Analyzing the Effects of COVID-19 on Educational Equity in Rural Pennsylvania School Districts

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Abstract

Using a mixed methods approach that combined state-level institutional data and local interview and school district data, this research examined how COVID-19 has (re)shaped rural school districts' ongoing efforts to identify and address equity concerns along geographic, fiscal, instructional, and racial/ethnic lines across Pennsylvania. This analysis examined institutional and socio-demographic features and trends, with in-depth local analysis from a stratified sample of districts. Analyses across rural Pennsylvania districts, as well as deeper case study analyses of selected districts, focused on understanding how rural districts have defined, responded, and adapted to equity concerns amid the pandemic, and analyzed district factors that might help to explain variations in responses and outcomes. This project's research questions were: (1) What are the key equity challenges faced by rural Pennsylvania school districts in the context of the COVID-19 pandemic? (2) What types of equity issues are rural district leaders (e.g., school board directors and superintendents) aware of, and in what ways do their planned and/or implemented responses prioritize equity, if at all? (3) What are the key policy implications for addressing educational inequities in rural Pennsylvania school districts as schools gradually transition out of pandemic conditions? Prior to the COVID-19 pandemic, public schools in rural Pennsylvania already faced a range of serious challenges including persistent poverty, funding disparities, lack of broadband access, and declining enrollments. The pandemic has served to deepen these and other forms of inequities, posing pressing challenges for the creation of timely and effective policy.

Keywords: COVID-19, educational equity, superintendency, educational leadership, school boards, school finance

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Executive Summary

This study, conducted in 2021-22, explored the challenges faced by rural school district leaders as they attempted to address pressing equity concerns at a time of public health and socio-political crisis.

The research used a mixed methods approach, combining state-level institutional secondary data and local interview, case study, and school district data, to learn how rural districts have defined, responded, and adapted to equity concerns amid the COVID-19 pandemic and to identify district factors that might help to explain variations in responses and response outcomes.

Key Findings

- **As of December 1, 2021, people in rural districts were disproportionately more likely to have tested positive for COVID-19 than in urban districts**. Among the school districts across the state with the highest rates of reported cumulative COVID-19 cases, the top four were rural. By December 2021, about 15 percent of residents in rural school districts had contracted COVID-19, while the same was true for slightly over 13 percent of residents in urban school districts.

- **Almost all district leaders cited teacher mental health and burnout as a primary concern**. Many teachers have left the profession during the pandemic, leaving rural districts at a higher rate.

- **The ability of rural school districts to operate remotely is impacted by the availability of a high-speed internet connection.** On average, rural school districts have slower download and upload speeds than urban districts, and there are fewer service providers offering high-speed connections than urban districts.

- **Poverty concentrates in rural areas.** Pennsylvania is no exception. Even rural school districts that are classified in this study as relatively "high resourced" still struggle with meeting the needs of significant numbers of students and families in poverty. (Note: "high resourced" and "low resourced" classifications were based on current expenditures per weighted student.)

- **District enrollments have dropped statewide, but they have dropped more precipitously in rural districts.** Data suggest these trends have been reinforced by the pandemic and rising cyber charter enrollments.

- **In the last decade Pennsylvania has experienced overall declines in teachers, though the declines are far more pronounced in rural districts, which saw a nearly 5 percent**

loss of teaching staff. This has the potential for profound impacts on educational provision within rural Pennsylvania in the immediate future.

- **The ability of rural districts to invest in school infrastructure varies substantially across districts.** Based on available financial data, the highest resourced rural districts had invested, in aggregate, $20 million more in technology than the lowest resourced rural districts by the end of 2019-20; the highest resourced rural districts were able to invest $48 million more in operations and maintenance than the lowest spending rural districts in 2019-20.

- **There are large gaps in spending on support services for mental health; a majority of rural districts reported that they do not currently have the resources to meet their students' growing demand for mental health services**. At the start of the pandemic, the highest resourced rural districts were able to invest $18 million more on guidance and psychological services than the lowest resourced rural districts.

- **Rural districts have faced growing special education costs over time.** In nominal dollars, special education costs increased by more than $295 million, yet state funding for special education has only increased by roughly $31 million during the same period.

- **District leaders expressed considerable concern about budget deficits caused by increased costs combined with steep declines in both tax revenue and public school enrollments**. Nearly all districts reported an increase in cyber charter enrollment over the pandemic; rising enrollments in cyber charter schools increase the fiscal burden as per pupil funding is diverted to charter schools.

- **All students have been impacted by COVID-19, but certain student groups were of special concern as rural educators responded to the pandemic**. Rural leaders specifically identified students experiencing additional distress as: those without ready access to internet and cellular service, students in poverty, students requiring special education services, English Language Learners, and students with disrupted home environments.

- **The pandemic has contributed to significant burnout of educators and administrators in rural school districts.** It is unclear what the longer-term effects may be, but administrators and others have reported significant job-leaving and stress, coupled with difficulties in filling vacant district positions, causing crisis-level staffing issues in many districts.

- **Though student of color enrollment in both rural and urban areas has grown, the increase in teachers of color in rural districts has not been proportionate to the increase in student racial and ethnic diversity**. Demographic shifts, such as the influx of Hispanic populations in rural eastern Pennsylvania, is transforming some rural district demographics, suggesting an increased need for English Language Learner instruction and more students whose life experiences will differ from those of their overwhelmingly white teachers.

- **School district level equity initiatives have been hampered by increasingly contentious and politicized local debates.** The political division of a district had a profound effect on school leaders' ability to equitably support all students and has contributed to administrator/educator burnout and job-leaving.

Policy Considerations

- The Commonwealth should ensure that all communities have broadband access, without staggering start-up fees or a competitive grant application process.

- Revise the cyber charter school funding formula to reduce the impact charter enrollment has on district budgets, even in well-resourced districts. (Note: In June 2022, the Governor issued Final-Form Regulation 6-349 [IRRC #3315] that clarified elements of the Charter School Law and set conditions that emphasize accountability, equity, quality, and transparency.)

- Examine both educational and school finance outcomes of districts opening or expanding their own district cyber academies as a way of keeping students enrolled in their district's public school.

- Construct communication pathways to efficiently solicit and use feedback from local communities to the Pennsylvania Department of Education, particularly about the unique needs of rural districts; facilitate and support, at the state level, communication spaces where practitioners can share with one another.

- Prioritize the mental health of students, educators, and district leaders by expanding the physical and mental health infrastructure to work with schools, which are especially central in rural communities. (Note: The 2022-2023 state budget included $200M to address student mental health and school safety.)

- As the U.S. Department of Agriculture has ended its universal free meals program, Pennsylvania should consider following the lead of other states (e.g., Maine and California) in permanently providing meals to schoolchildren.

- Assist with the equitable distribution of well-qualified teachers across the state by widening pathways for rural residents to work in schools and offering incentives for educators to move to rural areas.

- Monitor pandemic-related school staffing issues and how related challenges occur across different urban and rural places.

- Continue to support research on the ongoing effects of COVID-19 on students and schools.

Purpose of the Study

This study, conducted in 2021-22, explored the challenges faced by rural school district leaders as they attempted to address pressing equity concerns at a time of public health and socio-political crisis. This research aimed to achieve three overarching goals: 1) to systematically identify and better understand the challenges and contexts of local district leaders' response through specific, tangible, and traceable district practices; 2) to generate research-based knowledge that immediately speaks to practical concerns of rural district leaders and school boards, as well as state-level policy concerns; and 3) to generate analyses responsive to the heterogeneity of the Commonwealth's rural schools and communities.

Methods

This study used a mixed methods approach combining state-level institutional secondary data and local interview, case study, and school district data. The secondary data relied heavily on publicly available measures related to school district resources to examine institutional and socio-demographic features/trends. The qualitative data, specifically interviews with school district leaders (superintendents and school board directors) and case studies, provided in-depth local analysis from a stratified sample of districts. Mixed methods analyses are useful to understand how rural districts have defined, responded, and adapted to equity concerns amid the pandemic and to identify district contextual factors that might help to explain variations in responses and response outcomes.

Project Results

Even before COVID-19, public schools in rural Pennsylvania were confronted with a range of serious challenges including persistent poverty, funding disparities, lack of broadband access, and declining enrollments. The pandemic has served to deepen these and other forms of inequities, posing pressing challenges for the creation of timely and effective policy. Rural school districts' delivery of nonacademic services has, by necessity, grown during the pandemic, to include providing food, healthcare, and overall support for students, families, and their communities. Although districts have devised creative ways

to address the social-emotional and physical health needs of students and families, a majority of rural districts reported that they don't currently have the resources to meet their students' growing demand for mental health services.

Rural districts have experienced higher rates of teacher attrition and greater enrollment losses than urban districts; these losses have strained already overburdened staff and budgets. The ability of rural districts to invest in school technology and infrastructure varies substantially across districts, and remote instruction is also impacted by the availability of a high-speed internet connection. State messaging throughout the pandemic was poorly communicated, timed, and often contradictory—leaving district leaders with no time to prepare a response. Finally, unfunded mandates and programs put in place often did not reflect local knowledge.

Conclusions

Rural districts face multiple challenges that have drastically limited their ability to respond to the pandemic. This research identified several specific means for Commonwealth policymakers to aid rural districts and communities. The pervasive poverty in some rural communities further compounds school and community struggles and outcomes. State-level policies and mandates related to the pandemic often placed district leaders in compromised positions with communities that didn't understand the mandates and/or understood them as threats to local control—especially as policies became increasingly politicized along partisan lines. As the pandemic shines a light on these inequities, it also provides an opportunity for a re-evaluation of not only the policies that address public health and public education, but how these policies may or may not address the unique needs and conditions of Pennsylvania's rural schools.

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Introduction

The policy choices Pennsylvania's state leaders and local educators make during and in the wake of the COVID-19 pandemic will likely affect student learning opportunities for years to come (Laster Pirtle, 2020). Reactions to the pandemic have galvanized public perceptions about its potential threats and have created both opportunities and challenges for educational leaders and legislators to respond to the crisis. Rural district leaders are critically important in the broader education system, and their responses to the pandemic have significant consequences for the health and well-being of their communities.

Researchers have documented pronounced inequities in rural areas related to education, healthcare, and economic opportunity prior to the onset of the pandemic (Adary et al., 2017; Evans, 2020; Feldhaus & Slone, 2015; Fuller & Pendola, 2020; Gajanan & Fiorentino, 2019; Meinrath & Mansour, 2020; Patrick & Trussel, 2013). The multiple social, economic, and public health crises associated with the pandemic have only increased the pressures already placed on rural district leaders. Lessons taken from how superintendents and school boards in rural communities initially and have continued to manage this public health crisis therefore can critically inform the rural policy context.

In the midst of such a public health crisis and political polarization around policy choices, policymakers need empirical research data to help craft decisions as Pennsylvania continues to grapple with an unpredictable set of institutional, political, and public health conditions (Netolicky, 2020). While keeping the larger state context in mind, this research used a mixed methods approach to assess how the COVID-19 pandemic has shaped efforts to identify and address equity concerns within rural school districts. These analyses use state-level institutional and socio-demographic data, coupled with in-depth local analyses of interview and institutional data from a smaller, stratified sample of rural districts. This approach creates better understanding regarding how rural districts have defined, responded, and adapted to equity concerns amid the pandemic, and helps identify district contextual factors that might explain variations in responses and response outcomes.

Inequities, Rurality, and the COVID-19 Pandemic

The goal of equity-driven educational policymaking is the appropriate distribution of resources to meet children where they are, based on their individual needs and the challenges faced within their communities, to ensure that *all* students have access to a high-quality education. "Equity" refers to both fairness and justice. Equity is distinguished from *equality* in that equity suggests that providing equal amounts of resources does not necessarily erase or address underlying inequalities. The concept of equity recognizes that structural and systemic factors shape the ways in which individuals, groups, communities, and institutions are able to access different levels of resources (fiscal, political, cultural, economic, institutional, and so forth). Equity-driven policymaking and leadership is not a

one-time event, but rather an ongoing process of systematically working to enhance fairness and justice in the allocation of resources.

Researchers and policymakers have long called attention to structural inequities within public education (Darling-Hammond, 1998; de Brey et al., 2019; Fuller & Pendola 2020; Maryland State Education Association 2021). These include ***geographic*** inequities across and within rural and urban school districts, ***fiscal*** inequities across wealthier and poorer school districts, ***instructional*** inequities within rural and low resourced school districts, and ***racial and ethnic*** inequities occurring in school districts with both large and small student populations of color. These various inequities typically interact with one another in complex ways that have only been compounded by the pandemic.

For example, geographic inequities have had pronounced consequences for rural education as rural areas tend to have higher levels of poverty, fewer job opportunities, and heightened vulnerability to labor market shocks (Mueller et al., 2021). In many instances these different inequities intersect and overlap, compounding disadvantage: poverty concentrates in rural areas where broadband access (affecting remote instruction) may be especially spotty (Ritchey et al., 2020), where access to healthcare and hospitals is limited (PHAN, 2020), and where the opioid epidemic is most rampant (Burfoot-Rochford, 2020). Minoritized[1] populations living within these rural areas experience additional layers of inequities: the wage gap between Black and white employees has been growing steadily since 2000 (Gould, 2020), and data show that Black families own roughly one tenth the wealth of white families (Hanks et al., 2018). Racial disparities are felt inside of schools too, as Black, Hispanic, and emergent bilingual students are significantly more likely to be suspended and face exclusionary disciplinary action than white students (Losen et al., 2015). These inequities have only been intensified by the pandemic (Simon 2021; Walters, 2020).

While rural Pennsylvania school districts typically (though not always) have small percentages of students of color,[2] the 20 percent of rural districts in Pennsylvania that enrolled the most students of color in 2020-21 educated a similar share of students of color as the average district in the state and a substantially higher share of Hispanic students than the average district in the state. The demographic makeup of the student populations in these rural districts include 12 percent Hispanic students compared to the state's average of slightly less than 8 percent.[3] Demographic shifts, such as the Hispanic

[1] "Minoritized" refers to the ways in which individuals and groups may be socially excluded due to factors beyond their control, such as race and ethnicity. Individuals and groups are not disenfranchised simply because of disproportionately low numbers of representation relative to the larger society, but because of the structural racism, social hierarchies, and policies that actively perpetuate disenfranchisement.

[2] About 12 percent of rural Pennsylvania residents are people of color (Center for Rural Pennsylvania, 2020).

[3] Data are based on school district totals from Local Education Agency (LEA) and Race tab of 2020-21 Public School Enrollment file from the Pennsylvania Department of Education (PDE). Quintiles for rural school districts are weighted by enrollment so each quintile received ~20 percent of rural enrollments in

influx in rural eastern Pennsylvania, is transforming some rural district demographics, suggesting an increased need for English Language Learner (ELL) instruction and more students whose life experiences will differ from those of their overwhelmingly white teachers—posing both challenges and opportunities for rural districts (de Brey et al., 2019; Marroni, 2021). Within rural Pennsylvania, there are significant gaps between rural white populations and minoritized rural groups with regard to income, poverty rates, and unemployment (Center for Rural Pennsylvania, 2012), all of which shape uneven educational outcomes (Berliner, 2006; Darling Hammond, 1998; Tieken, 2022).

School Funding and Rural Education in Pennsylvania

Pennsylvania's rural school districts already experience increased costs because of their size, dispersed population, and the large number of students from low-income families. Within Pennsylvania some 37 percent of rural students are designated as low-income.[4] In particular, the pandemic has deepened fiscal crises for school districts, with important relevance for rural Pennsylvania. Since the state budget is reviewed and adopted annually by the General Assembly, findings from this report can provide insight for future school funding policy. Further, a lawsuit challenging the constitutionality of the Commonwealth's current school funding system and its disproportionate benefits to Pennsylvania's wealthier districts also raises the prospect of potential court-mandated changes to the way districts are funded in the coming years (Bryan & Meyer, 2021; Falk, 2021b; Loeb et al., 2021; Sears, 2021). This lawsuit amplifies the need for data to help discern more equitable means of supporting Pennsylvania schools.

Pennsylvania ranks 43rd in the nation for the share of education funding provided by the state.[5] As a result, Pennsylvania districts are heavily reliant on local taxes to generate funding. Even before the pandemic, the average fiscal capacity of rural districts to generate local revenue was 31 percent lower than the average fiscal capacity of districts statewide.[6] The pandemic increased the financial needs of rural schools, requiring many districts to make urgent investments to support in-person instruction, remote learning,

2020-21 thus preventing students of color in larger rural districts from receiving less analytic weight than students in smaller rural districts.

[4] For an overview of the impact sparsity, size, and student economic background have on educational costs, see Deborah Verstegen (2015), "On Doing an Analysis of Equity and Closing the Opportunity Gap," *Education Policy Analysis Archives*, 23 (41): https://doi.org/10.14507/epaa.v23.1809. Information about rural district poverty and acute poverty are from figures reported in Basic Education Funding files by the state in the most recent available data. These poverty figures are derived from the American Community Survey and reported in the Historical Subsidy and Grant Information sections of the Department of Education's website.

[5] Based on 2018-19, the most recent year of available comparative federal data from the *Digest of Education Statistics 2021,* Table 235.20. Excludes Washington D.C.

[6] Rounded to the nearest percent. Based on the definition of local capacity per weighted student calculated by the PDE and set by Section 2502(53) of the state school code Basic Education Funding file (2018-19). This is the most recent year of data available under the Historical Subsidy and Grant Information sections of the Department of Education's website.

and student support services to address the increased mental health needs of students. While emergency federal funding has and will continue to help districts offset some of these increased costs, these one-time funds do not address the preexisting resource challenges that already confronted many districts.[7]

In Pennsylvania, as elsewhere, rural schools play an important role in their community's development, serving as a center for community events and contributing to the ongoing health of the local economy (Schafft, 2016). But fiscal and funding disparities across rural districts threaten to undermine the symbiotic rural school-community relationship. Rural schools are often the largest employer in the areas they reside. Their presence is associated with a number of social and economic benefits, including lowered poverty rates, increased real estate values, and higher levels of local entrepreneurship (Schafft, 2016). Thus, every change to a rural school impacts the wider community, and when communities are facing hardships, such as the COVID-19 pandemic, rural schools are especially affected.

Whether more equitable allocation of resources and equity practices and policies can be developed and sustained by school districts will depend, in part, on the willingness of state and federal policymakers to fund and support such initiatives. Policymakers' willingness to champion equity-focused initiatives has been complicated by heated public debate at school board meetings and elsewhere surrounding hot-button issues (Falk, 2021a; Kines, 2021; Slisco, 2021; Southwick, 2021). Resistance to masking, remote instruction, vaccinations, and Critical Race Theory have all played key roles in this year's school board elections across the state and beyond, heavily impacting fundraising amounts, rates of voter turnout, and campaign strategies (Elwood, 2021; Hanna & Terruso, 2021; Parish, 2021). In the process, the tensions over COVID policy have consumed the time of school boards, and resource and funding equity issues have often gotten lost in the shuffle.

Objectives and Research Questions

This investigation combined analyses of state-level institutional data and local interview and school district data to achieve three overarching goals: first, to systematically identify and better understand the challenges and contexts of local district leaders' response through specific, tangible, and traceable district practices; second, to generate research-based knowledge that immediately speaks to practical concerns of rural district leaders and school boards, as well as state-level policy concerns, and; third, to generate analyses responsive to the fiscal, demographic, and geographic variations found across the Commonwealth's rural schools and communities. This project's research questions are as follows:

1. What are the key equity challenges faced by rural Pennsylvania school districts in the context of the COVID-19 pandemic?

[7] See Diana Polson and Eugene Henninger-Voss, "Pennsylvania Distributes Emergency K-12 School Funding Backwards—The Fewest Dollars Go to School Districts with the Greatest Need."

2. What types of equity issues are rural district leaders (e.g., school board members and superintendents) aware of, and in what ways do their planned and/or implemented responses prioritize equity, if at all?
3. What are the key policy implications for addressing educational inequities in rural Pennsylvania school districts as schools gradually transition out of pandemic conditions?

Methodology

This study, conducted in 2021-22, used a mixed methods approach to assess how COVID-19 has impacted school districts' ongoing efforts to identify and address equity concerns. The analyses examined institutional and socio-demographic features and trends, coupled with an in-depth local analysis from a stratified sample of districts. These analyses aimed to generate more complete understandings regarding how rural districts have defined, responded, and adapted to equity concerns amid the pandemic and to analyze district contextual factors that might help to explain variations in responses and outcomes.

Secondary Data and Document Analysis

This portion of the analysis relied heavily on publicly available measures related to school district resources, primarily from the Pennsylvania Department of Education (PDE), the Center for Rural Pennsylvania, and the Federal Communications Commission (FCC). Note that Appendix A provides the name, source, period covered, and additional details about each measure. Though the study primarily centered on the analysis of rural districts, comparative analyses of urban and rural data helped to highlight differences among various urban-rural fiscal, demographic, and other characteristics.

Sampling Frame for Qualitative Data Collection

Qualitative data used in this report came from a stratified sample of school districts selected through the use of both probability and purposive sampling, selecting school districts by characteristics reflecting the four key dimensions in the report's equity framework (geographic, fiscal, instructional, and racial/ethnic). Sampling was conducted specifically along geographic, fiscal, and racial/ethnic lines, as this study expected to find variation in instructional delivery across the sample, likely co-varying with geographic and fiscal characteristics of school districts. Data from the 2017-18 school year were used to develop a baseline by which changes after the onset of the COVID-19 pandemic could be examined.

Using the Center for Rural Pennsylvania's 2010 rural school district definition, the researchers organized Pennsylvania's 235 rural school districts by population density. The mean rural school district population density was calculated using data from the U.S. Census Bureau's Small Area Income and Poverty Estimates program (SAIPE, 2018). Districts with population densities below the mean were classified as "lower population

density," and those with population densities above the mean as "higher population density." "Lower population density" and "higher population density" district groupings were further classified according to their fiscal resource level by using district per-pupil expenditure data to calculate separate per-pupil expenditure means for both "lower" and "higher" population density district groups. This classification was done using current cost-adjusted expenditures per student, a measure reported by PDE in its Basic Education Funding files. This approach enabled the classification of "higher resourced" and "lower resourced" districts within both lower and higher population density school districts.[8]

In each population density group, districts above the current cost-adjusted expenditures per student mean were classified as "higher resourced" and districts below the mean as "lower resourced." Within the four-cell typology created by the geographic and fiscal classifications (see Table 1), district-level student ethnic/racial demographics were examined by calculating the mean percentage of students of color within each of the quadrants using data from the National Center for Education Statistics (NCES) Common Core of Data (CCD) Local Education Agency (School District) Universe Survey.[9] Districts with student of color populations above the quadrant mean were classified as "more diverse" and those below the mean were classified as "less diverse." The three levels of stratification resulted in a total of eight district groupings from which the sample was selected. To maintain anonymity for the districts included in the study, this report does not include a map of the district groupings.

Table 1. Stratified School District Sampling Schema for Qualitative Analysis

	Lower Population Density	Higher Population Density
Higher Resourced	More Diverse N=4	More Diverse N=4
	Less Diverse N=4	Less Diverse N=4
Lower Resourced	More Diverse N=4	More Diverse N=4
	Less Diverse N=4	Less Diverse N=4

[8] Current expenditures are based on total spending for instruction, support services, and operation of non-instructional services.

[9] This study used PDE race/ethnicity enrollment data to supplement NCES CCD data in instances when NCES CCD data were unavailable or incomplete.

Within each of the eight groupings, a concurrent probability and purposive sampling approach was used to select four districts for each cell, yielding a sample framework of 32 districts. This hybrid sampling approach allowed for meaningful comparisons across strata (see rationale in Appendix B). Within each of the eight cells, a district was randomly selected. Next, to maximize variability across the four cells, the district within the cell farthest from its diversity mean was selected. In "more diverse" cells, this was the district with the highest percentage of students of color remaining in the sample pool. In "less diverse" cells, this was the district with the lowest percentage of students of color remaining in the sample pool. Sampling was alternated between the first (probability) and second (purposive) rule for subsequent district selections, including alternates, until there were four districts within each of the eight district groups. The alternate sampling method was used to create a sample that was both representative of districts within the cell classification, as well as to maximize variation along the measure of student diversity. This was done in part because of the relatively low overall variability in district-level student racial and ethnic diversity within rural Pennsylvania schools.

Interviews Conducted Across a Stratified Sample of Rural Pennsylvania Districts

The stratified sample of rural Pennsylvania school districts was used to conduct videoconference (Zoom) interviews with district leaders from a goal of 32 sampled rural Pennsylvania school districts. The semi-structured interview protocol was developed after analyzing equity-related documents gathered as districts went remote in March 2020 (including Continuation of Education Plans and other relevant community documents from across the state). The district was included in the sample population if the superintendent agreed to participate in an interview. Once a district was included in the study, attempts were made to recruit the respective school board president.

The first round of outreach to 32 districts yielded 10 superintendent interviews. Continued outreach and recruitment ultimately yielded eight districts in three respective quadrants and seven in one quadrant. In total, 115 superintendents were emailed resulting in a final sample of 31 districts. Only seven districts declined, referencing administrative challenges brought on by the pandemic. Districts were eliminated from the sample if the superintendent declined or failed to respond after three email attempts and a phone call. After superintendent participation was confirmed, the respective school board president received an email invitation to participate in the study and consent to being interviewed. This outreach and recruitment yielded 11 school board presidents and two school board vice presidents. Though there were no outright declines from any school board directors, it is not surprising that it was more difficult to speak with a school board director given the contentious politics school boards found themselves in during the period in which interviews were conducted. The final sample of districts was geographically diverse, spanning rural districts across the state.

Interviews were conducted between August and December 2021 via Zoom (four moved to telephone due to internet issues), and most interviews lasted between 45 and 90 minutes (see Appendix C for the interview protocol). The majority of interviews (41) were conducted by one research team member, with two additional team members conducting an additional four interviews. Superintendents and school board directors varied in gender, age, previous positions held, and familiarity with the district. Thirty-one superintendents were interviewed, 21 male and 10 female. Three superintendent interviews included other administrative staff: two principals, one assistant superintendent, and one budget director. Eight superintendents had served in their role for 10 or more years, the longest having served 14 years. Twenty-three superintendents served less than 10 years, with six beginning their role after the onset of COVID-19 in March 2020. Superintendents ranged in age and familiarity with the school district, with about half having worked in the school district previously in a different professional capacity and several coming from neighboring school districts. Not all superintendents currently lived in their district, though most did. Thirteen school board directors were interviewed—11 presidents and two vice presidents. Eight directors were male and five were female. All directors were on the school board before the onset of COVID-19, the longest having served for nearly 20 years and the newest director being elected in 2019. Directors ranged in age, with the youngest director having graduated from their district's high school in the early 2000s and the oldest being a grandparent with grandchildren currently enrolled in the district. Not all directors had children, though many had children attend the district's school at one time. Director professions ranged from teachers/staff at neighboring school districts to business owners, farmers, and employees of multinational corporations. All interviews were transcribed upon completion and summaries were written to capture prominent themes. Weekly research team meetings were held to discuss and debrief completed interviews. Interview summaries were then coded and incorporated into a single NVivo database.

In-Depth Local "Instructive" Case Studies Conducted in Four Rural PA Districts

Interview data analysis from the 31 sampled districts were instrumental in the identification and categorization of emergent themes, providing policy-relevant insights into the ways school districts have responded to COVID-19. Noting school district "exemplars" that provide policy relevant insights into school district equity responses, one district was selected from each of the four quadrants (see Table 1) to serve as a "mini case study," highlighting particular school district contexts and policy-relevant issues related to pandemic adjustment and response instructive practices. These case studies help illustrate opportunities and challenges representative of a variety of rural districts, with the intention of informing future educational policy and practice across the state.

Results and Findings

Document and Secondary Data Analysis

This section draws on secondary data to analyze relevant school district-level sociodemographic and economic factors to better frame the findings and inform policy recommendations. Findings are organized as follows: COVID-19 cumulative cases in rural-urban school districts; district fiscal and enrollment measures; teacher demographic trends; rural district resource preparedness; and rural-urban comparisons of modes of instruction at the beginning of fall 2020. Analyses used the years most representative of the data measure. For full details on data sources, years, and definitions, see Appendix A.

COVID-19

As of December 1, 2021, people in rural districts were disproportionately more likely to have tested positive for COVID-19 than in urban districts (see Table 2), according to secondary data analysis from the Pennsylvania Department of Health (DOH). COVID-19 case rates provide a tool for comparing the effects of the pandemic, as they frequently drove policies and recommendations. Among the districts across the state with the highest rates of reported cumulative COVID-19 cases, the top four were rural (analysis not shown here). The highest cumulative case rate was Forest Area SD, where, as of December 1, 2021, 24 percent of people living in the district had tested positive — 6 percent higher than the next highest district (18 percent). Only two rural school districts, Delaware Valley SD and Unionville-Chadds Ford SD, shared the Commonwealth's lowest cumulative case rate for the same time period (11 percent).

Table 2. Total Cumulative COVID-19 Cases and Cases per 100,000 Residents for Rural and Urban Districts

	June 2020	Dec. 2020	June 2021	Dec. 2021
Total Cumulative Cases				
Pennsylvania	76,564	383,854	1,216,861	1,755,133
Rural	8,488	82,229	297,843	467,614
Urban	68,086	301,728	919,117	1,287,569
Cases Per 100,000 Residents				
Pennsylvania	598	2,998	9,505	13,710
Rural	273	2,646	9,586	15,050
Urban	702	3,113	9,482	13,283

Note: Data represent cumulative cases from June 1, 2020 to December 1, 2021. Cumulative cases are confirmed/probable cases of all residents in the district reported through that date. For additional details about measures used in this table, see Appendix A.

This study also found that the share of cases has increased in rural districts and decreased in urban districts. Though case counts are influenced by a variety of factors (including testing availability, backlogged test results, and mass screenings) these data

also demonstrate that rural and urban district leaders have likely felt the pandemic's effects differently over time and place.

District Enrollments, Demographics, and Finances

In 2019-20[10], rural districts enrolled fewer students per district and per school than urban districts, on average (see Table 3). There were also large demographic differences in the ethnic/racial composition across rural and urban districts. Rural districts were more white than urban districts; on average, the percentage of white students enrolled in rural districts in 2019-20 was 93 percent while the percentage of white students enrolled in urban districts was 69 percent. Both rural and urban districts educate, on average, a similar share of students with a special education designation and students with an English learner designation. Average poverty rates in urban and rural districts are similar in magnitude, with the percentage of students from low-income families slightly higher (4 percent) in rural districts.

Table 3. Enrollment, Demographic, and Fiscal Data for Rural and Urban Districts, 2019-20

	Rural	Urban	Total
Enrollments			
Avg. School District Enrollment	1,640	4,475	3,140
Avg School Size	372	545	464
Demographics			
% White	93	69	80
% Students of Color	7	31	20
% Low Income Students	46	42	44
% Special Education	18	17	17
% English Language Learner	1	3	2
Fiscal Data			
Current Expenditures Per WS	$13,720	$13,931	$13,882
Pct. SDs with Concentrated Poverty (> 30%)	93	68	80
Pct. Majority Poverty SDs (> 50%)	31	35	33
Total N	235	264	499

Note: Analysis excludes Bryn Athyn School District because the school district does not operate any schools. For additional details about measures used in this table, see Appendix A.

Rural districts, on average, had more resources than urban districts. The relative resources of urban and rural districts were, on average, higher in urban districts than rural

[10] 2019-20 was selected since it is the most recent year with publicly available fiscal data. Since LEAs that are not assigned as a "school district" by PDE (e.g., charter schools) are not classified as rural or urban by the Center for Rural Pennsylvania, enrollment data for LEA types that are not designated school districts by PDE were excluded.

districts, with rural districts spending $800 less, on average, than those urban districts.[11] A large number of students in both rural and urban school districts were from low-income families, though there was wide variation in district poverty levels across both rural and urban school districts, with some districts experiencing high levels of poverty and others experiencing relatively low levels. Districts where more than 30 percent of students are designated low-income by PDE are considered to be "concentrated poverty" districts, and districts where more than 50 percent of students are designated low-income are considered to be "majority poverty" districts. While 92 percent of rural districts experienced concentrated poverty in 2020-21 compared to only 68 percent of urban districts, the proportion of rural districts that were majority poverty (31 percent) was slightly lower than urban districts (35 percent).

There were large wealth gaps among the highest and lowest resourced districts in rural and urban Pennsylvania. There was wide variation in relative funding (see Table 4), with substantial gaps between the highest and lowest resourced districts.[12] These gaps are large in magnitude and exist whether comparing the highest and lowest resourced districts across the state, just the highest and lowest resourced urban districts, or just the highest and lowest resourced rural districts. The highest resourced rural districts, for example, spent about $5,484 more per pupil than the lowest resourced rural districts.

[11] Unless otherwise noted, all per student spending figures were based on current expenditures per weighted student. These figures were comparable across school districts with different financial needs. These needs were identified in the school code, and current expenditures per weighted student (CE per WS) figures for each school district were reported by PDE in basic education funding files in the "Local Capacity Index" tab starting in 2015-16. Since financial data for school districts are not released until after the completion of a fiscal year, the most recently available CE per WS figure was for the 2019-20 school year and contained in the 2021-22 estimated basic education funding file.

[12] To identify the "*highest resourced"* and "*lowest resourced"* districts, both rural and urban districts were divided into quintiles based on Current Expenditures per Weighted Student. Each quintile was assigned ~20 percent of the rural or urban student population (in 2019-20 Adjusted ADM) to facilitate comparisons across districts with aggregate figures and to ensure that the experience of a single student in a larger district was not considered analytically less important in the analysis than a student in a smaller district. For comparative purposes, quintiles were also formed for all districts in the Commonwealth and all urban districts as well, excluding Bryn Athyn since it does not operate its own schools.

Table 4. Wealth Gaps among Highest and Lowest Resourced Rural and Urban Districts

	Market Values per Weighted Average Daily Membership	Personal Income per Weighted Average Daily Membership	Per Student Spending (CE per WS)	% Low Income
All School Districts				
Highest Resourced Quintile	$ 659,866	$ 256,983	$18,327	32%
2nd Highest Resourced Quintile	$ 425,486	$ 177,833	$15,084	39%
Quintile 3	$ 358,581	$ 146,022	$13,490	45%
2nd Lowest Resourced Quintile	$ 328,869	$ 134,572	$12,015	49%
Lowest Resourced Quintile	$ 209,683	$ 96,160	$10,107	68%
Rural School Districts				
Highest Resourced Quintile	$ 528,408	$ 158,172	$ 16,874	43%
2nd Highest Resourced Quintile	$ 381,753	$ 142,974	$ 14,408	44%
Quintile 3	$ 335,080	$ 136,626	$ 13,322	45%
2nd Lowest Resourced Quintile	$ 327,087	$ 125,437	$ 12,480	48%
Lowest Resourced Quintile	$ 309,696	$ 122,700	$ 11,390	49%
Urban School Districts				
Highest Resourced Quintile	$ 695,460	$ 305,530	$ 18,820	27%
2nd Highest Resourced Quintile	$ 460,123	$ 205,378	$ 15,386	35%
Quintile 3	$ 388,307	$ 161,521	$ 13,600	44%
2nd Lowest Resourced Quintile	$ 325,340	$ 145,761	$ 11,960	49%
Lowest Resourced Quintile	$ 200,838	$ 91,383	$ 10,040	72%

Note: Analysis excludes Bryn Athyn School District because the school district does not operate any schools. Market Values per Weighted Average Daily Membership and Personal Income per Weighted Average Daily Membership are from PDE's 2019-20 Aid Ratio file. These values reflect the per pupil real estate and personal income values for each school district that were used to calculate each school district's 2019-20 Market Value / Personal Income Aid Ratio, a measure of local school district wealth that has been used in various state subsidies for decades. In the calculation of each district's Market Value/Personal Income Aid Ratio and in underlying Aid Ratio files, weighted average daily membership is used. Weighted average daily membership represents the number of average daily members for which a school district is fiscally responsible, after the application of weighted adjustments for half-day kindergarten and students in grades 7-12. For additional details about measures used in this table, see Appendix A.

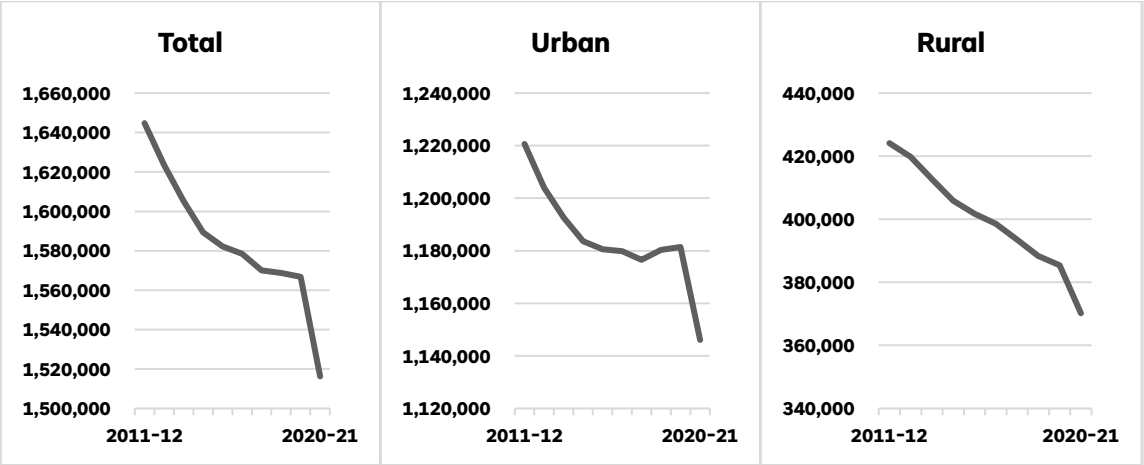
On average, higher resourced districts also had substantially more local wealth. Local wealth is expressed in terms of market values per weighted average daily member (MV Per WADM[13]) and personal income per weighted average daily member (PI Per WADM). In both urban and rural districts, these gaps indicate large differences in the fiscal resources available to districts as they confronted the start of the pandemic in spring 2020. On

[13] Weighted average daily membership is the pupil count used for calculating each district's Market Value/Personal Income Aid Ratio, a measure of school district wealth used in various state subsidies for decades. Weighted average daily membership represents the average number of students for which a district is fiscally responsible, after the application of a slight, grade-level weighted adjustment.

average, the percentage of students from low-income families in the lowest resourced districts was higher than the percentage of students from low-income families in the highest resourced districts. As a result, those school districts with the fewest fiscal resources had the greatest student need related to poverty. There are differences in the magnitude of these gaps for rural districts and urban districts (see, e.g., Table 3).

Enrollment trends over time show that, between 2019-20 and 2020-21, there was a decline in the total number of students enrolled in both rural and urban districts across the Commonwealth. Enrollment data (Figure 1) demonstrate steady declines between the 2011-12 and 2020-21 academic years across all districts, with a sharp decline after the start of the pandemic.

Figure 1. Enrollment Change Across Pennsylvania School Districts, 2011-12 to 2020-21



Note: Charter schools were excluded in this analysis since they are not assigned as a "school district" by PDE and are not classified as rural or urban by the Center for Rural Pennsylvania. For additional details about measures used in this figure, see Appendix A.

Declining enrollments were not evenly distributed across rural and urban districts. As Table 5 shows, total enrollments in rural districts have declined at a higher rate (-13 percent) than total enrollments in urban districts. White enrollments in both rural and urban Pennsylvania school districts decreased at a greater rate than total enrollments, while student of color enrollments increased.[14] The growth of student of color enrollments in rural areas was also greater (26 percent) than urban areas (13 percent). These changes were the result of a large increase in the absolute number of students of color enrolled in rural school districts between 2011-12 and 2020-21 (8,416), indicating that both urban and rural Pennsylvania districts are becoming more ethnically and racially diverse, and

[14] White students represent those students classified white by PDE in the enrollment reports posted on the PDE website. Students of color represent those students not classified white by PDE (American Indian/Alaskan Native, Asian, Black or African American, Hispanic, Multi-Racial, Native Hawaiian or other Pacific Islander (not Hispanic). For additional details, see Appendix Table 1.

that rural districts are becoming diverse at a higher rate than urban districts, a trend consistent with national data (Schafft & Maselli, 2021).

Table 5. Enrollment and Demographic Change in Rural Districts, Urban Districts, and Charter Schools

	2011-12	2020-21	% Change
Total Enrollment			
Urban School Districts	1,220,635	1,146,078	-6
Rural School Districts	424,129	370,192	-13
Charter Schools	105,187	169,252	61
Enrollment in Rural School Districts			
White Enrollment	391,554	329,201	-16
Student of Color Enrollment	32,575	40,991	26
Enrollment in Urban School Districts			
White Enrollment	801,497	674,179	-16
Student of Color Enrollment	419,138	471,899	13

Note: Charter schools are excluded in this analysis since they are not assigned as a "school district" by PDE and are not classified as rural or urban by the Center for Rural Pennsylvania. For additional details about measures used in this table, see Appendix A.

Across Pennsylvania, the decline in school district enrollment reflects a decrease in all enrollments across both urban and rural school districts. However, a substantial portion of declining school district enrollments is the result of expanding charter school enrollments since 2011-12. The number of students enrolled in a charter school increased by 64,065 during this period, a 61 percent increase. Put differently, approximately 50 percent of the absolute decline in school district enrollments (128,494) may be attributed to increased charter enrollments (64,065). The increase in charter school enrollments was particularly large with the start of the pandemic. Between 2019-20 and 2020-21, charter school enrollments increased by 22,696, or 35 percent of the total increase in charter enrollments since 2011-12.

Rising charter school enrollments between 2019-20 and 2020-21 were almost exclusively the result of increased enrollments in cyber charter schools statewide, suggesting that the majority of families who opted to leave traditional public school districts during the pandemic did so to enroll their children in a remote, online educational environment. Disaggregating increased charter enrollments by type (brick-and-mortar, regional, and cyber), 94 percent of the increased charter enrollments were from cyber charter schools.

Rising enrollments in cyber charter schools increase the fiscal burden of charter school tuition payments for rural districts. Between the 2010-11 and 2019-20 academic years, rural school districts sent over $1.6 billion in tuition payments to charter schools. However, because of fixed costs, rural districts needed to generate additional revenue

and/or reduce their spending on students enrolled in the district to make up for funding diverted to cyber charters.[15] Fixed costs are often related to economies of scale. If a single third grade student moves to a charter school, for example, a district cannot spend 1/25th less on electricity, heat, and the salary of a third-grade teacher to afford the tuition payment they are required to make. Instead, the district will need to reduce its spending on students who remain in the district or generate additional revenue by increasing taxes on local residents.

Teacher Attrition

Since the 2012-13 academic year, teachers have moved out of the profession across the Commonwealth. Teacher declines occurred across the state but were not evenly distributed across rural and urban districts or by race. As Table 6 shows, there was a 4.76 percent decline in teachers in rural districts between 2012-13 and 2020-21 as compared to a .27 percent decline in urban districts. When these data are examined by race, this study finds an increase in teachers of color and a decrease of white teachers across both urban and rural districts. Though student of color enrollment in both rural and urban districts has grown, teachers of color have not experienced a proportional increase.

Table 6. Teacher Demographic Change in Rural and Urban Districts

	2012-13	2020-21	% Change
Total Teachers			
Urban Districts	78,116	77,903	-0.27
Rural Districts	29,141	27,755	-4.76
Teachers in Rural Districts			
White Teachers	28,927	27,498	-4.94
Teachers of Color	214	257	20.09
Teachers in Urban Districts			
White Teachers	73,239	72,656	-0.80
Teachers of Color	4,877	5,247	7.59

Note: Teacher numbers are based on primary assignment classroom. Charter school teachers are excluded in this analysis since they are not assigned as a "school district" by PDE and are not classified as rural or urban by the Center for Rural Pennsylvania. For additional details about measures used in this table, see Appendix A.

Preparations for Pandemic

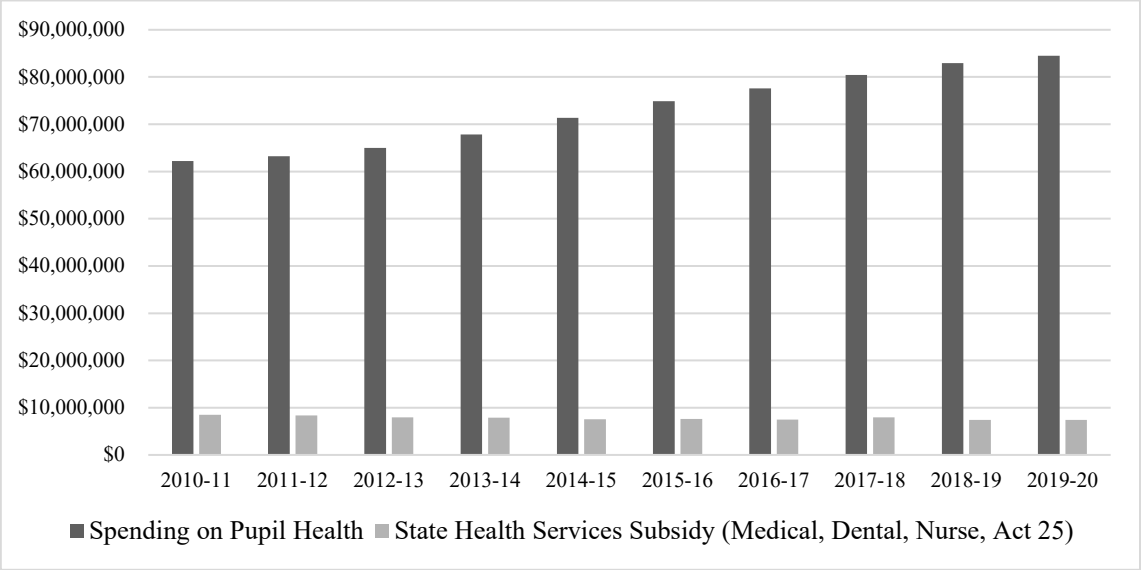
School leaders reported certain resources that affected (a) the ability of their district to operate safely during the pandemic and (b) the ability of districts to respond to the challenges created by the pandemic. Specifically, this study examined resources related to pupil health services, technology, and facilities since these resources impacted the

[15] Tuition payment data based on Annual Financial Report Data, Tuition Schedule file on PDE's website.

ability of districts to support community health, safety, and student learning while operating both in person (pupil health services and physical infrastructure) and remotely (technology). In addition, this study examined resources related to special education and student mental health services since resources in these areas reflected the ability of districts to help students with unique needs that have increased during the pandemic.[16]

Rural school districts have increased their investments in pupil health services over time while state support for spending in these areas has not increased (Figure 2). These figures are expressed in nominal (not adjusted for inflation) dollars.

Figure 2. Rural District Spending on Public Health vs. State Health Services Subsidy



Note: Values are not adjusted for inflation (expressed in nominal dollars). For additional details about measures used in this figure, see Appendix A.

There are large gaps in pupil health spending between the highest and lowest resourced rural districts. Districts in the highest resourced quintile were able to invest nearly $2 million more in nursing services than the lowest resourced rural districts in the most recently available financial data (see Table 7). On a per student basis, spending on nursing in the highest resourced rural districts was about 20 percent higher than in lowest resourced rural districts (see Table 7).

[16] In investigating the impact of school closures from March to June 2020 on expenditures, there was a small reduction in spending in some areas that were likely the result of school closures (such as a 1 percent decline in aggregated spending on operations and maintenance of between 2018-19 and 2019-20). On the whole, school closures did not produce an overall reduction in expenditures between 2018-19 and 2019-20. This trend was anticipated because of the shortness of the closure period (relative to the entire fiscal year) and the fact that large expenditures in areas like teacher salaries continued during those early months of the pandemic.

Table 7. Rural School District Preparedness Measures

	Highest Resourced Rural District	Lowest Resourced Rural Districts
Number of Schools	160	162
Nursing Services		
Investments in Nursing Services, 2019-20	$12,789,255	$10,794,060
Investments in Nursing Services per Weighted Student, 2019-20	$134	$111
% Districts w/ Fewer Nurses than Schools	74%	87%
Technology		
Technology Spending, 2016-17 to 2019-20	$60,228,994	$39,805,839
Technology Spending per Weighted Student, 2016-17 to 2019-20	$631.23	$410.22
Technology Spending, 2019-20	$17,818,231	$12,892,250
Technology Spending per Weighted Student, 2019-20	$187	$133
Maintenance, Repair, & Operations (MRO) of Plant Services		
Investments in MRO, 2016-17 to 2019-20	$542,323,753	$358,268,126
Investments in MRO, 2019-20	$139,630,057	$91,384,535
MRO per Weighted Student, 2019-20	$1,463	$942
Mental Health Investments		
Mental Health Investments, 2019-20	$48,714,121	$ 30,306,396
Mental Health Spending Per Weighted Student, 2019-20	$510.55	$312.32
Total FTE Equivalent Counselors and Psychologists	297	215
Students per FTE Counselor and Psychologist	256	352

Note: "Technology Spending, 2016-17 to 2019-20," "Technology Spending per Weighted Student, 2016-17 to 2019-20," and "Investments in MRO, 2016-17 to 2019-20" are based on annual financial report data for 2016-17, 2017-18, 2018-19, and 2019-20 school years. Systematic data on the age of all school buildings in Pennsylvania are not available. The age of buildings and the history of deferred maintenance within a district will impact fiscal need related to MRO. Data should be interpreted with this limitation in mind. For additional details about measures used in this table, see Appendix A.

Differences in spending on nursing services impacts the percentage of school districts with fewer nurses than schools. The findings show that 84 percent of rural districts did not have enough nurses to ensure all children in the district had access to a nurse throughout the school day. While a substantial portion of rural districts are impacted by this resource constraint, higher spending rural districts were able to provide greater access to nurses. For example, only 74 percent of the highest spending rural districts were able to provide full-time nursing services to their schools in 2019-20. While insufficient for the number of students, this figure is higher than in the lowest-spending rural districts where only 85 percent of districts had the nursing staff needed to provide access to all students.

There is wide variation between rural districts in investments in hardware, software, and related technological services.[17] Since investments in technology before 2019-20 impacted school district preparedness for remote instruction at the start of the pandemic, this study examined aggregate investments within rural districts. Per student technology investments in the year immediately before the pandemic were about 40 percent higher in the highest resourced rural districts. In aggregate, the highest resourced rural districts had invested $20 million more in technology than the lowest resourced rural districts by the end of 2019-20.

The ability of school districts to operate remotely is also impacted by the availability of a high-speed internet connection. On average, rural school districts have lower download speeds and upload speeds than urban districts. In addition, there are fewer service providers offering high-speed connections than urban districts. Within rural districts, access to high-speed internet also varied substantially by population density. For example, 47 percent of lower density school districts were located in ZIP Codes with no access to a high-speed internet. In contrast, only 29 percent of higher density rural districts did not have access to high-speed internet.[18]

The ability of local districts to invest in school infrastructure varies substantially across districts. PDE does not regularly collect and release systematic data on school facilities that substantially impact the ability of districts to offer students a safe educational environment. This is vital information as aging HVAC units have challenges in providing the necessary ventilation, filtration, and air cleaning needed for schools to run safely during an air-born pandemic (CDC, 2021).

Based on available financial data, the highest resourced rural districts were able to invest $48 million more in operations and maintenance than the lowest resourced rural districts in 2019-20. On a per student basis, spending in this area was 55 percent higher in the highest resourced rural districts. Since deferred investments in operations and plant services can increase costs over time, this study also examined trends in spending among rural districts since 2016-17. The highest resourced rural districts were able to spend over $184 million more on operations and maintenance than the lowest resourced rural districts.

There are large gaps in spending on support services for mental health. At the start of the pandemic, the highest resourced rural districts were able to invest $18 million more on guidance and psychological services than the lowest resourced rural districts. On a per student basis, spending in these support areas was 63 percent higher for the highest resourced rural district relative to the lowest resourced. Differences in fiscal resources and

[17] Aggregated spending for object 650: supplies & fees—technology related, object 756: capitalized technology equipment-original, object 758: capitalized technology software – original, and account code 2220 (technology support services). To avoid double counting, account code 2220 expenditures do not include values for Objects 650, 756, and 758.

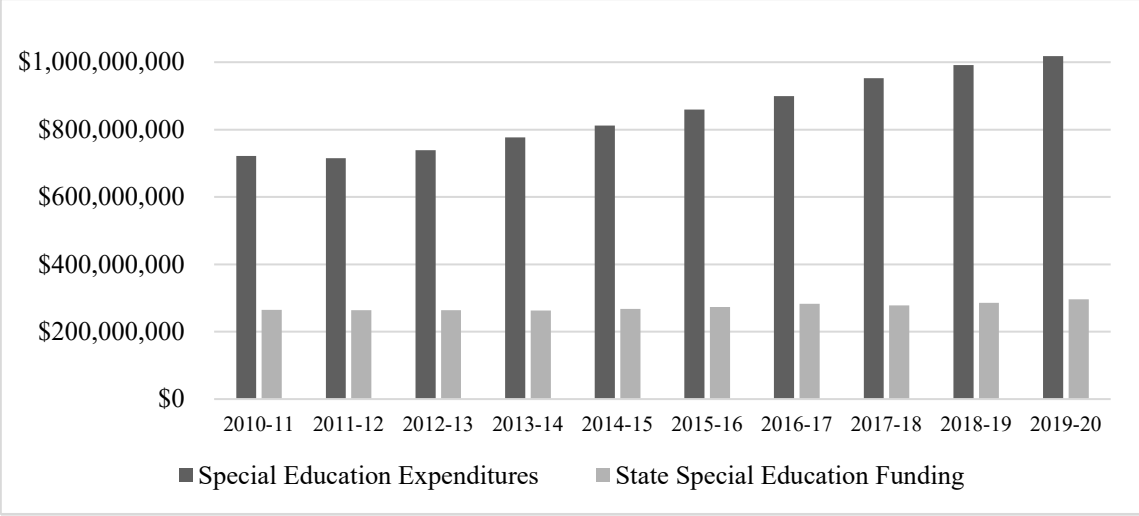
[18] ZIP Code level data matched to school districts based on ZIP Code reported by PDE in Future Ready Index Fast Facts Files.

investments shaped the kinds of services districts have been able to offer to support the mental health of their students. Higher resourced rural districts operate 160 schools while lower resourced rural districts operate 162 schools.

Although these districts have a similar number of schools, higher resourced districts were able to employ 82 more counselors/psychologists (297 in total) than lower resourced districts (215 in total). These employees were able to serve a smaller number of students as a result. If every student received support from a counselor/psychologist in rural districts, each counselor/psychologist would be responsible for 95 fewer students in a higher-resourced district. These differences can become quite extreme. For example, if Mountain View SD provided mental health services to each student in the district, each counselor/psychologist would be responsible for a large number of students (185). Nonetheless, this figure is substantially lower than similar measures for other rural districts. Carmichaels Area SD, for example, would need to assign each of their counselors/psychologists more than 1,000 students, a caseload over five times as large as that of Mountain View.

As Figure 3 illustrates, rural districts have faced growing special education costs over time. In nominal dollars, special education costs increased by more than $295 million, yet, state funding for special education has only increased by about $31 million during this same period. As a result, in 2019-20, rural districts needed an additional $264 million in revenue just to cover the increase in unfunded special education costs since 2010-11. Students with a disability, who have unique learning needs, require substantial investments in direct services as well as accommodations and modifications to their learning environment.

Figure 3. Rural District Special Education Spending vs. State Special Education Subsidy



Note: Values are not adjusted for inflation (expressed in nominal dollars). For additional details about measures used in this figure, see Appendix A.

Modes of Instruction

Rural and urban districts took different approaches to modes of instruction in fall 2020. Starting in fall 2020, PDE did not mandate operational status or modes of instruction for districts. To gauge mode of instruction per district, PDE received input from the 29 regional Intermediate Units (IUs) to understand the operational status and mode of instruction in fall 2020. Using these data, this analysis found that rural districts were more likely to be full in-person as compared to urban districts (Table 8). On average, the highest resourced rural districts were full in-person at a lower rate than the lowest resourced rural districts.

Table 8. Rural and Urban District Mode of Instruction by Percent, Reported Fall 2020

	Total Reopen/Full In-Person %	Scaffolded Reopening %	Blended Reopening %	Full Remote Learning %
Rural Districts (All)	42.44	15.13	35.71	6.72
Highest Resourced	34.15	14.63	39.02	12.20
Lowest Resourced	41.30	10.87	41.30	6.52
Urban Districts (All)	11.11	10.00	39.26	39.63
Highest Resourced	1.82	3.64	30.91	63.64
Lowest Resourced	14.29	n/a	23.81	61.90

Note: Districts could select more than one option; the percentage indicates the proportion of all districts that indicated each option. For additional details about measures used in this table, see Appendix A.

District-Level Qualitative Findings

This section draws principally upon the interviews conducted with district leaders and school board members in the 31 rural districts sampled across the state. Respondents consistently described the challenges associated with educational provision and addressing student needs at a time of intense and prolonged disruption and uncertainty. The pandemic has also underscored the non-academic roles that educational leaders and school districts take on to ensure community well-being. District leaders repeatedly described how their decision-making was significantly complicated by rapidly changing state agency guidelines and an increasingly hostile political climate in which pandemic responses were often politically weaponized (Falk 2021, Kines, 2021; Parish 2021, 2022; Southwick 2021). As leaders struggled to respond to changing state directives in real time, maintaining trust and open lines of communication with members of often divided communities was a challenge.

A number of respondents reflected on the impact the pandemic has had on the willingness and enthusiasm to serve as a leader at the district level. “It's a real challenge to fill the leadership positions today, and that's going to have very long-lasting effects,” one superintendent said, directly referencing the public backlash against many school leaders across the Commonwealth. Another leader, reflecting on her time in the position

stated: “To be a school leader was a calling, and I believed I was called here. I had several job offers that I declined just because I felt like my work made a difference. But the way the public is treating school leaders, it's moving it from being a calling to having to make it become a job, because that's the only way you're going to survive.”

Findings are broadly organized by first examining student-level concerns, then district-level challenges, and finally the interaction between state policies and school district practice. Four mini case studies of school districts are included in Appendix D to illustrate the dynamics of local pandemic responses.

Student-Level Concerns

All students have been impacted by COVID-19, but specific student groups were of special concern to leaders. As one superintendent put it, leaders needed to “meet kids’ needs in a variety of different ways” and “understand the needs of students *and* families.” While many district leaders spoke directly about academic concerns, most prioritized the social and emotional well-being of children and families. One superintendent shared, “the impact on [students’] social and emotional development was far more detrimental than the risk of COVID.” Another superintendent explained the need to prioritize students' well-being by saying, “Right now, we have people that are just melting down and being crushed under the stress of everything. I do think public education and the teaching side is important, but not right now. We’ve got other needs that are not being met.”

Areas of highest concern identified by superintendents and school board members included socioeconomic issues, mental health, special needs, technology access, at-home support, age-related issues, and language accessibility, and are described in more detail below.

Economically disadvantaged students. Every district leader mentioned students and families in their community who were in deep, intergenerational poverty, several linking how the lack of employment and rising incidences of drug abuse have particularly affected the way poverty shapes rural communities. Students in poverty were extremely reliant on public schools for resources—including food, clothing, healthcare, and hygiene—with few, if any, other places to meet these needs in their community. Three superintendents specifically mentioned that they believed they have more students experiencing homelessness than before the pandemic. Because economically disadvantaged students were more dependent on the services of the school, school closures and quarantines were felt most acutely by this population.

Students with mental health concerns. A majority of districts reported that they don't currently have the resources to meet their students’ growing demand for mental health services. As one district leader shared, “we don't physically have the people to meet those needs in the mental health fields. The mental health resources we have are excellent, but we don't have enough of them.” After sharing that the Elementary and Secondary School Emergency Relief (ESSER) funds are “great” and that the “priority is in the right place,”

another district leader reiterated, "There are no mental health professionals here for hire...Everybody's strapped. Everybody's making deals with the devil as to what to do with a student in crisis" (see Appendix E for more details about ESSER funds). One superintendent connected the rise in mental health concerns to poorer student behavior and noted that she's seen an increase in anger and anxiety. Another superintendent quantified this growth in need by stating, before the pandemic "there were just over 100 [mental health] referrals, so 115 referrals. We have exceeded that in Quarter 1 of this year, so we're on track to be more than four times the level of mental health referrals—just by that one metric—than last year."

Students with Individualized Education Plans (IEP). Many district leaders shared that they were incredibly concerned about how the district could realistically satisfy the IEPs of students with special needs during remote instruction. Because IEPs are legal documents, these concerns extended into worries about liability, especially in rural districts with fears of consolidation. Although IEPs aren't written to accommodate remote instruction, district staff felt immense pressure to fulfill IEPs in their entirety. One administrator explained this stress by saying that the district had a "fiscal responsibility [to] avoid lawsuits, combined with the ethics of providing what students need." When districts were able to bring back some students for face-to-face instruction but not all, they reported prioritizing students with IEPs or elementary students who they were less able to serve through online platforms.

Students without ready access to internet and cellular service. District leaders reported that they were particularly concerned about students who lacked access to internet and cellular coverage both during the initial school shuttering and rolling school closures/student quarantines. Not only were these students unable to access instruction, but schools were unable to connect with them and check on their overall well-being. District leaders were clear that the actual infrastructure limited remote access, but also, even if some households had the capacity for internet coverage, securing access was fiscally impossible for many families. Several district leaders reported that the farther that students lived from schools, the greater the impact the school closures had because they were distant from services the school supplied (i.e., food) and were more likely to lack broadband infrastructure.

Students with inadequate parental support and/or disrupted home environments. Enforced periods of quarantine exacerbated disparities in children's access to healthy and supportive adults. District leaders noted that students who had parents that were able to support student learning fared much better than those who did not. Parents and adults in the community also had heightened mental health concerns that manifested in multiple ways, including increased drug use and declining health; these struggles differentially shaped access to healthy home environments for children. Moreover, given that jobs were in low supply, some parents had to drive long distances to work. District leaders noted LGBTQ students were and continue to be at increased risk of isolation and abuse due to unsupportive or actively hostile family members. For these students, school is sometimes

the only place where they have access to affirming student organizations and supportive peers and adults.

Elementary age students and high school seniors. Concerns around elementary school-aged students were mainly about gaps in social-emotional and literacy development due to unstable home environments. Concerns about seniors highlighted the important role rural schools play in helping graduates access post-secondary opportunities, many of which may exist outside the rural community. Many leaders—especially those in less dense districts—noted that students are often only exposed to places outside their district through the school (e.g., through athletics, band, field trips). Consequently, the curtailing or halting of school activities meant that seniors missed out on pivotal moments in their school career, prompting concerns about their readiness for post-secondary education or a career. As the beginning stages of the pandemic faded and manufacturing boomed, leaders reported that they lost track of many juniors and seniors as they left school to take jobs like truck driving.

English Language Learners (ELL). ELL students were noted as a population of concern in three districts. One district that has two and a half full-time English as a Second Language (ESL) teachers for roughly 90 ELL students reported that, due to staffing shortages, they had to pull certified ESL teachers to cover other certified teachers' classrooms, keeping that subgroup of students from receiving needed services.

District-Level Pandemic Responses

Study results show that school districts' provision of nonacademic services has grown, including providing food, healthcare, and overall support for students, families, and their communities. While many districts offered at least some of these services prior to the pandemic, COVID-19 greatly accelerated the growth in the number of services that rural districts were able to offer. Simultaneously, districts devoted considerable effort and resources toward quickly transitioning to remote learning and providing technological support to ensure continued learning. Efforts to support remote learning are discussed first, followed by a discussion of district efforts to support the social-emotional, and physical health of students and families.

Rural school districts transitioned to online and expanded academic environments. The pandemic necessitated a quick shift from in-person to remote instruction. Districts managed this shift by implementing surveys to assess their district's broadband needs; purchasing cellular data plans for students with smartphones or tablets; connecting families with companies offering low-cost internet; buying and distributing individual hotspots directly to students; and constructing WIFI locations in school, on buses, community businesses, and church parking lots where students could access the internet and complete their schoolwork. Many leaders mentioned that hotspots only work if internet access is available, and in some areas without access, expansion of networks was necessary. District leaders from higher density districts mentioned working with providers and local governments to expand internet coverage in their districts directly.

One superintendent, with over 10 years of service in his district, built the district's own fiber optic network prior to the pandemic. "We've run our own cabling," he explained. "We connected our buildings with our own fiber. We do own two towers. Right now, what we're trying to do is to get onto existing towers... I built my own because I got tired of waiting for it. I'm tired of the studies and the commissioners putting in a million dollars to study where the pockets are."

The pandemic fueled a huge increase in districts' provision of personal computing services for students and families. While most districts were not at one-device-per-student (1:1). prior to the pandemic, they relied on ESSER funds to procure necessary devices to adapt to online instruction. Although many districts placed orders in spring 2020, some districts did not receive devices until October to December 2020. Districts that were (or were closer to) 1:1 before the pandemic pivoted to remote learning with greater ease and had more flexibility with their ESSER allocations.

Most districts also had to find ways to continue instruction with students who still did not have internet access, distributing hard copies of assignments to families who needed it, oftentimes in conjunction with food pick-up. When given the option from the state to either do planned instruction or enrichment after the Governor closed schools in March 2020, one district of about 1,500 students chose to institute an offline project-based learning model for spring 2020. In this district, at least 10 percent of their students lacked dependable internet and not all teachers had access; in effect, students received "menus" of ten projects (with separate options for elementary and secondary) and were expected to choose two. Teachers split into teams to manage these projects and were given cell phones so students could call them with questions during regular school hours.

Many rural districts that had been unable to offer enrichment programs previously, citing their high costs, due were able to utilize ESSER set-asides to develop summer and after-school programs. Leaders reported these programs included academic programming, transportation, and food—though with mixed effects. While some were a huge success, with leaders already trying to budget to keep these programs in perpetuity due to their observed advantages, others had trouble staffing them or even having students attend.

Rural school districts support social-emotional and physical health of students and families. Districts devised creative ways to address the social-emotional and physical health needs of students and families. Most commonly, this involved teachers, bus drivers, and/or district administrators delivering meals door-to-door and/or dropping off meals at designated distribution spots in the local community. Meals were often distributed in bulk (i.e., providing days' and weeks' worth of food at a time) to both limit the exposure to COVID-19 and to support families without access to regular transportation. Some districts partnered with local restaurants to both feed students and support local community restaurants. While all district leaders discussed the challenges of student food provision during the pandemic, several superintendents stated they made sure there was enough food for everyone in the household—not just the students. Superintendents also

mentioned using this time to check on students that they had not seen since the shuttering of schools.

Supported by ESSER set-asides, some districts also provided increased social-emotional programming as well as professional development focused on wellness and trauma support. Some districts hired social workers and mental health specialists, and partnered with community providers to meet the needs of their students, faculty, and staff. Notably, in the early stages of the pandemic, many district administrators and teachers went out to homes to individually check on children. Higher density districts mentioned adding "resilience coaches," intervention specialists, and additional staffing and community partnerships for home/school visits. At least one Intermediary Unit partnered with the Trauma-Skilled Schools Model™ to support districts in using trauma-skilled practices that foster positive school culture. Although some districts were able to make improvements, more district leaders reported a lack of access to mental health professionals in their rural areas, both within the school system and in their community. One superintendent noted, "That's great that the money is there, but who are we going to hire because there are no mental health professionals here for hire."

Lack of adequate health care was also a concern. One district directly addressed this need by partnering with a medical service provider to open a full-service primary care office for district staff. While this initiative was in progress before the pandemic, COVID-19 allowed the district to garner enough support to bring this idea to fruition. This allows district insurance to be self-funded, reducing costs for the district and employees, serving as a benefit to all staff, regardless of FTE status. This district also prioritized hiring local staff so many district children of employees are also served. The superintendent hopes to expand this to students in the district.

Rural districts are less likely to have access to healthcare centers causing extended out-of-school time for quarantined students. If students don't have access to COVID-19 testing, they must quarantine after exposure for the full duration whereas students who had access to testing were able to have a shortened quarantine and return to in-person instruction quicker. One superintendent tried to bring a free testing clinic to his schools but decided not to after receiving extreme pushback from parents: ultimately, he could not offer this service to his students. In general, the political polarization of the pandemic and differential access in accepting health knowledge has caused great difficulty in superintendents' ability to focus on education.

Staffing and Teacher Concerns

Almost all district leaders cited teacher burnout as a primary concern. While teachers of all grade levels and subjects had unique challenges, special education teachers, in particular, faced a formidable increase in required paperwork, as they sought to both provide the necessary services and to document their provision of the adapted IEPs during the pandemic. One superintendent estimated the paperwork responsibilities of her special education staff increased four-fold. Many teachers struggled to connect fully with students in light of virtual instruction, a reality that negatively impacted feelings of

efficacy. Multiple districts reported that they pursued professional development that used restorative practices to build student-teacher relationships. Other superintendents, instead of requiring professional development, reported that they allowed teachers to count rest as professional development.

Superintendents reported that teachers' comfort with technology was a pressing concern early in the pandemic, especially for older, more veteran teachers, many of whom opted to retire early rather than transition to long-term remote instruction. In many cases, teachers were provided additional technology, including smartboards and cameras to support simultaneous remote and in-person teaching. Districts reported that they provided substantial professional development regarding technology, including Google classroom tutorials and smartboard and document camera demonstrations. Many leaders emphasized flexibility during required periods of remote instruction, such as allowing teachers to bring their own kids to school with them when teaching remotely and having half or full prep-days during the week.

Superintendents reported that teachers have been concerned about their mental health and the mental health of their colleagues throughout the entirety of the pandemic, but especially during the 2020-21 school year. This was especially vocalized by superintendents in lower-resourced districts, as their communities tended to be dealing with larger bouts of trauma. Teachers' mental health was negatively impacted by the second-hand trauma many teachers experienced after seeing inside students' homes during prolonged periods of virtual instruction, as well as by the long-term nature of increased work responsibilities. To support teachers on this front, districts have pursued professional development meant to target the mental health needs of both students and teachers. One higher resourced district reported that it had half-days every Friday to support teacher mental health. A common support that seems to predate the pandemic in most districts is the existence of an Employee Assistance Program, which offers free mental health benefits like assessments and short-term counseling to teachers on an as-needed basis.

Almost all districts reported facing immense staffing shortages, a struggle that has become especially pronounced during the 2021-22 school year, exacerbating the already inflated workloads across the state. Districts' ability to hire new staff varied widely depending on the resources of each district. Those who were infrastructurally better off prior to the onset of the pandemic (e.g., had 1:1 devices and/or newer HVAC systems) had more money to devote to staffing new positions like counselors, social workers, behavioral specialists, and even, in one instance, a resilience coach. Districts that were lower resourced were more likely to partner with their county health services or local mental health agencies (if available) to support their students, as they typically needed to allocate their ESSER funds for more immediate safety and technological needs.

Many teachers left the profession during the pandemic, so many districts lost the knowledge, wisdom, and guidance of veteran staff. As districts look for ways to save money due to increased cyber charter enrollment, leaders are increasingly planning to fill

vacancies by intentionally hiring entry-level teachers who can start at the bottom of the pay scale. When district leaders have been able to find long-term substitutes, they have frequently asked existing teachers to offer training and support, sometimes by way of lesson planning for additional classes. When substitutes could not be found, which has been a frequent occurrence during the pandemic, existing teachers, paraprofessionals, and administrative staff frequently had to cover unstaffed classrooms themselves. Several superintendents had to reschedule interviews for this study because they had to cover classrooms.

There has also been a contraction of bus drivers, cafeteria workers, and custodians across sampled districts. While some districts referenced losing staff to neighboring districts who are able to pay higher wages, more superintendents note that they "can't compete when you have your convenience stores, your fast-food places, that are giving $3,000 sign-on bonuses and paying $13-$14 an hour." Many districts note the longstanding underpay of many school staff positions, and how they are trying to create better work environments and increase pay incrementally, but—even with ESSERs monies—are unable to offer competitive pay. Several schools have had to offer delayed starts or even cancel in-person school due to lack of bus drivers (especially critical for rural districts covering large areas of land) and reduce meal options due to limited cafeteria staff.

Cyber Charter School Enrollments and Rural District Impacts

Throughout the pandemic, district leaders have been expressing considerable concern about budget deficits caused by increased costs combined with steep declines in tax revenue and public school enrollments. All districts reported a decline in enrollment during the pandemic and students left for various reasons: not having appropriate technology, out of a reluctance to participate in remote learning, due to fear of exposure, due to frustration over polarized school policies, and to enter the workforce. Additionally, while many rural districts were unable to provide computers or internet access, cyber charters could often get students online quicker, which leaders saw as a factor driving increases in cyber charter enrollments, something nearly all district leaders reported.

At the very time that districts needed more resources (e.g., for food service, transportation, mitigation efforts), they experienced loss of funding as students transferred to cyber charters. Many district leaders shared stories of students attending charter schools and falling behind academically; since the pandemic was already exacerbating learning gaps at an alarming rate, district leaders were increasingly concerned about the toll cyber charter enrollment would have on students' academics and on public schools when/if these students returned to brick-and-mortar schools. One superintendent explained this pattern by saying, "When they're not successful [at the cyber charter school], they come back. They're a year, sometimes two years behind. [They] become our dropouts."

Many districts also opened (or expanded) district cyber academies as a way of keeping students enrolled in their district's public school. Districts did this independently, through partnerships with their IU districts, or adjoining with a neighboring district. Districts who already had a cyber academy prior to the pandemic reported being able to pivot to the online learning context with greater ease. Many districts plan to offer their newly created cyber academy as an option in perpetuity.

In an effort to recuperate lost students—not just for financial reasons, but because leaders believe they serve their district's children better—districts are facing mounting pressure to prove the worth of their cyber academies: "And we're working diligently at doing that. We make phone calls. We've sent out letters. We've done a variety of things to try and make people see if they still want cyber, look at our [district] cyber academy, as opposed to looking at just the outside cybers, so we've got to get that message out." Many superintendents mentioned using ESSER funds to help make up the difference for the steep budget deficit due to cyber charter allocations.

State-Level Evolving Policies and School District Implementation

The pandemic represented an enormous and unpredictable public health and institutional crisis which few, if any, were prepared for. Decision-making at local, state, and national levels was necessarily imperfect, a result of incomplete information and an increasingly politicized environment. However, many state level policies and actions created additional challenges for local educational leaders. Many leaders noted that state officials, particularly the Governor and Department of Health (DOH), had greater influence in their communities through their pandemic decision-making. This ran counter to values in many communities, which stressed the importance of making decisions aligned with the needs, political perspectives, and norms of the local community. This shift demanded that superintendents be willing to take actions that their community members often did not fully support and that their board members often strongly opposed, especially as the pandemic entered the spring of 2020. While all district leaders noted the unprecedented nature of the pandemic and offered some level of empathy towards state leaders, many felt state policymakers made egregious policy missteps, exacerbating the already difficult nature of the pandemic. The most frequently reported actions by the state that created new dilemmas for school leaders include:

Governor Wolf's March 13, 2021 4 p.m. closure started off many districts on the wrong foot. While nearly 150 (mostly urban and suburban) districts had already decided to close, many (though not all) rural leaders reported that the pandemic had not yet reached their rural communities. District leaders all agreed that some level of closure was needed, but the abrupt, forced closure at the end of the school week had long-lasting, negative effects—many superintendents citing this as an equity concern.

The August 31, 2021 mask order was "one of the more unfortunate decisions that was made by the Governor and DOH through this whole pandemic," one district leader stated. The order came down after summer messaging had been pushing a locally controlled

decision all the way through the end of August. After many hours of meetings, districts had established health and safety plans with their own masking protocols based on local community COVID-19 rates going into the fall 2021 school year. The mask order came down after the first few weeks of school. As one leader recounted, the messaging was "Yeah, we were going to leave this up to the local districts, but now we don't like the decision you're making, so therefore we're going to step in as 'big' government and make the decision for you." While there were certainly local level frustrations—many citing the fatigue of the pandemic in general—this moment was the beginning of endless phone calls with angry parents, threats to boycott school board director's businesses, and even—in many cases—death threats. Though not every district faced such extreme backlash, it forced many district leaders to turn their attention from student learning to community crisis mitigation—effects lasting at least through the writing of this report in January 2022.

The August 2021 mask mandate is an illustrative example of the complex leadership challenges in working to address equity in the context of public health and socio-political crisis. Though public perceptions towards masking policies were mixed, they had particular geographic and political effects (e.g., Kahane, 2021). Consequently, it is unsurprising that the pushback against masking policy was particularly pronounced in this study's sample of rural districts. Further, districts with less fiscal resources and fewer administrators had less capacity to deal with the community concerns. Superintendents in the districts with greatest community backlash reported spending months unable to focus on students and their learning—further compromising instructional equity. For most superintendents in this study, the decision to follow the mask mandate was largely a choice promoting instructional equity. It allowed students to stay in school face-to-face with less quarantine time and need.

The messaging throughout the pandemic was poorly communicated, timed, and often contradictory—leaving district leaders with no time to prepare a response. Respondents recognized the evolving nature of the pandemic but voiced considerable frustration around the rapidly changing guidelines, mandates, and/or recommendations. District leaders were looking for clearer guidance from the state early on, especially as it related to valid medical information. The timing of state announcements, typically Fridays at 3pm, meant that district leaders had to spend weekends scrambling, all when offices were closed so they had little support in how to uphold the new requirements. Further, many leaders expressed frustration around the lack of communication about changing policies they received from the state as their community would find out about mandates before them. This left superintendents in an extremely vulnerable position. Across all interviews, the Pennsylvania Association of School Administrators (PASA)—notably the Executive Director, Dr. Mark DiRocco, was the person that helped superintendents interpret state guidance.

Unfunded and unsupported state mandates exacerbated inequities. District leaders repeatedly referenced the lack of support regarding the growing list of mandates from the

state. Acknowledging that many mandates are necessary as they create standards of learning and safety for their communities, district leaders report they feel they have been "piled on" without flexibility in already existing mandates or clarity/support around how to uphold the mandate. For example, in alignment with Title 28 Pa. Code Chapter 27 (relating to communicable and noncommunicable diseases), schools were supposed to report positive cases of COVID-19 to DOH for case investigation, contact tracing, and issuance of quarantine and/or isolation orders. Many of the district leaders stated no such contact tracers or support was extended to help with contact tracing. All this did was create an increased reporting burden and community upheaval. To pay for unfunded mandates, school districts are forced to consider raising local taxes, using reserve funds, or taking steps such as increasing class sizes, cutting staff positions, or eliminating programs.

Programs and policies the state put in place did not reflect local knowledge. Many of the rural superintendents interviewed felt the needs of their districts were not considered in policies. "Was there a voice that represented rural Pennsylvania? Small school districts? School districts that are behind in the area of equity, of technology and infrastructure, and all those components?," asked one school leader. While there was a statewide school task force that the Governor put into place in March 2020, it was dissolved in June 2020, representing an important missed opportunity to connect with rural stakeholders. Further, resources are often wasted when state policies or programs fail. For example, the initial PDE supported testing program involved pooled testing where each person swabs their own nostril and the samples from each classroom are mixed together. Given that the one uniting concern from all district leaders was to keep as many children in school, face-to-face, as possible, this was not an ideal solution as they would have to quarantine entire classes and potentially close schools with this sort of testing protocol. As such, not one district leader from this study participated. In another related example from August 2021, the DOH announced a partnership with Concentric by Ginkgo Bioworks to provide free COVID-19 testing in K-12 schools across the Commonwealth—known as the "test to stay" program—to mitigate the spread of COVID-19 in schools during the 2021-22 school year. When the tests arrived in November 2021, however, they were marked as expired in June 2021, with distributors citing federal approval to extend the shelf life for six months until January 2022. For many district leaders, this messaging served as an indication that the state was not actually prioritizing their health.

Because of the way in which COVID-19 was increasingly politicized, state actions often created more local confusion and conflict. Superintendents related heightened politicization to a deterioration of trust in state and federal governments, as illustrated by protests against COVID-19 health policies. In this highly political environment, district decision-making largely did not fall to the expertise of local leadership. While superintendents agreed the state had an important role to play in COVID-19 response, the approach taken by state leaders caused significant stress in local districts. As one superintendent summarized:

> The fact that we have legislators who are putting posts out on their website that are just absolutely inciteful and totally contrary to what we're trying to accomplish in local school districts simply to advance their political positioning; the fact that Governor Wolf and the DOH and PDE are presumably on completely different planets most of the time; that superintendents find out at the same time that John Q Public finds out that there's going to be some huge change—they should be embarrassed as to the position that they have put public schools in. And if we have public schools that cannot find leaders, it's their fault, and I don't say that lightly. But what they're doing is they're putting us all in a situation where you have superintendents who are afraid to go outside. There are superintendents who are installing cameras in their homes. You have superintendents who are afraid to go to board meetings. You have to have police escorts from point A to point B. Their cars are being vandalized. They're being threatened on a regular basis, and the leadership in our state should be embarrassed...
>
> I'm not pointing the finger at either side of the aisle, please understand that. This is not a partisan statement. This is a leadership statement and my heart actually hurts for the vast majority of the school leaders in the Commonwealth of Pennsylvania because I have been part of the meetings in person and on Zoom where I have seen the tears. I have seen people say, 'I'm done. I'm submitting my resignation, or I'm going to do an early retirement.'...These are good, committed people... strategic thinkers, who would give literally the shirt off their back for the young people in our community—our leadership has let us down.

The political division of a district had a profound effect on school leaders' ability to devote time and energy to equitably supporting all students. Rural superintendents, amidst the usual concerns of a school—and further, a global pandemic—now had to turn their attention to fielding dozens of phone calls and confronting hundreds of upset parents and had very little time to dedicate to the day-to-day practice of supervising a district. District leaders report that the hostile and long-lasting debates have fractured their communities, with schools now caught in the middle. In general, the more time a superintendent had in the superintendency, the better they were able to respond to the pandemic and subsequent crisis. Given that so many superintendents are leaving the field, with 97 superintendent positions changing during the 2021 calendar year, creating better conditions for the superintendency is paramount to the future success of Pennsylvania public schools.

Policy Considerations

COVID-19 has had and continues to have an acute impact on rural communities. Public schools in rural Pennsylvania were already confronted with a range of serious challenges including persistent poverty, funding disparities, lack of broadband access, and declining enrollments. The pandemic has deepened these and other forms of inequities and has posed pressing challenges for the creation of timely and effective policy (see Appendix F for a cross-state pandemic-related policy comparison of Pennsylvania with Ohio, New York, and Maryland). As the pandemic is still ongoing, state agencies have an important role to play in supporting district leaders and the future of public education across the Commonwealth. The following policy considerations are offered as a set of discussion points toward what will be a long process in revitalizing public education in the wake of the pandemic.

Create communication mechanisms that efficiently engage policymakers with local communities and schools, particularly about the unique needs of rural districts. Prioritizing clear and consistent communication between government policy-making agencies and local institutions and stakeholders is critical for effective policy implementation and creating trust in government (Hyland-Wood et al., 2021). In Pennsylvanian, using IUs as two-way mechanisms to enhance communication during times of crises (and otherwise) could be a strategy well worth considering. In interviews, school district leaders repeatedly talked about feeling overlooked by legislators and subjected to policies for which they had provided no input and which often seemed to run counter to local needs and realities. Legislators should engage in dialogs with local (rural) stakeholders to ask about challenges and needed resources, and that could help to consistently interpret legislation across districts. Targeted policies that provide the necessary resources are effective. ESSER funds are a good example of how targeted inducements and capacity building policy can encourage districts to create the programs that legislators want instituted. However, legislators may not always understand the direct needs of each of Pennsylvania's 500 school districts. For example, even though some ESSER set-asides were for after school tutoring, one district in this study didn't have the staff to support the program.

Ensure all communities have broadband access, without staggering initiatory fees or on a competitive grant application process. Districts should not have to write grants for such a vital service, as this may disadvantage districts with less capacity. Broadband access is obviously essential during a pandemic but is another way in which inequity *prior* to the pandemic was further exacerbated. Rural districts had differing access to high-speed internet and uneven resources to provide devices and training for teachers, students, and families to use devices. Expanding access, devices and training will ensure that Pennsylvania's rural students are prepared for the 21st century economy. It is also a vital component of rural economic development more broadly.

Continue to research the effects of the COVID-19 pandemic on students and schools and adapt policies and provide supports as needed. The effects of the pandemic and

interrupted schooling will continue long after the public health emergency eventually subsides, and research will need to continue to track students' unfolding needs so that local and state agencies can effectively respond (NEPC, 2022). One long-term need is addressing the gap in critical literacy skills of some of Pennsylvania's youngest students whose developmental windows were interrupted by the pandemic.

Create conditions to equitably distribute well-qualified teachers across the state by widening pathways for rural residents to work in schools and offering incentives for educators to move to rural areas. Critical teaching shortages, a challenge that predates the pandemic, have continued to jeopardize Pennsylvania schools' ability to safely reopen and serve all students. Teachers and school staff are now facing what are arguably unprecedented levels of burnout. An influx of support now will likely aid those still in the profession and keep them from leaving. While Act 91 (*Substitute Teacher Flexibility*) can help relieve stress in the short-term, this is a short-term solution. To support a centralized effort to grow the teaching force across the Commonwealth, the General Assembly should consider:

- Responding to the rise of unemployment in rural areas by building grow-your-own teaching residencies where residents can work in schools as paraprofessionals while earning online teaching licenses. Research suggests that residencies produce effective educators who stay in teaching at higher rates and who are, on average, more racially diverse than new teachers prepared through other routes.
- Creating a Rural Teaching Fellows program in the state university system that pays tuition and licensing fees for an annual cohort of undergraduates who, upon graduation, agree to teach for at least five years in a rural Pennsylvania county. These fellowships could be structured similarly to the residencies described above and ought to prioritize positions for special education teachers, school counselors, and social workers.
- Convening statewide and regional collaboratives that support strong partnerships between K–12 schools and teacher preparation programs, help residency programs learn from one another and improve their practice with each cohort of residents, and monitor progress toward successful scaling of the residency program(s).
- Establishing systems for tracking and measuring the impact of beginning teacher support funds distributed and creating procedures to set minimum requirements for beginning teacher mentoring that support retention, are aligned with research, and provide for local control and implementation.
- Supplementing compensation and retention strategies that high poverty schools can offer prospective teachers to improve their supply of high-quality teachers and leaders.
- Apart from raising teacher pay, expanding the use of other strategies to attract talent, such as forgivable tuition loans, service fellowships, hardship pay for the most-challenging settings, and housing and childcare subsidies for teachers, many of whom can't afford to live in the communities in which they teach.

Expand physical and mental health infrastructure to work with schools, something that is especially important in rural communities. Rural district leaders clearly communicated the need to address the growing physical and mental health concerns for students, staff, and administrators, especially as they have been expected to support their communities in ways that more infrastructurally dense places have traditionally relied on community organizations to provide. Support may include the following:

- Provide incentives for guidance counselor and social worker education programs so that these personnel will take positions in rural communities similar to those incentives described above (see, e.g., Murphy, 2021).
- Dedicate staff at the Department of Health to contract trace for schools to try to reduce the burden on school staff and get as many children in school as safely as possible.
- Provide social and emotional learning (SEL) supports for districts.
- Implement financial support for districts with needs for infrastructure upgrades. (Note: the 2022-2023 state budget included $200M to address student mental health and school safety.)

Prioritize the mental health of educators and district leaders. Research shows that staff struggle to support students coping with trauma and stress if they themselves are experiencing poor mental health. Wellness requires ongoing and long-term schoolwide change and should not be treated as a superficial, siloed, or short-term goal. Designating just one day, one person, or one initiative as the response to educator wellness will not sustainably improve teacher well-being and does not account for the diversity across staff. Wellness requires strong relationships and an effective organizational system, with a commitment of resources to sustain.

Schools can play an important role in addressing food insecurity. The pandemic revealed the many ways in which schools support children, and their families. A common response across districts was working to distribute meals, which were available free to all children under federal policy changes. Districts implemented this policy in varying ways, especially for remote students. While such a policy was in place, it provided additional support as needed. For example, it helped with food delivery to families who lacked transportation to pick it up. Or, as farmers and restaurants experienced excess food supply because of COVID, it helped to buy food to distribute at low cost to families, especially those who may be living in food deserts. As the U.S. Department of Agriculture has ended its universal free meals program, Pennsylvania should follow the lead of other states (e.g., Maine and California) in permanently providing free meals to schoolchildren.

Revise the cyber charter school funding formula to lessen the impact charter enrollment has on public school budgets, even in high resourced districts. Cyber charters and public school districts should operate under the same rules. Even with additional federal funding to respond to the pandemic, districts made cuts that affected the academic and social experiences of students because of cyber school payments. Moreover, public school districts have experienced a notable recent loss of students

compared to pre-pandemic levels. (Note: In June 2022, the Governor issued Final-Form Regulation 6-349 [IRRC #3315] that clarified elements of the Charter School Law and set conditions that emphasize accountability, equity, quality, and transparency.)

Temporarily reduce paperwork burdens on districts. Throughout the duration of the pandemic, teachers and administrators have put in additional time to plan and train for online instruction, modify students' IEPs, or meet other needs of students and families. Therefore, PDE, in consultation with districts, should streamline all required paperwork that will not harm schools' abilities to serve all children and provide temporary waivers as needed. The state should pause and add years to the strategic planning cycle for districts as another means to reduce the current burdens on districts.

Facilitate and support, at the state level, communication spaces where practitioners can share with one another. Provide rapid response analysis of data to share across districts, thereby supporting districts with less direct access to local experts and allowing tailored assistance to similarly situated rural districts. This may include the following:

- State departments of education should collect COVID innovations from other states and from districts across their state to be centralized in best practice libraries. These could exist as web-based resources or distributed through role-alike regional groups to districts.
- Large districts with robust central offices should be encouraged to share resources with smaller districts housing fewer central office staff to prevent reinventing the wheel on COVID-19 related communication or policy. Include information such as how to handle concerns about basic health and welfare of children, how to plan and implement welfare checks on kids, or how to train faculty to adapt to remote teaching.
- Support for role-alike groups for school leaders (e.g., PASA, county superintendent meetings, IU meetings). District leaders reported that these organizations offered a primary means of communication and innovation diffusion among and between schools and districts in response to COVID-19. During weekly and sometimes daily meetings, superintendents shared challenges, borrowed resources, and adapted policies that other districts had implemented. States should explore additional ways to leverage these groups as the challenges facing districts continue to evolve with the virus.
- Some rural districts were fortunate enough to have medical facilities located in their district and therefore had deep expertise to guide their decision making. PDE and/or IUs could have more evenly facilitated access to subject matter experts to help inform local administrators and boards. For example, PDE could hire pediatricians or other experts to be consultants to districts, as needed, or provide liaisons to DOH specifically for districts without local capacity.

When one-size-fits-all policies need to be issued, the messaging and policy approach is critical. The state needs to have more communication with district leaders who are essential for ensuring the implementation of policies in communities. Effective

communication from the state can help district leaders navigate complex, changing conditions while also balancing competing priorities of education, public health, and the economy. Communication measures might include:

- Soliciting feedback from district leaders, including leaders in rural counties, prior to publicly announcing policies to minimize the need for continually releasing amendments.
- Informing district leaders about policies that will affect schools prior to sharing these policies with the public, providing immediate access for district leaders to get their questions answered, and creating digestible fact sheets to support dissemination of policies.
- Providing clear guidelines that do not allow for loopholes or multiple interpretations.
- Including a rationale for the policies released to help answer the public's questions (i.e., why should districts have mandated masking if PSU can fill stadium with 100,000 people?) Providing materials such as fact sheets to help communities understand why policies are required to equitably meet the needs of all children.

When new mandates are implemented, the state should ensure that districts receive the supports (financially and otherwise) necessary to carry them out successfully. District leaders expressed frustration with unfunded mandates that were unclear in intent or ill-suited to rural districts. If the new communication pathways recommended above are developed, these mechanisms could serve as conduits for differentiated funds and supports based on the unique contexts and needs of individual districts. These supports might include fact sheets explaining the appropriate uses of new funds, training programs that assist districts to implement required changes with fidelity, or new technologies to ease the burdens rural districts and families face with ongoing remote instruction.

Intermediate Units remain an under-used resource in the Commonwealth, and the state should better leverage their capacity to lead in times of crisis. For example:

- IUs have the benefits of centralization around messaging without the burden of top-down control. Some districts reported that their IUs had served as excellent sources of information when immediate communication with PDE staff was untenable.
- The state already has the IU infrastructure in place and, if properly funded, IUs could be immediately activated to disseminate information, offer training, build the capacity of rural districts to employ technology, provide mental health support, or help districts adapt new policies to local contexts in times of great need.
- IUs could be given the resources to provide immediate guidance on medical and health matters and prompt consulting on curricular issues.
- IUs can also serve as the regional best practice libraries described above and as the hub of the latest innovation information.

Conclusions

Pre-existing inequities and challenges faced by rural school district leadership were intensified during the COVID-19 pandemic. The pervasive poverty in some rural communities further compounds school and community struggles and outcomes. Food insecurity remains a significant challenge. Not only did rural superintendents work to make sure students had access to instruction, but they also worked to make sure families were fed. Lack of access to technology and access to reliable broadband networks posed deep impediments to adapting to new pandemic conditions and remote instruction. State-level policies and mandates related to the pandemic often placed district leaders in compromised positions with communities that didn't understand the mandates and/or understood them as threats to local control—especially as policies became increasingly politicized along partisan lines. As the pandemic shines a light on these inequities, it also provides an opportunity for a re-evaluation of not only the policies themselves that address public health and public education, but how these policies may or may not address the unique needs and conditions of Pennsylvania's rural schools.

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Appendix A. Secondary Data Analysis Measures

Measure	Source and Description	Table or Figure with Measure
Cumulative Cases	Cumulative cases are confirmed/probable cases of all residents as defined by the Council of State and Territorial Epidemiologists reported through that date. A person is counted as a case only once. Data are available on DOH's website. Since Pennsylvania school districts are not always contained within unique county boundaries, a web based geographic correspondence engine—using the census block based Master Area Block Level Equivalency (MABLE)—was used to determine the proportion of the population of each school district that resides within a given county. Using this weighted percentage, cumulative case counts were then assigned to each school district and aggregated at the district level. See MABLE/Geocorr 18: Geographic Correspondence Engine. Cumulative cases are from the following dates: June 1, 2020; December 1, 2020; June 1, 2021; December 1, 2021	Table 2
School District Enrollment	Based on the total enrollment for school districts reported in "Public School Enrollment Reports" from PDE. Files are available on PDE's website. Values in Table 3 are from 2019-20. Values used in Table 5 and Figure 1 are based on files for the 2010-11 through 2019-20 school years.	Table 3; Table 5; Figure 1
School Size	Based on the average total enrollment for the schools associated with each school district's AUN. Reported in the "Public School Enrollment Reports" from PDE. Files are available on PDE's website. Values in Table 3 are from 2019-20. Values used in Table 5 and Figure 1 are based on files for the 2010-11 through 2019-20 school years.	Table 3; Table 5; Figure 1

Pct. White	Based on the percentage of white students reported in the "Public School Enrollment Reports" from PDE. Files are available on PDE's website.	Table 3
Pct. Students of Color	Based on the percentage of students not designated white in the "Public School Enrollment Reports" from PDE. Student subgroups include American Indian/Alaskan Native, Asian, Black or African American, Hispanic, Multi-Racial, Native Hawaiian or other Pacific Islander (not Hispanic). Since PDE files mask values less than 10 for some racial subgroups, aggregate student of color count is based on *total enrollment – total white enrollment*. Files are available on PDE's website.	Table 3
Pct. Low Income Students	Based on the percentage of students designated low-income in "Public Schools Percent of Low-Income Reports." Files are available on PDE's website.	Table 4
Pct. Special Education	Based on the percentage of students with a special education designation for 2019-20 reported in "District Fast Facts" files reported in the "Data Files" section of the Future Ready Index.	Table 3
Pct. English Language Learner	Based on the percentage of students with a English learner designation for 2019-20 reported in "District Fast Facts" files reported in the "Data Files" section of the Future Ready Index.	Table 3
Market Values (MV) per WADM	Based on the Market Values per Weighted Average Daily Member reported in the 2019-20 Aid Ratios file reported on the "Financial Data Elements" section of PDE's website. Market values are based on the aggregated market values of taxable real property determined by the Pennsylvania State Tax Equalization Board. These values are expressed in PDE Aid Ratio files on a per "weighted average daily member" (WADM) basis. Weighted average daily membership is based on a district's average daily membership after the application of grade-level weights.	Table 3; Table 4
Personal Income (PI) Per WADM	Based on the Personal Income per Weighted Average Daily Member reported in the 2019-20 Aid Ratios file reported on the "Financial Data Elements" section of PDE's website. Personal income is the aggregate income, excluding out-of-state income, reported on PA-40 income tax forms.	Table 3; Table 4

Current Expenditures Per WS	Current expenditures are expenditures for Instruction, Support Services, and Operation of Noninstructional services. Current Expenditures per Weighted Student (WS) are reported in basic education funding files in the "Local Capacity Index" tab starting in 2015-16. Figures are from 2019-20. Since financial data for school districts is not released until after the completion of a fiscal year, the most recently available CE per WS figure is for the 2019-20 school year and contained in the 2021-22 estimated basic education funding file.	Table 3
White Teachers	Teacher demographic data was provided by the Pennsylvania Department of Education in response to a Right to Know Request from a research team member. The number of white teachers is based on the aggregate number of primary assignment classroom teachers in school districts. Charter schools are not included. Unique teacher data were aggregated from individual to district level. Values are from the earliest year reported data were available (2013-14) and the most recent (2020-21).	Table 6
Teachers of Color	Teacher of color data was acquired in the same way as white teachers above. Teacher of color race/ethnicity subgroups include American Indian/Alaskan Native, Asian, Black or African American, Hispanic, Multi-Racial, Native Hawaiian or other Pacific Islander (not Hispanic). Teachers of color is used to describe an aggregate of subgroups that are not white.	Table 6
Spending on Pupil Health	"Spending on Pupil Health" is based on expenditures reported for "Pupil Health 2400" in "Expenditure Detail" file on the Annual Financial Report Data: Detailed section of PDE's website.	Figure 2

State Health Services Subsidy	"State Health Services Subsidy" is based on revenues reported for "Health Services 7330" reported in "State Revenue" file on the Annual Financial Report Data: Detailed section of PDE's website.	Figure 2
Investments in Nursing Services	Based on expenditures reported for Nursing Services 2440 in "Expenditure Detail" file on the Annual Financial Report Data: Detailed section of PDE's website. Values are from 2019-20.	Table 7
Nursing per Pupil	To match current expenditures per weighted student figures used elsewhere in the report, based on expenditures for nursing services per weighted student. Weighted student counts are from "total student weighted ADM" figures reported in the "Student-Weighting" tab in basic education funding files.	Table 7
% Districts w/ Fewer Nurses than Schools	The percentage of districts with more schools than FTE nurses. The number of schools for each district is based on number reported in district fast facts file from the Future Ready Index. The number of FTE nurses is based on the aggregate number of FTE equivalents reported for each district with a school nurse assignment description in professional personnel individual staff files. Values are from 2019-20.	Table 7
Technology Spending. 2016-17 to 2019-20	Based on annual financial report data for 2016-17, 2017-18, 2018-19, and 2019-20 school years reported on PDE's FTP site. Aggregated spending for object 650: supplies & fees—technology related, object 756: capitalized technology equipment-original, object 758: capitalized technology software – original, and account code 2220 (technology support services). To avoid double counting, account code 2220 expenditures do not include values for Objects 650, 756, and 758.	Table 7
Technology Spending, 2019-20	Technology spending reported in areas described above for 2019-20.	Table 7

Technology Spending per Student	To match current expenditures per weighted student figures used elsewhere in the report, based on expenditures for technology spending per weighted student. Figures are for 2019-20. Weighted student counts are from "total student weighted ADM" figures reported in the "Student-Weighting" tab in basic education funding files.	Table 7
Investments in Operations & Maintenance of Plant Services, 2016-17 to 2019-20	Based on expenditures reported for Operation & Maintenance of Plant Services 2600 in "Expenditure Detail" file on the Annual Financial Report Data: Detailed section of PDE's website. Values are for 2016-17 through 2019-20.	Table 7
Investments in Operations & Maintenance of Plant Services, 2019-20	Based on expenditures reported for Operation & Maintenance of Plant Services 2600 in "Expenditure Detail" file on the Annual Financial Report Data: Detailed section of PDE's website. Values are for 2019-20.	Table 7
Operations & Maintenance of Plant Services per Weighted Student, 2019-20	Based on expenditures reported for Operation & Maintenance of Plant Services 2600 in "Expenditure Detail" file on the Annual Financial Report Data: Detailed section of PDE's website. To match current expenditures per weighted student figures used elsewhere in the report, based on expenditures per weighted student.	Table 7
Mental Health Investments in 2019-20	Based on expenditures reported for Guidance Services 2120 and Psychological Services 2140 in "Support Services" file on the "Annual Financial Report Data: Detailed" section of PDE's website. To match current expenditures per weighted student figures used elsewhere in the report, based on expenditures per weighted student.	Table 7
Mental Health Spending Per Weighted	Based on expenditures reported for Guidance Services 2120 and Psychological Services 2140 in "Support Services" file on the "Annual Financial Report Data: Detailed" section of PDE's website.	Table 7

Student, 2019-20	To match current expenditures per weighted student figures used elsewhere in the report, based on expenditures per weighted student.	
Total FTE Counselors and Psychologists	The number of FTE Counselors and Psychologists is based on the aggregate number of FTE equivalents reported for each district with an elementary counselor, secondary counselor, and school psychologist assignment description in professional personnel individual staff files.	Table 7
Students per FTE Counselor and Psychologist	To capture the absolute caseload regardless of differences in resource needs, total enrollment figure is used for this measure.	Table 7
Broadband Service Providers and Average Download Speed (Geographic)	National Neighborhood Data Archive (NaNDA): Broadband Internet Availability and Speed by ZIP Code Tabulation Area, United States (original from Federal Communications Commission) Most recent currently available from the Inter-university Consortium for Political and Social Research. Values are from 2014-2020.	In-text
Special Education Expenditures	"Special Education Expenditures" are based on values reported for "Special Programs - Elem/Sec 1200" in "Expenditure Detail" file on the Annual Financial Report Data: Detailed section of PDE's website.	
State Special Education Funding	"State Special Education Funding" is based on revenues reported for "Special Education Funding for School Aged Pupils 7271" in "State Revenue" file on the Annual Financial Report Data: Detailed section of PDE's website.	
District Mode of Instruction	These data were collected from PDE by the research team and were developed from three inputs: LEAs' Phased School Reopening Health and Safety Plans submitted to PDE; IU directors' periodic updates; LEAs' websites, as PDE staff are able to check for updates. Most districts were reporting their intended modes of instruction in August and September of 2020.	Table 8

	The definition for each plan is: • *Total Reopen/Full In-Person for All Students* – The LEA's plan is a total reopen for all students and staff (but some students/families opt for distance learning out of safety/health concern). • *Scaffolded Reopening* – The LEA's plan is that some students are engaged in in-person learning, while others are distance learning (i.e., some grade levels in-person, other grade levels remote learning). • *Blended Reopening* – The LEA's plan is a blended reopening that balances in-person learning and remote learning for all students (i.e., alternating days or weeks). • *Full Remote Learning* – The plan is total remote learning for all students.	

Appendix B. Rationale for Sampling Rule

The sampling rule used to create the qualitative sample alternates between probability selection and purposive selection for several reasons. First, a purely random selection of school districts may not have maximized the variance in diversity that is needed to best address the research questions of this study. While purely random sampling would provide more adequate variance in geographic and fiscal profiles of districts through use of the stratified sampling frame, the range of percent of students of color in different cells was so large that purely random sampling might not account for extreme cases/outliers, which are important for this study. The use of a sampling rule that strategically includes extreme cases allows for maximizing variance in each cell while maintaining the mean in each quadrant.

Second, rural Pennsylvania contains a small percentage of minoritized racial/ethnic students overall (6.75 percent), so the probability of districts with high concentrations of students of color being selected is lower than the probability of highly white districts being selected. To adjust for this difference, we employed the purposive sampling rule to ensure that our district sample represented a more complete range of rural district demographics. This assurance was particularly important because we used the 32-district sample to select four critical cases (one from each quadrant) for in-depth case study analysis during the second phase of the project. The sampling rule (probability and purposive) ensured that the eight districts selected in each quadrant for phase 1 interviews and analysis represented the variance of district demographics that exist in rural Pennsylvania.

Third, the literature on sampling for qualitative studies includes consideration of purposive sampling techniques. Sandelowski (1995) argues for maximum variation in selection of individuals, groups, or settings to be studied because multiple perspectives better represent the complexity of the world (Creswell, 2002). Extreme case sampling, another sampling approach, selects outlying cases to study and then compares them. This approach is considered useful in phenomenology because what is learned can provide significant insight into the phenomenon of interest along with providing guidance for future research and practices. While this study is not explicitly phenomenological in its approach, it analyzes how distinct districts have responded to the challenges posed by COVID-19.

By using a sampling strategy that alternates between probability and purposive sampling within the previously constructed stratified sampling frame, this study was better able to sample districts that represent the range of school districts in rural Pennsylvania. Therefore, data will better represent the impact(s) of COVID-19 on geographic, fiscal, racial/ethnic, and instructional equity in the state's rural school districts.

Appendix C. Interview Protocol for District Leaders

To the Respondent:
Hi! My name is _____ and I am from Penn State University.

I appreciate you taking the time to help my team and me better understand how COVID-19 has affected Pennsylvania's rural school districts as they have worked to provide services for all students. For our study in particular, given the fact that COVID has been shown to have worse effects for certain subgroups of the population, we are interested in understanding how your district has been able to meet the needs of diverse student groups within your district. As a superintendent, we value your opinion and insight. Ultimately, we hope the information we gather will help the Pennsylvania state legislature to be better informed about how to support rural school districts in times of crisis.

Please note that the information you share today will be kept private. What you say will be added to the responses from 31 other Pennsylvania school districts and we won't identify any people or information discussed today with specific places in any of the reports we write from this study.

I anticipate the interview taking approximately 30 - 45 minutes given average-length responses to the questions. At any point, you may choose not to answer a question or to end your participation.

With your permission, we'd like to record the conversation for transcription purposes. This will only be shared with the research team and will be deleted once we have accurate transcriptions. Do I have your consent to record?

Respondent and Background Information: To get us started, I would like to ask you a few background questions about you and your district.

1. When did you first begin working for the district and what was your role?
    a. (If different from superintendent) When did you begin working as a superintendent?

2. Do you live within the school district? Are you from this community originally?

3. How would you describe this district? How does it compare to other districts in the area in terms of demographic makeup, specific challenges or strengths, or any other unique qualities?

School District Challenges and Responses to COVID-19: Now, I'd like to ask you some questions to learn more about your district and some of the challenges it has faced due to the COVID-19 pandemic.

4. To start us off, and I know this is a big question so feel free to answer with whatever comes to your mind: What are the main ways in which COVID-19 has impacted your district?
    a. (If they haven't shared a specific example) Can you provide one specific example of an in-school impact?
    b. (If they haven't shared a specific example) Can you provide one specific example of an out-of-school impact?

5. How has being a rural school district specifically shaped the way that COVID-19 has impacted your district? (RQ3)

6. As I mentioned earlier, one of the things we're really interested in here is how equity policies and practices have been affected by the pandemic. How do folks in your district think about equity? how have equity practices been affected by the pandemic?

7. Thinking back to March 2020 when it became clear that the pandemic might significantly change school district operations, which groups of students were of most concern as the district responded to the pandemic? What were the main concerns for each group of students? (RQ1, RQ2)

8. What were the most significant challenges in addressing the needs of particularly vulnerable student groups? (RQ1, RQ2)

9. To what extent was the district successful in addressing these needs? (RQ1, RQ2) Were there any specific programs and/or policies that helped a particular segment of the student population? (RQ1, RQ2)
    a. If yes - Can you tell me more about those programs (including name, level, purpose, for whom they were earmarked, and how it helped?)
    b. If no - What problems did you encounter that you wish could have been helped through established programs and policies?

----------| If not mentioned previously... |----------

As a research project we are looking broadly at equity across PA. Could you shed light on how you've specifically met the needs of your district's subgroups of students such as students of color, students enrolled in special education, English Language Learners, low-

income students, or students who struggle with mental health concerns? spatially remote status (in-town v out of town), gender, vaccination status/masking policies, etc.

Recognizing that COVID has now spanned into 3 AYs, you can answer this question in different stages to understand how this has evolved or however feels best for you:

10. What were the biggest concerns raised by teachers and staff in the district? Did these differ across demographic subgroups? (RQ1, RQ2)

11. What were the biggest concerns raised by parents in the district? Did these differ across demographic subgroups? (RQ1)

12. Since rural schools are critical to the health of their communities, what programs and/or policies did the district implement to support families in vulnerable circumstances (economic, health, etc.) and those who were particularly adversely affected by the pandemic? (RQ2)

13. Did any of these programs or policies pre-date COVID?

14. Does the district plan to continue any of these programs or policies?

15. What typical Academic Year/pre-COVID programs and/or policies, if any, did you have to pause or stop because of the pandemic? (RQ1)

Wrapping Up and Looking Towards the Future

16. How did your district's experience during the 20-21 school year influence your spending/proposed spending of (ESSER funds) Rescue Plan funds? What are your plans for the Rescue Plan funds, at least as it stands today?

17. If you could go back in time or even now if you were to meet with policymakers, what advice would you give them that could have/would better support your district? This could be IU leaders, general assembly, wolf, etc.

18. What about your district's handling of the 20-21 school year are you most proud of? (RQ2, RQ3)

19. Is there anything that we haven't covered that would help us to better understand how your district has coped with the pandemic as it has worked to provide services for all students?

Thank-you for your time. Your answers are very valuable to our team and will inform our work. Is it possible for us to contact you if we have other questions as the study continues?

Note: This was modified slightly to better fit the school board director context.

Appendix D. Case Studies

School District A: A District Addresses Interacting Factors of Poverty and Mental Health

School District A, located in central Pennsylvania, enrolls just under 4,000 students. The district is geographically large, though a considerable amount of its landmass is made up of state lands that provide a fraction of the funding the district would receive if it were occupied by families. Though still experiencing population decline, the district's sparse population has made it an attractive location for individuals and families to relocate during COVID-19. Although School District A in this study is classified as a low population density, high resource school district, over half of the district's enrollment is economically disadvantaged and nearly a quarter is enrolled in special education. Though the student population was nearly 95 percent white at the beginning of the pandemic, the schools are now seeing slightly more racial diversity as a result of new residents having moved to the district. The community's net gain in population during the past year and a half has also increased the value of homes in the area and has ensured that the district's professional teaching positions have remained fully staffed.

The superintendent of this district notably reflected that public schools "have been completely designed for and revolve around the middle class, but the middle class doesn't necessarily understand what it's like to live in poverty." Thirty percent of this district's student population has IEPs, and roughly 15 percent of families in the community live under the poverty threshold. This combination made for an especially turbulent period of remote and hybrid schooling, as the students who had the greatest academic needs were often living in families with the greatest economic needs. These compounding layers of stress resulted in a mental health crisis throughout the district that has included multiple deaths, due to both suicide and child abuse. This level of trauma has had differential impacts on students, families, and teachers.

To directly assist students and their families, the district began distributing food at the onset of the pandemic. The superintendent reported that many parents in this district were, prior to COVID, employed by the food industry and lost their jobs at the pandemic's onset. The level of economic need was so high that some families regularly drove through food lines at multiple schools to get enough groceries to last the week. The district is currently seeking ways to advocate for an extension on how long they have to spend their ESSER funds, as leaders think these funds could help balance their budget in the longer-term and keep from financially stressing local taxpayers.

When remote instruction was a necessity, the district provided multiple instructional formats to support families' unique schedules and supervision abilities. Students had the choice of participating in either asynchronous or synchronous remote learning, either of which could be done at home or at school. The in-school option of remote learning was offered to support families who couldn't provide supervision throughout the pandemic, and students were able to complete their coursework in separate environments guaranteed to accommodate stringent social distancing requirements. The district gave families the option to change their instructional choice as needed; this level of flexibility

required to be ready to pivot their instruction at any moment, though it also helped families work with the dynamic nature of the pandemic.

The superintendent reported the district's teachers, most of whom are middle class, have worked incredibly hard throughout the pandemic but many simply cannot know, for the most part, what it's like to grow up in poverty. As they've tried to meet the needs of their students, teachers have experienced their own trauma, much of it second-hand from seeing inside the homes and lives of their students during prolonged bouts of remote instruction. Throughout the pandemic, district administration has tried to strategically design professional development that helps teachers design instruction that takes learning disabilities and/or poverty into account; the staff recently completed a district-wide book study on the text, "Poor Students, Rich Teaching," for example. In addition, the district used some of its ESSER funds to adopt a new social-emotional curriculum that they are beginning to implement and will continue with even after the pandemic. Interventions aside, the district has struggled with heightened behavioral concerns since returning to in-person instruction, many of which they cite as stemming from trauma. To address these concerns, they've used additional ESSER funds to hire more counselors (including a crisis counselor, specifically) and social workers. The superintendent highlighted the exhaustion of the staff, particularly of special education teachers whose paperwork demands have increased fourfold throughout the pandemic. Due in large part to this exhaustion, the district is expecting heightened rates of attrition in the next few years. Moving forward, they plan to hire new teachers who will begin at the bottom of the payscale; with the leftover funds, they'll be able to make their new counseling and social work positions permanent, though it will come at the expense of years of teaching experience in the district.

School District B: A Community-Centered Rural School District

School District B enrolls approximately 1,800 students and houses two schools. Located in the southwest part of the state, School District B is one of the geographically larger school districts in its county. In this study it is classified as a high population density, low resource rural school district. The resident population in the district has been experiencing decline for at least the last two decades and currently has just around 11,000 residents. About 96 percent of enrolled students are white, nearly 50 percent are economically disadvantaged, and about 15 percent are classified as special education students. A district leader described the former steel mill town as a "barren moonscape" now, having experienced significant population outmigration and a rise in transient populations with increasing drug and alcohol problems. Even so, the school district remains focused on community spirit and excellence in education.

The superintendent described the "fabric of rural Pennsylvania" as a three-legged stool constituted by the school, the church, and the family unit, describing each of the legs currently in trouble. He sees the school as the place that can help to "turn it around" for

his district and provide access to educational support and early-intervention services for children prior to enrolling in school. “I need to help the parents, and I need to be the hub where if somebody needs some medical stuff, they need help, how to be a parent, that I could help. If we're really going to get to equity, we’ve got to work on that family part and that’s the hard work. But if we're going to be successful, that’s what we have to do, and we have to figure out how to get there... I have to start the education part and start building that trust and be the resource early. That’s how I think we (address) equity. I can’t fix equity when you're in 10th grade.”

Since the onset of the pandemic, the district has initiated a range of partnerships in attempts to meet the evolving needs of its students and families, some of the most pressing being food and social-emotional support. In March 2020, the superintendent invited the community leaders to the school and held a forum to talk about a community plan. They opened up satellite learning centers with the libraries and fire halls and sent teachers and aids to those places. They did community tours to check on students and families. The district partnered with the local church to help make spaghetti dinners, raised money for the local foodbank, and paid struggling restaurants to make meals for their community. The superintendent worked with the PTO and brought together an alumni group “to show the kids there's hope out there and try to get another revenue source or something to help us... I can't think of anybody who did more than what we tried to do during the covid situation to do good for people...I'm glad we did that, because I'm not exactly sure I would have survived the last two, three months.”

Even with the deep involvement and support of the community, there was still backlash over the mask mandates enforced by the district. Instead of wanting to silence those voices, however, the superintendent asked, “Can we get you back after we get through this masking? can we get you here to open house? Can we get you here to outreach and engagement things? Can we get you here to talk about education? Can we get you here about math? Can we talk about math?” This superintendent feels like he must connect with the anti-masking segment of the community to better his district and improve education. Seeking to maintain this robust participation from segments of the community that did not formerly have a vocal presence, the superintendent is concerned with how to encourage continued public participation beyond the pandemic’s duration. The superintendent expressed a desire to keep a diverse range of voices involved in school matters while also wanting to minimize some of the hyper-politicization of pandemic topics such as mask-wearing.

Highlighting the importance for community to be at the center of the school district’s efforts even in times of crisis like these driven by the pandemic, the superintendent explained, “I can’t be subject to the blowing wind. I gotta be subject to what’s best for my community and my kids. And if I can identify those things and could stick by them, like I said, we’re going to do great things.”

School District C: Online Instruction Initiatives in the Context of Geographic and Fiscal Inequity

School District C, located in the central part of the state, has three schools, fewer than 1,000 students, and boasts an award-winning high school. Yet, over half of the enrolled students are economically disadvantaged and nearly 4 percent are reported to be experiencing homelessness. About 15 percent are special education students. Around 95 percent of students in the district are white, with over 3 percent of student identifying as two or more races. Median household income is around $50,000, with about 15 percent of families below the poverty line and about 20 percent eligible for free and reduced lunch. About 75 percent of households have broadband access. In this study School District C is classified as a low population density, low resource rural school district.

The superintendent, who has served the district in a variety of posts for a couple of decades, has been in her current position for several years, is actively involved in local affairs, and served on the chamber of commerce. She describes the community as having a "real sense of spirit and fight about keeping small town values and beliefs alive ... We have really strong relationships amongst our school district and different entities within our community."

Like many districts in this study, district administrators surveyed families several times throughout the early stages of the pandemic to identify which students had internet access, which they saw as essential to providing all students with equitable learning opportunities. "So we made sure number one, everybody had internet, everybody had technology if they needed it. We didn't ask questions. We provided as much as we could, but we made sure everybody had that so they all had an even playing field." The district talked with cable companies about providing access, and it used some of its ESSER funds, and some private community grants, to create a one-to-one computer device program. The district began use Schoology, a learning management system to deliver content, and worked to offer live instruction to students both in school and learning remotely. Prioritizing synchronous, live, online instruction was what this district felt was best for student learning though also most difficult for teachers. To focus on keeping "employees as whole as possible" the district allowed quarantined teachers to teach from home without taking sick days.

Unlike other districts in this study, the district—quickly recognizing that many parents lacked technology skills—began having training sessions for parents so they could learn how to access the online platform. "We often think about the community coming into the school, but I guess COVID really forced the school to go into the homes of the community in a way that we hadn't done before. Maybe it was initially through food drop off, but then that kind of shifted and changed." The superintendent attributes the continued civility the district has experienced throughout the pandemic to strong bonds. Even when there were disagreements over masking, the discussion was respectful.

In terms of policies, the district has been frustrated with mixed messages coming from the state about masking during the pandemic, decisions that have often undermined their local preparations and plans, and they would like to see more consistency. Leaders in School District C felt that taking away school board power to make decisions was detrimental, especially when state messages shifted back and forth between mandates and guidance. As the superintendent put it, rural communities feel like "We've got this. We know our people. We know our communities, our schools, our kids. We got this, let us handle this."

School District D: Changing Demographics and a School District's Equity Responses

School District D has fewer than 1,500 enrolled students and is located in the eastern part of the state. The district's main borough has a population of about 5,000 people, and the district also encompasses several smaller boroughs as well as large tracts of rural areas. While the district enrollment, like most of rural Pennsylvania, is predominantly white, district student demographics have been slowly but steadily diversifying by about 3-5 percent every year mainly due to an increase in Hispanic populations drawn by area jobs in supply chain and nondurable goods distribution. The availability of affordable housing has also drawn new residents and helped to account for enrollment increases. Currently about one in every five students enrolled in the district is a student of color and close to 5 percent are ELL. About 30 percent of the enrolled students are economically disadvantaged and more than 20 percent are special education. In this study School District D is classified as a high population density, high resource rural school district.

During the pandemic, the district provided Spanish translations of school materials for the increasing Spanish-speaking population, including recorded videos in Spanish of how to use and operate Canvas, an online course management system used by many school districts and other educational institutions. Throughout the pandemic, the district has been specifically concerned with Spanish-speaking and ELL students, socioeconomically disadvantaged students, students requiring special services and supports, and full-time virtual students. While the district leadership has paid close attention to changing district demographics, the superintendent spoke about the broader approach to understandings of equity taken by the district, noting "whether it is providing hotspots to families that need them, spreading devices, meeting kids' needs in a variety of different ways, offering a virtual speech session for kids that are homeschooled. Any of those things are true equity issues and understanding the needs of our students and our families. Providing greater social-emotional support through contracted services is a way of raising equity."

In the summer of 2020, the district approved an equity policy similar to that recommended by the Pennsylvania School Board Association as well as an anti-racist school climate resolution. This effort was led by a teacher-established "equity team," which communicated its activities through newsletters and announcements made

available to the broader community. Its activities went largely uncommented upon until the following spring (2021) when the school district began to get increasing political pushback from community members. The equity policy was repealed as a consequence of community pushback and concern about the introduction of Critical Race Theory (CRT) in the district's instruction (School District D does not use CRT). A second policy was drafted and was slated to be discussed at a school board meeting, but that discussion and the meeting itself was curtailed by community members in attendance who refused to wear masks (the school board meetings subsequently were held virtually).

At the beginning of the pandemic, families were most concerned about their students' social-emotional needs. As the pandemic progressed, the family concerns seemed to become more political and politicized. Some families expressed concerns about enforced masking and the efficacy of vaccines, often the same parents voicing concerns about equity initiatives within the district. Teachers in the district have grown in concern about what they say to students, fearing that they may be targeted on social media. The district continues to explore ways to advance racial and other equity efforts but does so with the knowledge of the contentious political environment in which it operates.

Appendix E. Elementary and Secondary School Emergency Relief Funds

In response to needs arising from the pandemic, the federal government issued three rounds of emergency dollars for pandemic related educational needs: the Coronavirus Aid, Relief, and Economic Security (CARES) Act included state funding known as the Elementary and Secondary School Emergency Relief Funds (ESSER) known as ESSER I; the Coronavirus Response and Relief Supplemental Appropriations (CRRSA) Act, which supplied ESSER II; and the American Rescue Plan (ARP) ESSER, also referred to as ESSER III. They are briefly described below.

ESSER I: In May 2020, PDE received $523.8 million from Elementary and Secondary School Emergency Relief Funds (ESSER I) (PDE, 2022c). LEAs in the state received funds based on proportion of Title 1 Part A funding for Fiscal Year 2019. These funds could be used for COVID-19 response efforts, individual school needs, unique needs of children in marginalized groups, professional development, planning and coordinating for long-term closures, purchase educational technology, mental health services, and other LEA operational needs (PDE, 2022b). Funds could cover expenses retroactively up to March 13, 2020 and had to be used by September 30, 2022. In ESSER I, LEAs had to include non-public schools equitably in their distributions. Reporting requirements for ESSER I asked how LEAs determined needs, how they determined and handled student learning gaps from lost instructional time, and how ESSER funds were used to promote remote learning (PDE, 2022b).

ESSER II: In December 2020, the federal government provided another round of emergency funding, ESSER II, through the Coronavirus Response and Relief Supplemental Appropriations (CRRSA) Act. Pennsylvania received $2.22 billion in emergency funding (PDE, 2022e). This round of education funds were distributed to LEAs based on their proportion of Title 1 Part A funds in Fiscal Year 2020 (PDE, 2022e). ESSER II funds could be used to address “learning loss”, make facility repairs and improvements, and improve indoor air quality (PDE, 2022d). Quarterly reporting on use of funds was required for ESSER II.

ARP ESSER/ESSER III: The final, and largest, round of funding—American Rescue Plan (ARP) ESSER, also referred to as ESSER III—provided more emergency funds to districts that could be used on expenses retroactively from March 13, 2020 and until September 30, 2024 (PDE, 2022f). Pennsylvania received $5 billion in emergency funding. Per federal law, 90 percent or $4.5 billion had to be sent to school districts and charter schools proportionally based upon the federal Title 1 Part A from fiscal year 2020-2021.These funds did not need to be appropriated by Pennsylvania’s General Assembly though the federal government required the following set-asides:

- At least 30 percent must be targeted to social, emotional, or mental health supports to students.
- At least 10 percent must be targeted to professional development and technical assistance to educators and school staff to address the social, emotional, and mental health needs of students.
- At least 8 percent must be targeted to reading support and improvement for students.

The remaining 10 percent, or $500 million, was available for state-directed activities and the funds had to be appropriated by the Pennsylvania General Assembly. In June 2021, the General Assembly and Governor Wolf enacted Act 24 of 2021, which required school districts to allocate certain minimum percentages of their share of the 10 percent ARP ESSER set-aside for the following:

- 2.5 percent was discretionary, and 0.5 percent was for administration ($150 million).
- 1 percent had to be spent on summer enrichment programs ($50 million).
- 1 percent had to be spent on after-school programs ($50 million).
- 5 percent had to be spent to address learning loss ($250 million).

Further, the 5 percent learning loss set-aside had to target specific programs and supports as follows:

- At least 30 percent must be targeted to social, emotional, or mental health supports to students.
- At least 10 percent must be targeted to professional development and technical assistance to educators and school staff to address the social, emotional, and mental health needs of students.
- At least 8 percent must be targeted to reading support and improvement for students

Although reporting for ESSER I, ESSER II, and ARP ESSER funds will look similar, ESSER I, ESSER II, and ARP ESSER are different grant awards. As such, all ESSERS funds must be tracked and reported separately (Pennsylvania Department of Education, 2022a).

Further, as of January 14, 2021, four of the 24 positions supporting Pennsylvania ESSERs dollars in the Bureau of Curriculum, Assessment and Instruction -Division of Federal Programs are vacant. Three of the five are intended to support IUs 4, 7, 10, 17, 18, 19, 27, 28, and Rural Education Achievement Program/Rural and Low-Income Schools Grant are vacant (PDE, 2022g).

Appendix F. Neighboring State Education Policy Equity Responses

As of early January 2022, neighboring states had similar rates of daily COVID-19 infections (800+ per million) and similar percentages of the population vaccinated (55 percent to 66 percent) (Kaiser Family Foundation, 2022). Rural Pennsylvania school districts faced challenges similar to those within surrounding states. To address pandemic challenges, surrounding states used several different approaches. One of the most encompassing responses was Maryland's Blue Print for Maryland's Future reform legislation – a far reaching investment in education with a focus on equity (Maryland State Education Association, 2021), providing funding and guidance for equity initiatives including the creation of community schools in schools that serve a large number of low-income students.

In New York, reopening guidance suggested using multiple modes of instruction, staggering or alternating students to meet local and state health guidelines, social distancing, prioritizing in-person instruction for high-needs students, and requiring that schools address learning loss for bilingual students (O'Hare & Beattie, 2020). In Ohio, instructional options were voted on by school boards, and reopening plan focused on equity-based solutions including tutoring and summer sessions, as well as the resources for physical distancing (Stewart, 2020; Targeted News Service, 2020a). Maryland, Ohio, and West Virginia devoted federal funding to expand broadband access (MD), provide matching grants for hotspots and device purchases (OH), and set up Wi-Fi hotspots at schools, libraries, and state parks (WV) (Renbaum, 2021). Other responses by the states included partnering with the New York State Library to present digital equity webinars for educators (Targeted News Service, 2020b), providing online learning collections of activities for families with special needs students early in the pandemic (DE), and providing regular webinars that included technical guidance for schools (MD) (Miller, 2020).

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