^2	0.064	0.202	0.267	0.315	0.351

Note: .01 - ***; .05 - **; .1 - *; Sampling weights used. Demographic controls include respondent employment status, married or living with partner, household income, and respondents' education.

Taken together, the results presented in appendix tables E.3 and E.4 appear to indicate a surprising amount of heterogeneity in the preferences of Hispanic respondents. Examining table E.3, we find large negative point estimates for identifying as being from Central or South America and a preference for in-person learning. All else equal, respondents from Central or South America were 23-28 percentage points less likely to report intending to use in-person learning than white respondents. These estimates are significant at the 90% and 95% confidence levels. While point estimates are no longer statistically significant in appendix table E.4, which looks at the reported modality, they are similar in magnitude. Conversely, estimates reported in table E.4 indicate that respondents identifying as having Mexican heritage were approximately 5 percentage points more likely than white respondents to report in-person learning. The large, meaningful, differences between the preferences of respondents from different ethnic subgroups may be of particular importance for districts whose stakeholders identify primarily as Mexican or Central/South American. Point estimates for other coefficients in these supplementary analyses are generally similar to our main analysis, although some estimates are more precise.

Appendix F: Sensitivity of Racial/Ethnic Groups to Remote Availability

To explore the responsiveness of different racial and ethnic groups to the availability of remote learning options[19], we estimate a series of models in which indicator variables for each race and ethnic group are interacted with the indicator for remote learning availability for the fall 2021 survey. Due to issues related to the interpretation of interaction terms in non-linear (e.g., logit and probit) models (Ai & Norton, 2003), we use linear probability models estimated via ordinary least squares for these analyses. In appendix table F.1, below, each column in the table corresponds to a column in table 4 and indicates how the relationship between race/ethnicity and remote availability changes with the inclusion of different covariates. For clarity, we report only coefficients of interest in this supplementary analysis, although estimates for other covariates are not qualitatively different than those reported in table 4[20].

In our primary analysis, we found that modest to large estimated differences existed between Black and white and other race/ethnicity and white respondents across all model specifications, although these estimates were only marginally significant at the 90% confidence level for Black respondents and imprecisely estimated for other race/ethnicity respondents. However, with the inclusion of an interaction term, estimates for all race/ethnic indicator variables approach zero as coefficients are added. Instead, we now find large and sometimes significant point estimates for the interactions of both Black and other race/ethnicity with remote

[19] We performed similar robustness checks by interacting race/ethnicity indicators with our measures of public health trust, media trust, and COVID-19 related comorbidities but did not find meaningful patterns.
[20] Full results are available upon request from the authors

learning availability. This indicates that members of these two groups were most responsive to remote availability and, so, may have unmet preferences for different learning modalities.

Appendix Table F.1
Interactions Between Race and Remote Learning Availability

	(A)	(B)	(C)	(D)	(E)
	N=1458	**N=1074**	**N=1073**	**N=803**	**N=704**
Black	-0.084**	-0.077*	0.014	-0.004	-0.002
	(0.037)	(0.045)	(0.040)	(0.054)	(0.052)
Hispanic	0.006	0.014	-0.026	0.020	-0.002
	(0.022)	(0.030)	(0.041)	(0.024)	(0.024)
Asian	-0.040	-0.009	-0.006	-0.000	-0.001
	(0.048)	(0.039)	(0.020)	(0.027)	(0.031)
Other Race/Ethnicity	-0.110	-0.117	0.020	0.030	0.021
	(0.137)	(0.165)	(0.029)	(0.039)	(0.042)
Remote Option Available			-0.064***	-0.079***	-0.067***
			(0.021)	(0.023)	(0.023)
Black X Remote			-0.161**	-0.103	-0.132
			(0.077)	(0.090)	(0.091)
Hispanic X Remote			0.062	0.016	0.025
			(0.049)	(0.050)	(0.057)
Asian X Remote			-0.005	-0.023	-0.036
			(0.069)	(0.079)	(0.095)
Other Race/Eth. X Remote			-0.257	-0.336	-0.510*
			(0.251)	(0.246)	(0.267)
Demographic Controls	No	Yes	Yes	Yes	Yes
Adjusted R^2	0.013	0.091	0.125	0.125	0.124

Note: .01 - ***; .05 - **; .1 - *; Sampling weights used. Demographic controls include respondent employment status, married or living with partner, household income, and respondents' education.