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Navigating Conflicting Pressures: How Districts Spend Federal COVID-19 Relief Funds

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Federal COVID-19 relief funds provided a large increase in school district revenue, with fewer requirements than usual. Districts received widespread criticism, based on little systematic evidence, for spending federal funds slowly or ineffectively. Institutional theories predict a common response to funds across districts, while other theories predict variation in use of these funds. How have districts used this rare funding increase and how has that varied by state or district context? We use district-level spending data 2010-2023 to examine spending changes and superintendent interviews in four states (KS, MI, OK, RI) to understand district leaders' rationales for spending changes. We find that spending increased within three years, with larger increases in high-poverty districts, consistent with the distribution of relief funds. Adjusting for differences in federal funding increases, changes in spending are similar across contexts. Interviews reveal that districts across contexts used funds to implement instructional programs, seeking effective ways to improve student learning while gathering data to document effectiveness for local stakeholders. District leaders navigate conflicting pressures, prioritizing student learning while anticipating future accountability requirements, documenting spending effectiveness, avoiding a fiscal cliff, and communicating with communities. District leaders face similar conflicting pressures and adopt similar spending approaches across contexts.

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Navigating Conflicting Pressures: How Districts Spend Federal COVID-19 Relief Funds

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Abstract
Federal COVID-19 relief funds provided a large increase in school district revenue, with fewer requirements than usual. Districts received widespread criticism, based on little systematic evidence, for spending federal funds slowly or ineffectively. Institutional theories predict a common response to funds across districts, while other theories predict variation in use of these funds. How have districts used this rare funding increase and how has that varied by state or district context? We use district-level spending data 2010-2023 to examine spending changes and superintendent interviews in four states (KS, MI, OK, RI) to understand district leaders' rationales for spending changes. We find that spending increased within three years, with larger increases in high-poverty districts, consistent with the distribution of relief funds. Adjusting for differences in federal funding increases, changes in spending are similar across contexts. Interviews reveal that districts across contexts used funds to implement instructional programs, seeking effective ways to improve student learning while gathering data to document effectiveness for local stakeholders. District leaders navigate conflicting pressures, prioritizing student learning while anticipating future accountability requirements, documenting spending effectiveness, avoiding a fiscal cliff, and communicating with communities. District leaders face similar conflicting pressures and adopt similar spending approaches across contexts.

Introduction

Federal COVID-19 relief funds provided a large, one-time increase in K-12 school district revenue. Journalists and academics have criticized districts for spending those funds slowly or on expenses that are seemingly ineffective for student learning (Lieberman 2022; Roza and Aldeman 2022; Roza and Silberstein 2022; Locke 2022; Ngo 2023; Roza 2023). These criticisms are contradictory, calling for both more rapid spending and more planning and evidence-based spending, and they focus on spending relative to the deadline rather than to previous district spending (Ngo 2023; Locke 2022). Based on little systematic evidence, these criticisms fuel concern among taxpayers and policymakers and further threaten the legitimacy of public education (Schneider and Berkshire 2021).

How did districts spend federal relief funds and how do district leaders explain the use of relief funds? Theories of competitive advantage predict variation in district use of funds, with some organizations spending strategically in ways that are valuable in their local contexts to position themselves to be more advantaged during and after the pandemic (e.g., Barney 2001). Resource dependence theory also suggests variation in district spending due to varying reliance of school districts on federal funding (Pfeffer and Salancik 1978; Neely 2015).

In contrast, neo-institutional theory predicts delayed and consistent responses among school districts due to strong external pressures to conform and to maintain stability (DiMaggio and Powell 1983; Arum 2000). District leaders must justify spending and organizational performance locally and districts rely much more heavily on state and local revenue than federal funds, which accounted for only 13.7% of district revenue on average in 2022 (Cornman et al. 2024; Neely 2015; Oliver 1991). In an effort to maintain legitimacy with state governments and local taxpayers, neo-institutional theory expects district leaders to converge around similar

spending patterns, following norms based on what other districts do. For example, two decades of accountability policies have created a ubiquitous focus on achievement test scores and documentation of effectiveness in districts throughout the country (Power 1997; Ambrosio 2013; Ravitch 2020). Thus, all districts may target spending to focus on achievement and documentation. Yet districts could have similar responses to the increase in federal funding for other reasons, such as rising prices or public health needs due to the pandemic. To understand district responses, it is important to gather information about the rationales behind district use of funds.

We use mixed methods to understand how districts used federal relief funds. Quantitative analyses of F-33 district finance data show how district spending changed with the federal relief funds. Semi-structured interviews with district superintendents provide background about rationale or why districts spent the funds the way they did, at least from the perspective of the district leader. Combining these data sources provides novel insight into district behavior. Neither the quantitative nor qualitative data alone are sufficient to understand district behavior: the quantitative data assess whether spending patterns actually changed and superintendent explanations help understand why and make sense of the quantitative findings.

We draw on new institutional theory to argue that districts in various contexts behaved in similar ways when federal relief funds temporarily reduced financial pressure. Districts primarily spent funds on instruction and programming to improve student achievement, with smaller increases in spending on central administration and other categories. Interviews reveal the ubiquity of pressures to document the effectiveness of spending for student achievement, which we include as part of the broader umbrella of accountability pressures. Districts across state contexts used funds to implement programs with the goal of improving student achievement and

also invested resources in administrative expenses to document the impact of that spending. Results suggest districts pre-comply with documentation requirements, anticipating the need to demonstrate effective use of funds and leveraging federal funds to convince local stakeholders of the value of educational investment. Interviews reveal that district leaders navigate conflicting pressures, prioritizing student learning while anticipating future accountability requirements, documenting spending effectiveness, avoiding a fiscal cliff, and communicating with communities. District leaders face similar conflicting pressures and adopt similar spending approaches across contexts.

Theoretical and Empirical Background

Federal COVID-19 Educational Relief Funds

As part of the pandemic relief efforts, the federal government provided large, one-time investments in K-12 education to support schools and help them respond to COVID-19. The federal government distributed these funds to state education agencies in three stages, in proportion to the amount each state receives in federal Title I funding. In March 2020, the Elementary and Secondary School Emergency Relief Fund I (ESSER I) provided $13.2 billion to state educational agencies to support school districts. In December 2020, ESSER II provided an additional $54.3 billion to state educational agencies. In March 2021, the American Rescue Plan (ARP) included an additional $122 billion for ARP ESSER, also called ESSER III, to support safe school reopening and operation and to help students recover from the pandemic (USDE 2023). State governments then distributed these funds to districts in proportion to their Title I funding. Therefore, high poverty states and districts received more funds. Most of these funds were unencumbered, but ESSER III required 20% of funds be used to combat learning loss and set a deadline of January 2025 to use the funds (School and State Finance Project 2021).

The pandemic federal relief funds are a unique case of federal intervention because they provide large investments in K-12 schools with fewer requirements or "strings" attached than usual, aiming to maintain operations and recover, not to change. Federal interventions usually mandate some specific change in organizational behavior, often with unintended consequences due to state and local variation in interpretation, policies, and enforcement (Jennings 2005). For example, No Child Left Behind required annual accountability testing, reporting, and improvement in student achievement, focusing on marginalized students. The Individuals with Disabilities Education Act (IDEA) similarly mandated free and appropriate public education and services for students with disabilities. Race to the Top provided financial incentives for states to implement systemic reforms in teaching and learning. Alternatively, the federal government can withhold Title I funds if states do not meet certain requirements, such as academic standards, assessments, and reporting (Pfeffer and Salancik 1978).

The federal pandemic relief funds are a rare, large investment in K-12 education without mandated systemic reform, which provides a valuable opportunity to learn how educational organizations respond to a short-term increase in revenue. ESSER III required that 20% of funds be used to combat learning loss and that funds be used by January 2025, but did not dictate how districts could use the funds. For example, in a description of the funds in a Frequently Asked Questions document, the U.S. Department of Education (2022:11) wrote:

> These Federal emergency resources are available for a wide range of activities to address diverse needs arising from or exacerbated by the COVID-19 pandemic, or to emerge stronger post-pandemic, including responding to students' social, emotional, mental health, and academic needs and continuing to provide educational services as States, LEAs, and schools respond to and recover from the pandemic. Some uses of these funds may be directly focused on health and safety—such as improving ventilation and implementing prevention strategies that are, to the extent practicable, consistent with the Centers for Disease Control and Prevention

> (CDC) guidance. Other allowable uses may be focused on meeting the social, emotional, mental health, and academic needs of students.

The document provides additional details about how the funds may be used (pages 12-14), indicating a great deal of flexibility and covering a wide variety of acceptable uses. Thus, districts had to spend one fifth of the funds to combat learning loss, but the appropriate strategies to do this can be locally determined and the remaining four fifths of the funds have even more flexibility.

By temporarily relaxing budgetary pressure, the relative strength of other pressures constraining organizational behavior become clearer. In this case, federal pandemic relief funding could provide temporary freedom from the expectation of frugality, from normal pressures to focus on achievement, or from the general expectations of documenting effective use of funds. Removing this budgetary pressure, even temporarily, could allow districts to change behavior by avoiding or defying external requirements or norms, or manipulating external pressures to develop a competitive advantage (Oliver 1991; Selznick 1984; Zimmer et al. 2017; Hallett and Hawbaker 2021). Because districts make decisions in different state and local contexts, we also examine variation in district responses by context.

Delayed and Consistent Spending: Neo-Institutional Theory

Organizational theorists have worked to explain the strong similarity and stability of educational organizations, despite multiple reform efforts (Weick 1976; Meyer and Rowan 1978; Hannan and Freeman 1984; Clemens and Cook 1999). Neo-institutional theory highlights the strong coercive, normative, and mimetic pressures that make educational organizations stable and uniform (DiMaggio and Powell 1983; Arum 2000). For example, educational organizations are bound by multiple federal and state laws and pressure to act the same way other districts do to avoid negative consequences. Locally, districts face bureaucratic constraints, including the

annual budget planning and approval process, which can take several years to change. These constraining pressures help educational organizations weather external shocks by maintaining long-term stability while slowly adapting to contextual changes (Tyack 1974; Arum 2000; Bidwell 2001). The neo-institutional perspective therefore predicts initially slow response to external shocks, followed by rapid adaptation as districts conform to new norms. In the case of federal pandemic relief funds, it predicts initially slow spending of federal relief funds, with limited spending changes within the first few years, following by an increase in spending across contexts with little local variation due to strong external pressures (Arum 2000; Bidwell 2001).

Hypothesis 1a: Districts did not increase spending in the first few years after receiving federal relief funds.
Hypothesis 1b: District spending changes were similar across contexts.

Constrained Action: Spending Priorities with Strong Institutional Norms

Districts may conform to external pressures, but those pressures could be complex and conflicting. In this type of context, compliance could be a strategic decision (Barney 2001; Oliver 1991). Faced with similar external pressures and norms, districts could conform around a particular approach, consistent with neo-institutionalism. For example, districts faced pressure to use federal relief funds quickly during the pandemic, but also experience consistent accountability pressure to improve student achievement and document effectiveness of spending for student achievement. In this context, districts could conform around delayed and consistent spending patterns for multiple reasons, including normative and accountability pressures.

Accountability is generally conceptualized as a focus on student achievement, but it also includes the need to document and communicate performance to stakeholders (Harris and Brown 2013; Ebbeler et al. 2016; Penninckx 2017; Ordofa and Asgedom 2022). Accountability systems have become central to U.S. federal and state education policy (Figlio and Loeb 2011), and

include mechanisms to document and report student performance to governments, parents, and the community (Harris and Brown 2013; Ebbeler et al. 2016). In the context of spending federal relief funds, we conceptualize accountability as the expectation that districts use funds to improve student achievement and to document the effectiveness of spending for student achievement. We therefore refer to accountability pressures as incorporating expectations for both student achievement and documentation of the effectiveness of spending in terms of student achievement.

If both state and local contexts consistently emphasize accountability, districts may consistently work to meet state and local accountability expectations in order to maintain relationships with these key funding sources. In other words, districts may not simply passively comply, but consider the competing demands of various stakeholders and actively decide that compliance is the optimal strategy. Neely (2015) studied district compliance with federal accountability and reporting requirements following the 2001 No Child Left Behind Act (NCLB). Neely found variation by the degree of reliance on federal funding, but the strong accountability pressures could have weakened variation because all districts complied with accountability expectations regardless of federal funding reliance (Neely 2015).

Consistent with Tolbert (1985), Neely found evidence that accountability expectations have become ubiquitous resulting in constant pressure to comply with accountability expectations, including documentation and reporting expectations. He suggested that variation in compliance by federal dependence would be more apparent in a more "voluntary" policy context with greater flexibility (Neely 2015:17). The pandemic relief funds provide that context, with greater flexibility and fewer requirements than NCLB. In this context, we could see greater variation in responses, consistent with resource dependence theory. In contrast, given the

strength and consistency of normative pressures and accountability expectations, we could see little variation if all districts choose to follow accountability expectations even when not required. In other words, districts could make similar spending decisions and pre-comply with accountability expectations to document spending effectiveness, even when not required to do so, due to external and isomorphic pressures.

Drawing on insights from new institutionalism theory, we expect that districts across various contexts may actively choose the same type of behavior when given flexibility and temporary relief from financial pressures. Accountability expectations and norms have become so common and expected that districts may pre-comply or comply with them in advance even when not required. Regardless of variation in resource dependence or other contextual differences, districts may converge around similar spending patterns, anticipating accountability expectations (including a focus on achievement and documenting effectiveness for achievement) when spending funds.

> **Hypothesis 2:** Districts invested in strategies to increase achievement (e.g., instructional spending).
> **Hypothesis 3:** Districts invested in central administrative services to assess effectiveness of spending programs.

Quantitative data can only provide some evidence of this potential explanation by examining spending on central administrative services, which includes district planners, researchers, and fiscal services, and does not include the superintendent, board of education, school principals, or their staff (Cornman et al. 2024). Qualitative evidence about the rationales of district leaders is required. For example, it is unclear from the quantitative data whether spending increased merely due to rising prices that outpaced inflation, without any change in organizational behavior. It is also unclear whether pandemic-era spending was used purely to respond to unique needs created by the pandemic, or whether the changes were used for

organizational goals beyond what was necessitated by the pandemic emergency. The limitations of the quantitative data highlight the need for interviews with district leaders to learn about rationales.

Variation by District Context and Confounding

Neo-institutional theory predicts similar district spending patterns across contexts, due to strong mimetic pressures and consistent expectations across contexts. In contrast, resource dependence theory suggests district spending patterns will vary across contexts due to variation in organizational reliance on external sources for funding (Neely 2015; Oliver 1991). These theories provide competing expectations about district variation. Based on resource dependence theory, district spending patterns are expected to differ by district reliance on federal and state revenue. For example, to maintain access to federal funds, the degree of district compliance with federal expectations should vary with dependence on federal funds (Pfeffer and Salancik 1978; Pfeffer 1972; Salancik 1979). High poverty districts that rely more heavily on federal funds could be more likely to spend the funds within the four-year deadline (Neely 2015).

> **Hypothesis 4**: District spending changes varied by context (poverty rate; reliance on federal and state revenue).

However, high poverty districts also received more federal relief because funds were distributed in proportion to district Title I funding. Spending during the pandemic is therefore confounded with poverty and reliance on federal funds. This confounding makes it difficult to tease out whether higher funding, poverty, or resource dependence leads to variation in spending. We use this expectation of variation to motivate heterogeneity analyses by district context and focus on what might explain the spending patterns we find. We partially address the difference in funding by scaling estimates by the estimated change in federal funding, but this is a rough

adjustment. We acknowledge that other factors could influence district spending during the pandemic. Evidence of consistent spending patterns across contexts would be more consistent with neo-institutional theory.

Existing Research

A small, but growing body of work examines how districts spend federal pandemic relief funds. A recent study by McCauley (2023) used survey data to understand which districts are using federal funds on equity and leadership initiatives. Manuel and Mikkelsen (2023) used spending plans and spending data to understand district spending priorities and patterns in North Carolina. Both studies provide valuable recommendations for districts. Policy work has examined spending patterns in Rhode Island (Benitez et al. 2023), North Carolina (DiMarco and Kelleher 2023), and in particular districts in Wisconsin (Henken et al. 2022), and has offered recommendations for use of federal funds (Boughton et al. 2021; Bryant et al. 2023; Thelen-Creps et al. 2021; Jordan 2022). Work by FutureEd has examined spending plans in districts throughout the country, suggesting that districts will spend on staffing, capital improvements such as HVAC systems, and technology (FutureEd 2022a, 2022b). However, actual spending may differ considerably from spending plans if shortages prevent districts from enacting their plans.

Existing research highlights the opportunities provided by this large, one-time federal investment in school districts, but is limited in its ability to identify patterns in actual spending, uncover within-district changes in spending, or understand the reasons behind those spending patterns. Public organizations including school districts rarely receive large funding increases with little mandated systemic reform or spending requirements. This study takes advantage of this large federal investment to learn how educational organizations respond to a short-term

increase in revenue and how that varies by context. Critiques focused on district spending relative to the January 2025 deadline. But examining within-district changes in spending provides more information about how districts responded. Using a mixed methods approach and examining changes in district spending behavior, with a focus on four states that vary in state funding and political context, this paper makes three contributions. First, we examine spending data to learn how district spending changed with federal relief funds. Second, we draw on interviews with school superintendents to learn how they explain district spending and how they navigated competing pressures during the pandemic. Third, we combine quantitative and qualitative data to examine variation in district spending by poverty and funding contexts.

Methods

Data

We use quantitative school district spending data for all states and qualitative interview data with superintendents from four states: Kansas, Michigan, Oklahoma, and Rhode Island. We include these states to provide variation in state funding (both level and progressivity) and political contexts. Characteristics of these four sampled states are summarized in Table 1.

[Table 1]

In 2019, these states fell across the distribution in terms of spending per pupil (RI ranked 8th, MI 27th, KS 31st, and OK 47th; Cornman et al. 2021a) and progressivity of state education funding (RI ranked 3rd, KS 22nd, OK 26th, MI 39th; Baker et al. 2021). The states also differ politically, with higher rates of conservative identification in Oklahoma and Kansas (OK ranked 11th , KS 14th MI 30th and RI 37th). Despite key differences, these states had fairly comparable unemployment rates and racial and ethnic composition relative to other states before the pandemic, and all were economically impacted by the pandemic, with unemployment at or above 10% in May 2020 (Bureau of Labor Statistics 2023). Drawing on quantitative data for all states

and gathering interview data from these four states allow us to examine how school districts in different contexts used the federal relief funds.

Quantitative analyses use annual district-level spending data from the F-33 Census data in all states for years 2010-2023. For comparability between the qualitative and quantitative data, we repeat analyses using annual district-level data for our four sampled states. Districts may show larger spending changes in later years, but we focus on relatively rapid spending changes within the first three years impacted by the pandemic and federal relief funds (2021-2023). All spending is calculated per pupil and is adjusted for inflation to 2025 dollars using CPI data. We link spending data to annual 2010-2023 data from the National Center for Education Statistics (NCES) and Small Area Income and Poverty Estimates (SAIPE) on district-level demographic and economic measures.

Qualitative data are required to understand the spending rationales of district leaders and include interviews with 68 superintendents. From April 2020 to August 2023, we conducted in-depth, semi-structured interviews with superintendents in each of our four sampled states, purposefully sampling districts within each state based on enrollment size to ensure heterogeneity. Superintendents provide valuable insight on district spending because they are leaders and key decision-makers, with detailed knowledge about budgets and challenges (Schwartz et al. 2023). Using data from the National Center for Educational Statistics (NCES), we divided districts in each state into small, medium, and large based on student enrollment. Specifically, we consider large districts to be those in the top quartile of enrollment in the state, medium districts to be those in the third quartile of enrollment (50-75th percentile), and small districts those in the bottom half of enrollment in the state. This strategy also provided

geographic diversity among rural, suburban, and urban districts because large districts are more often found in urban and suburban areas while rural districts are often smaller.

We contacted districts by email to request a phone interview with the superintendent. School superintendents are busy and frequently declined interview requests due to lack of time. However, participation rates were generally above the average organizational response rate (35%; Baruch and Holtom 2008). The following percent of superintendents we emailed completed an interview: 42% in KS, 14% MI, 37% OK, 75% RI. Response was low in Michigan because we contacted most of the superintendents in May (near the end of the school year). We had a higher response rate in Michigan for emails sent in other months (40%). We continued interviewing at least until we achieved saturation and began hearing consistent information in each state. But superintendents were more responsive in some states than others, resulting in the following number of interviews: KS (11), MI (23), OK (7), RI (27). Appendix Table A2 shows average characteristics by state for districts interviewed and for all districts. Interviewed districts differ somewhat from the state average in several characteristics. For example, average enrollment and number of schools is higher in interviewed districts compared to the state district average in KS, MI, and OK, but not in RI. Relatedly, a larger share of interviewed districts is in high cost areas and above the state median child poverty rate than the state average in KS, MI, and OK, but not in RI. Child poverty rate is slightly lower in the interviewed districts in all states. These differences suggest that the interviewed districts are not drastically different from the average district in their state, but also do not represent the average district in their state or in the country.

Interviews were conducted by phone or zoom, lasted an hour on average, and were recorded (with participant consent) and transcribed. One respondent preferred the interview not

be recorded; detailed notes were taken during the interview and a voice memo was made immediately after the interview. Questions included how districts responded to COVID-19, how they used federal funds and why, which students and schools they targeted and why, and how they made spending decisions.

Measures

In the F-33 spending data for all states, we measure annual per pupil spending in 2025 dollars on instruction, student services, staff services, central administrative services, executive administration, school administration, maintenance, transportation, nutrition, salaries, benefits, capital, and debt. Executive administration includes the superintendent, board of education, and their staff and school administration includes spending on school principals and their staff (Cornman et al. 2024). The central administrative services category includes spending on district planning, research, and fiscal services (Cornman et al. 2024), including spending on district research and evaluation of the effectiveness of spending and programs for achievement. This spending category is the finest category available that includes spending on research and evaluation and we therefore use it to operationalize *Hypothesis 3*, that districts invested in central administrative services to assess effectiveness of spending programs. However, this category could include spending on fiscal or other services that do not relate directly to research. This limitation makes the qualitative interview data even more valuable for understanding district use of federal relief funds.

COVID-19 is an indicator for academic years 2021, 2022, and 2023. This includes years impacted by the pandemic and federal relief funding, which began in March 2020. We do not include the 2020 academic year in the COVID-affected indicator because most schools were

closed and only about three months of that year were affected. Year indicates spring of each academic year throughout the paper.

Enrollment is measured using the spending data. District child poverty rate is measured using SAIPE data. District characteristics, including the number of full-time teachers, number of schools, and the proportion of students who are Black, Latinx, American Indian, Asian, and eligible for free or reduced-price lunch, are calculated from NCES data.

To examine variation by district poverty and reliance on federal or state revenue, we create indicators for districts that are high or low on each measure in 2019 (before the pandemic). High poverty is an indicator for districts above the 2019 state-level median child poverty rate. High federal reliance is an indicator for districts above the 2019 state-level median percent of funds received from the federal government. The same approach is used to create the indicator for high state funding reliance.

Quantitative Analyses

Equation 1 predicts school spending per pupil in district (*i*) and year (*t*), including district fixed effects to account for time-constant differences between districts and a linear time trend to control for temporal variation in spending across all districts. To account for time-varying differences across districts, we control for time-varying district characteristics (*X*), including child poverty rate, number of schools, enrollment (log), and percent of students who are free/reduced-price lunch eligible, Black, Latinx, American Indian, and Asian. We weight by enrollment in the main analyses to assess how spending changed at the student level. However, we repeat analyses without weights to assess district-level changes and results are consistent. Robust standard errors are adjusted for district clustering in all models.

$$\text{Spending/Pupil}_{it} = \beta_1 \text{Covid}_{it} + \beta_2 \text{Year}_{it} + \beta_k X_{it} + \pi_i + \varepsilon_{it} \quad (1)$$

Compared to the pre-pandemic trend, β_1 tests whether spending changed within three years after the start of the pandemic and federal relief funds. We fit multiple models predicting each specific type of spending and β_1 coefficients estimate changes in spending per pupil since COVID-19 for each spending category. Positive β_1 coefficients would not support *Hypothesis 1a.* When predicting instructional and central administrative services spending, positive β_1 coefficients would support *Hypotheses 2* and *3*. We repeat analyses with a year squared term and indicators for each year to capture nonlinear time changes and results are consistent.

To test for variation by district context – *Hypotheses 1b* and *4* – we fit separate models limited to districts with high and low poverty and with high and low reliance on federal or state funds. We compare β_1 coefficients from these separate models to determine whether spending changes with COVID-19 differed significantly by poverty and funding reliance (Clogg et al. 1995; Paternoster et al. 1998). For example, we calculate $z = \frac{\beta_{High} - \beta_{Low}}{\sqrt{SE_{High}^2 + SE_{Low}^2}}$, where β_{High} indicates β_1 from Equation 1 when predicting spending in high-poverty districts and β_{Low} indicates β_1 when predicting spending in low-poverty districts. Positive and statistically significant z-scores would support *Hypothesis 4* that spending increased more in high- than in low-poverty districts, and contradict *Hypothesis 1b*. We repeat this approach after scaling coefficients by the estimated increase in federal revenue per pupil in each contextual category. That is, we divide each β_1 coefficient among high-poverty districts by the β_1 coefficient when predicting federal revenue per pupil among high-poverty districts. We use the same approach to scale coefficients for each of the other contextual categories and then recalculate *z* statistics to test for differences after adjusting for changes in federal revenue.

The main analyses use district-level spending data for all states. We conduct sensitivity analyses using district-level data from our four sampled states. We follow the same approach above, with the same time-varying controls. Results are consistent with the main analyses.

Qualitative Analyses

To understand the spending patterns observed in the quantitative analyses, we analyze interviews with superintendents about district spending. We use NVivo 20 and a flexible coding strategy (Deterding and Waters 2018) to allow complex analysis of qualitative data in conjunction with categorical descriptive data. After reading through all interview transcripts multiple times, we used directed content analysis to create codes both deductively and inductively based on the research questions and patterns that emerge from the data (Hsieh and Shannon 2005; Padgett 2017). Responses are guided in part by interview questions and, within each topic, we draw out common patterns to develop codes and themes (Hatch 2002; Charmaz 2006; Kvale 1996; Rubin and Rubin 1995). This approach allows novel themes to emerge from the data and is guided by the research questions and theory (Charmaz 2006). We look particularly for explanations of how and why districts spend COVID funds and how districts navigated competing pressures and demands when spending relief funds. The first and third authors coded interviews and then reexamined codes and texts to address any inconsistencies and identify whether any themes were missed. After coding, we examined codes to identify themes, including explanations and decision-making, and we compared codes by district characteristics. Specifically, we compared codes across states to see if there were different themes by poverty or by reliance on federal funds.

Results

Table 2 shows descriptive statistics for district-level spending in all states over the full time period and separately before and after COVID (see Appendix Table A1 for mean spending in Kansas, Michigan, Oklahoma, and Rhode Island). The difference column shows that mean spending per pupil (in 2025 dollars) is higher after the start of the pandemic for almost every spending category. Demographic differences before and after COVID are small, but they are statistically significant because of the large sample sizes. The child poverty rate declined by 3 percentage points, which is consistent with evidence that pandemic relief reduced child poverty rate (Burns et al. 2022). These changes highlight the value of controlling for time-varying demographic characteristics.

[Tables 2-3]

Table 3 provides results from multivariate regressions. Estimates including all states are shown in the first column and the other columns show estimates separately for each of our sampled states. Estimates indicate that total current spending increased with COVID by an average of $469 per pupil when including districts in all states. When we limit analysis to districts in each of the four states where we interview superintendents, estimated spending increases are higher, with amounts ranging from $653 per pupil in Rhode Island to $1,182 per pupil in Michigan. Larger spending increases in these four states could reflect higher rates of eligibility for free/reduced-price lunch than in all states (49% vs. 47%, on average) and thus greater investment of federal relief funds or more rapid spending increases in these states. Focusing on the model including all states, an increase of $469 per pupil from an average annual spending of about $15,400 per pupil amounts to about a 3% increase in current spending. Spending increases were largest for salaries ($310), instruction ($262), support services ($258), and instructional salaries ($209). Districts also had small, but significant savings on transportation ($32) and food

services ($46). These savings likely reflect school closures, which reduced the need for transportation and meal services.

Estimates in Table 3 consistently indicate that spending increased within three years of the start of COVID, contradicting *Hypothesis 1a*. Consistent with *Hypotheses 2 and 3*, estimates also indicate that spending increased on instruction ($262) and central administrative services ($65). However, central administrative services can include spending on services that do not relate directly to research, so data from the interviews are important for understanding the increase in spending on this category. Illustrated in Figure 1, these spending increases indicate relatively rapid organizational spending changes. Appendix Figure A1 shows estimates separately in each of the four sampled states, illustrating that spending increased within three years of the start of COVID in each of the four states.

Several coefficients in Table 3 differ by state, suggesting variation in spending changes by context. Table 4 provides estimates by district child poverty rate and reliance on federal and state revenue. Shaded cells indicate significantly different changes in spending with COVID by these characteristics. In several cases, spending increased more in high-federal and high-state reliant districts compared to low-state and low-federal funded districts. For example, instructional spending increased by $322 per pupil in high-federally funded districts and by $351 per pupil in high-state funded districts (compared to $169 and $168 in low-federal and low-state districts). These estimates contradict *Hypothesis 1b* and are consistent with *Hypothesis 4*, indicating larger increases in spending in state- and federal-reliant districts. However, the first row shows much larger increases in federal revenue in districts that have high poverty and high reliance on federal and state revenue. This reflects higher rates of poverty in these districts and higher receipt of federal relief funds.

[Tables 4 & 5]

Given differences in federal relief funds, Table 5 provides coefficients from Table 4, scaled by the estimated increase in federal revenue per pupil (i.e. divided by the estimated increase in federal revenue/pupil after COVID, shown in Table 4). Figure 3 shows scaled estimates by poverty rate. When adjusted for differences in the increase in federal revenue, estimates in Figure 3 are statistically similar by district poverty rate, with overlapping confidence intervals. As shown in Table 5, only estimates predicting spending on food services and debt interest differ significantly by poverty rate ($p<05$). In most cases, estimates by reliance on federal and state revenue also become statistically similar when adjusted for the increase in federal revenue. Districts with high reliance on federal funding increased spending on support services, benefits, and capital slightly more than those with lower federal reliance and those with high state funding reliance increased spending on benefits slightly more than those with low state reliance. However, these differences are small and the overall pattern is similar increases in these different contexts.

The amount of increase in federal revenue likely varies across districts even above (or below) the median poverty rate, but the similarity of the scaled estimates suggests that the differences between coefficients in Table 4 by poverty rate and by reliance on federal and state revenue likely reflect differences in the amount of federal relief funds received. Thus, when accounting for differences in federal relief funds, results are most consistent with *Hypothesis 1b*, that district spending changes were similar across contexts.

Results could differ depending on the level of analysis. To check this, we examine school-level data in Oklahoma and Rhode Island, which have school-level spending data from 2010-2023. Results of school-level analyses are consistent with those of the district-level

analyses. We also repeat analyses when controlling for year squared and results are consistent with the main analyses.

The quantitative results are broadly consistent with neo-institutional explanations for district spending and demonstrate that apparent differences across contexts generally disappear once differences in federal relief allocations are taken into account. Resource dependence theory therefore provided a competing explanation but received little empirical support.

Qualitative Results

Quantitative estimates suggest that districts increased total spending, and spending on most specific categories examined, within the first few years of the pandemic. This suggests relatively rapid organizational changes, but qualitative data are required to learn how district leaders explain the use of the funds.

Qualitative analyses reveal that district spending was an active and thoughtful process and not merely a response to unique needs or higher prices created by the pandemic. While superintendents focused on district priorities, particularly student learning, districts also invested funds to document effectiveness of spending for student learning. The conflicting pressures facing districts and district leaders are apparent as leaders explain district spending of federal relief funds. Similar to navigating whitewater rapids, district leaders work to navigate and satisfy competing demands while also looking ahead to anticipate future challenges. Despite varying local contexts, district leaders faced similar and conflicting pressures, including mimetic pressure, and coalesced around similar spending patterns.

Prioritizing Student Learning: In explaining the use of federal relief funds, superintendents consistently emphasized their priority of improving student learning. To achieve

this goal, superintendents worked to pilot programs new to their district, including summer school, after school programming, tutoring, teacher coaching, and reading/math specialists. For example, several superintendents describe summer school as a targeted approach to improve achievement among the students most affected by the pandemic.

> Probably the one big thing that we've done out of ESSER money that we have not done before is summer school. Last year, we did summer school and this year we're doing summer school again. And all of that is, is completely paid for through ESSER funds right now. That is something that I don't know if I'll be able to continue cause it's costing us about $30,000 each summer with staff and busing and meals and that kind of stuff. So, um, I don't know if we'll be able to continue that. We're still looking to see how effective it is. What's the academic gain that we're seeing by doing this. – Small district, KS 6/2022

This small district implemented a new program – summer school – with the funds and provided the community a new opportunity that was not previously available. The superintendent is assessing effectiveness in terms of academic gain as they consider whether to keep summer school. Using the funds for summer school was not unique to small districts.

> So we're providing some additional, um, summer school, which we didn't the last two years, we're doing this current year. And in 2021, we provided a very extensive summer school in [the district], which we've not done before. – Medium district, MI 4/2022

This medium district in Michigan also implemented summer school with the funds, along with the medium district referenced below in Oklahoma.

> We extended our summer programming that we have… it's an all-day program for eight weeks in the summer that combines, you know, physical activity and different STEM activities and taking kids swimming and on field trips and those kinds of things. But also has half a day of reading and math interventions and things as well, and direct instruction as well. It's an entire day program. We provide transportation, we provide breakfast, snack, and a lunch, and it's eight weeks in the summer…so, we really ramped up that program. – Medium district, OK 8/2023

In this medium-sized district, summer school included academic enrichment, but also physical activities and services to make it highly accessible and improve child health and

nutrition. In a large district in Kansas, summer school allowed an opportunity to pilot project-based learning opportunities.

> One of the things that we're really proud of, and I think a lot of districts are really proud of, is we're doing what we call summer learning opportunities. We had never done any summer learning opportunities for anybody K-8 before. So we allow teachers to kind of have a little bit of flexibility when it comes to what they're teaching. It's more project-based learning. It's more fun. Like one of the ones that we heard a lot about was this year was they did a Hunger Games summer learning. So they were reading the book, interacting with the book, doing the trainings, doing all of that. So that was kind of cool to be able to see that as well as we were able to expand our summer school for our kids, not only in the six through eight, but then also our 9th through 12th. – Large district, KS 8/2022

These and other superintendents discussed adding or expanding summer school to help students learn. Summer school was just one of many ways that districts used federal funds to help students learn. Districts also used the funds to invest in activities such as professional development or teacher training.

> We use a lot of that for professional development, student remediation programs, after school STEM programs, art programs tutoring programs, basically for any student from kindergarten through 12th that wanted it, we made it available for them after school. [We've] done a lot with summer school programs, doing some remediation with those kids that have had some difficulties with learning, or some kids that have missed a lot of school. – Medium district, OK 5/2023

This district invested in professional development and new programs to help students and expand opportunities. Another superintendent describes an exciting investment in professional development to train all of their staff in effective practices.

> We have contracted with [a teaching approach], and we are training our entire staff for three years on best research-based effective practices for teaching and learning. So we rolled out year one this year. That's what I'm most excited about in all of my years, as an educator. Because of budgets, you do a train the trainer, so you send five people to a conference and then they come back and train a group. And then, it's like a three-year progression just to get year one rolled out. We were able to train every certified staff member at the same time with the same information. – Large district, KS 5/2022

The funds allowed all staff to learn research-based techniques at the same time, which

allows collective learning and implementation. Another superintendent describes hiring a new learning facilitator for special education to improve effectiveness.

> If we have kids that have some needs that have come up, a learning facilitator to come in and help you with differentiation and, and strategies and instructional strategies, and they helped the teacher become more effective. Well, we never had one for special education. And you would think that would've been one of the first areas we would've hired, you know, to help regular ed teachers adapt... You think we would've, but no. So, we used ESSER funds to fund that position starting this year. So we have our first learning facilitator for special education. And right now we're using ESSER funding, but in December of 2024, when that funding runs out, we're gonna move that person onto our regular budget. So we're already looking at, okay, did we get new monies? Do we have to cut another position somewhere else? But we want to keep that position. We really think that was important. – Large district, KS 7/2022

These superintendents emphasize the importance of professional development for student learning and, because schools are communities, the value of training all teachers at the same time, which is normally too expensive. The quote above also illustrates strategic hiring with federal relief funds and conflicting pressures districts face when using the funds.

Conflicting Pressures: While district leaders prioritized student learning, they routinely faced conflicting pressures, including the temporary nature of the funding, the anticipated expectation to document effective spending, and questions among the community that required careful communication.

In several cases, such as the quote above, superintendents discussed strategic hiring with federal relief funds. Superintendents are keenly aware that federal funds are temporary, but they see the value of these investments to help students recover. For example, a superintendent in Rhode Island discussed this at length.

> We created a reading specialist position, K-12. We created a couple of other instructional coach positions to help in all of our buildings. We added an extra social worker, all of that's federally funded, either as one-year or two-year positions. I would say 90% of that has been spent trying to target individual needs of kids that have been impacted negatively by the pandemic over the last year and a half. A lot of staff hiring, a lot of moving pieces to that. What I'm most concerned about is what's

> going to happen when this money goes away?… Our initial thoughts are the staff that we hired and the model that we're using is like a train the trainer model. We want to provide training for teachers so that they have the skills to keep this going in their classroom. That's a long-term plan. These folks will be in classrooms primarily working with teachers. The hope is that once they're out of the classrooms, the teacher will have the skills to continue to do those interventions in that work with kids. – Large district, RI 8/2021

Two superintendents from Michigan also raised concerns about the temporary nature of the funds.

> With all this funding, the other thing is, in every case, we have a two-year window to use it. So, especially with us, where we're dealing with a lot of labor unions, where there's pretty lengthy conversations that have to happen through contract negotiations, as we're making changes, we have to worry about legacy costs as well. So, we need to be very careful about what we're bringing in because in all cases, it's not going to be able to be funded once a COVID funds are up in two years. – Large district, MI 3/2021

> How do we best utilize those dollars knowing they're one time funds? And you have to spend them by the, by the end of the year in 2024. So it's, it's a good problem to have, but it's still a problem because like I've hired a lot of staff to help with COVID learning loss, but I can't sustain that staff beyond the, the 2024 school year because you know, those funds, those dollars are all gonna be spent. – Medium district, MI 6/2022

These superintendents raise concerns about a potential fiscal cliff. A superintendent from another large district in Rhode Island noted a commonly referenced tension between the federal relief funds and expectations of community members.

> Again, we're happy that we have this money and we can use it. On the other hand, we look at each other and go, "Ooh." Because I don't want to start something that I can't sustain, whether it's good or bad, it's just, people get used to it. If we have these fabulous and really expensive summer programs, even if they're great, I don't know how I'm going to be able to do it in year three if I don't have this money. – Large district, RI 9/2021

Implementing a new program with short-term funds, even an excellent program, can have negative consequences if families and teachers come to expect it. A district leader in

Oklahoma notes a similar concern with new positions or with replacing all HVAC systems at once.

> We were very, very intentional and very cognizant to not put in a lot of, uh, our strategy was to, was to offset current costs for short-term gain and large costs for long-term gain. So that, um, we were not obligating our budget to a lot of recurring costs because when that money's gone. If I added $250,000 worth of salaries, I either have to fire all those people and just say, sorry, we don't have the money anymore. Which nobody likes in a small town. And obviously if they're great people, you don't wanna get rid of 'em 'cause they're, they've, you know, they serve a purpose for your kids. Um, and then I just, that's just not a good look and that, that obligates us, you know, on something that is possibly not sustainable. And so, just for instance, one of the things we had, in the late nineties, there was a small bond issue that was run to replace almost every single HVAC system in the entire district. Well, that's great. Until they all start going out at the same time. – Medium district, OK 5/2023

District leaders in Kansas and Michigan noted similar concerns about the temporary nature of federal relief funds. Superintendents took strategic and thoughtful action to help students recover from the pandemic while also planning for the end of federal relief funds and avoiding a fiscal cliff. To learn from the new approaches, districts gathered data to assess the return on investment and decide how to spend most effectively in the future, after federal relief funds are gone. Other superintendents used the federal relief funds to conduct research on what works for their students and cities.

> Evening tutoring was another one that came out. We went ahead, we implemented that already. Cause it worked really well, and it's really reasonable cost. We paid teachers $24 an hour and they're available for like an hour and a half every night, via zoom. And so any kid in the district, if I got a math need, there's a zoom link and I just click on it and I've got a teacher right there to answer my questions… And what we've been doing is tracking utilization. So you know, how many students are actually logging on how many are actually asking questions? Is it a good return on investment? Cause that was the other question from the board is if we say we're gonna continue to do this, so we're gonna work this to our budget. We need to have some sort of evidence that it's affected, that it's actually doing what we said it was gonna do. – Large district, KS 7/2022

In addition to investing in tutoring, the district is carefully tracking usage to assess effectiveness and return on investment. This adds administrative costs, but the superintendent notes the evidence is useful in local budget advocacy. Other district leaders also emphasized the importance of documenting benefits.

> I think if I can show the mayor we're actually getting results and kids are learning, I think I have a good argument to get those jobs in the budget. And like I said, [this city] is really a data-focused district... We're really focused on teaching and learning when we can and I think the mayor likes that and if we can show him results, he has a good argument to go to the town council to say, we need to support these few jobs this year, then following year, et cetera. – Large district, RI 9/2021

A large district in Kansas hired a short-term data analyst to learn from the new programs implemented in their district. This is an example of central administrative services spending and provides local accountability evidence to show the mayor in an effort to get higher funding.

> We did hire two positions out of ESSER money that we knew would be temporary positions. One was a data analyst, because we really wanna keep data on our summer school and summer programs and tutoring programs. So we can see if it really is having a high impact... The data analyst, she's like creating a book of how she, what, what data she runs, how to run it. So when she's gone someone else, if they want that information knows how to get it. – Large district, KS 5/2022

In each of these cases, a lot of thought goes into district use of federal relief funds. Part of the strategy is to learn from this rare opportunity to improve student outcomes most effectively in the future. Districts gathered data and in some cases hired data analysts to assess return on investment. This is consistent with *Hypothesis 3* and helps to understand the increased spending on central administrative services. Legislators and taxpayers may perceive an increase in administrative spending as pay raises for superintendents and other administrators. But these quotes from superintendents reveal the reasoning behind district spending. Administrative work increased with the pandemic, due in part to the increase in federal funding, which requires time

to process reimbursements and complete the bureaucratic recordkeeping. Yet districts also spent more on administrative services to document and assess the effectiveness of the new programs they implemented for student learning, which will enable more effective use of district funds in the future.

District leaders across contexts also noted the complex and competing pressures they must navigate. These competing pressures often raise questions or confusion and create a need to communicate effectively with community members, teachers, and various levels of government. One superintendent from a large district in Oklahoma described it as a dance.

> On the federal level there's, um, you know, there's the federal requirements and then there's state requirements and then there's local, uh, school board requirements, that sort of thing. So it's kind of a collective of all those things and you gotta keep, um, your parents happy. You've gotta keep your teachers happy and working. So it's just a, it's a complex dance, if you will, of just kind of making everything work and, with the interesting times that we've been in, it's been, it's challenging regardless of what time we've been in, but it's, it's just a new type of challenge with the ESSER money, kind of explaining to people, okay, this is, yes, we have this money. – Large district, OK 6/2022

Conflicting pressures are a chronic part of school district leadership. Federal relief funds and the pandemic did not create these competing pressures, but in some cases raised new questions among community members about funding. To address these questions and avoid confusion, a superintendent from a medium-sized district in Rhode Island also emphasized the importance of communicating with the community.

> There's no decision that I ever make that you have a hundred percent of the people that agree with it. That just never happens. So I, you know, I make sure that everybody is clear about why I'm making the recommendation that I'm making, communicate that out to everybody. If there's, if there's requirements from the state, I make sure that everybody is aware that here's the requirement. This is why the decision is being made. You know, we don't have a choice, or, and it could be the right thing anyway, but I'm required to do this, I didn't make this decision by myself. This is a requirement and this is how we're meeting the requirement. You know, I think, I think that the, the big things that [the State Department of Education] focuses on are the right things. And what I, what I find is that they don't often tell, you know,

> here's what you need to focus on, and this is exactly how you need to do it. They may give you a recommendation for how to do it, but they never mandate that this is the strategy to make it happen. So I always interpret that as, okay, this is what we need to do, but we can come up with a strategy to get there.... So a lot of communication, a lot of transparency, you know, and, and I'd bring things to the school committee and they ultimately vote. And if I have the vote of the school committee, and then that's the decision. So parents say, I don't always agree, but I, but I appreciate knowing where the decision came from. – Medium district, RI 5/2021

District leaders note the conflicting pressures they face and explain the need for communication to navigate those pressures. These conflicting pressures are not state-specific, but are common across district contexts. Thus, despite variation in district characteristics and state policy contexts, district leaders similarly emphasize conflicting pressures and share a similar focus on improving student learning.

Consistency Across Districts: Combining the qualitative and quantitative data, we compared how often superintendents referred to strategies to improve achievement by district poverty and federal funding reliance. For each interview, we identified whether the district was coded as high or low poverty or federal reliance in 2019 based on the quantitative data. These indicators are strongly related. We used a matrix query in NVivo to count the number of references to any of the strategies or programs to improve achievement by district poverty and federal reliance. Superintendents in all contexts referred to these strategies. Of the 78 references to these strategies, 60% were from superintendents in high-poverty districts, compared to 40% in low-poverty districts. About half of the interviews were with superintendents in high-poverty districts and they accounted for slightly more of the references to achievement strategies. We also examine references to these strategies by state and found that superintendents from districts in each state note these strategies.

This pattern suggests that districts across contexts worked to improve student achievement. This focus was not limited to high or low poverty districts or to districts with high

or low reliance on federal funds. The references to these strategies across contexts suggest that districts face common pressures and make common decisions across these contexts. Thus, consistent with neo-institutional theory, district leaders navigated conflicting pressures by coalescing around similar spending patterns.

Conclusion

During the pandemic, districts received a rare increase in federal funds with fewer requirements than normal. Contradictory critiques of districts for spending slowly or ineffectively have been based on little systematic evidence. Using national data on district spending and superintendent interviews in four states, we examine how districts used this funding increase. We combine these data sources to provide novel insight into district behavior. Comparing spending to earlier years rather than to the deadline to spend pandemic relief funds, we find that districts increased spending relatively quickly (within three years) on multiple types of expenses, including instruction and central administrative services, which include research.

Drawing on neo-institutional theory, we argue that districts face similar pressures across contexts and coalesced around common spending patterns. Districts spent funds primarily on instructional programs and services not previously implemented in the district, such as tutoring and summer school, to improve student learning. Districts also consistently spent funds to document effectiveness of their spending for student achievement. Although the federal funds came with more flexibility than normal, districts spent funds in common ways across contexts. The ubiquity of accountability pressures, focused on achievement and documentation of effectiveness, encourage districts to make similar choices across contexts. Districts pre-comply with anticipated requirements to improve achievement and to document effective use of funds.

Our findings highlight how accountability pressures constrain district options, even when strict requirements are relaxed.

Superintendents consistently focus on the goal of improving student learning. Districts actively considered options and used funds strategically to advance the central academic goal of schools and to satisfy the competing demands of multiple stakeholders. Across federal, state, and local contexts, accountability pressures are consistent and widely shared. Faced with these pressures, districts anticipate the need to document the effectiveness of spending in terms of student achievement to maintain or improve legitimacy.

We examined whether district spending patterns varied by contextual characteristics, including child poverty rate and reliance on federal or state funding. We find similar spending changes across these contexts. Spending increased more in districts with high child poverty, consistent with the distribution of federal funds, which targeted high-poverty districts. Specifically, total spending per pupil increased by almost 200% more in high-poverty than in low-poverty districts. However, when adjusting for different increases in federal revenue, spending changes were statistically similar in districts with high and low poverty rates and federal or state funding reliance. There is growing evidence of benefits of progressive school funding, but it is unclear whether the larger returns reflect different spending behaviors (Rauscher and Shen 2022; Baker 2018, 2017). Our findings suggest that districts used the additional funds in similar ways across contexts, working to increase student achievement, document spending effectiveness for student learning, and manage conflicting pressures.

A key limitation of this study is the temporal confounding of the pandemic with federal relief funds. We examine changes in spending that occurred within three years of the pandemic and those changes could reflect federal relief funds, the pandemic, or both. Another limitation is

the relatively imprecise measure of central administrative services spending, which we use to assess district changes in spending on research and evaluation. This measure could include spending on fiscal or other services as well. However, none of the superintendents interviewed said their district increased spending on fiscal services or administration other than evaluation efforts to assess effectiveness of their spending. A third limitation is the focus on four states for the qualitative data. These states fall across the distribution in terms of spending per pupil and include states with liberal and conservative legislatures. These states could be unique, but the interviews reveal the importance of hearing from district representatives to understand spending changes. In the quantitative data, we find consistent results when including all states or only our four sampled states, suggesting the patterns hold in other states.

This paper combines quantitative and qualitative data to learn how and why district spending changed with federal relief funds and how district leaders explain the use of the funds. We find that districts changed spending behavior relatively quickly, within three years of the start of the pandemic, and spent funds on programs to improve student learning and to assess the effectiveness of those programs. This counters criticism from journalists and academics, which predicts relatively slow change. Rather, results suggest that relieving financial pressures on school districts can allow them to implement instructional programs used in other districts and gather local data about the effectiveness of those programs in their own district. District leaders coalesce around similar spending patterns, using federal funds on evidence-based programs to improve student outcomes and gathering data to learn from those approaches and enhance the effectiveness of school spending in the future. Consistent with neo-institutional theory, districts make similar spending decisions across contexts, possibly because they all face conflicting pressures including strong accountability pressure.

The federal relief funds provided flexibility to help school districts recover from the pandemic. Districts received widespread and contradictory criticism from journalists and academics about spending federal relief funds. Based on quantitative and qualitative evidence, we find that districts spent federal relief funds relatively quickly and pragmatically: within three years, districts increased spending on evidence-based programs to improve student learning and efforts to assess the local effectiveness of those programs while avoiding a fiscal cliff. This suggests districts use emergency funds responsibly, planning ahead to implement and assess the effectiveness of programs to improve student learning. For policymakers, results highlight the value of flexible emergency funding relief so that districts can invest in the programs that are most needed locally. The widespread investment in tutoring, summer learning, coaching, and other instructional programs suggests districts use additional funds to improve student learning. However, districts have to invest time and money in documenting effectiveness, planning ahead to avoid a fiscal cliff, and communicating details about the federal relief funds to their communities. Federal and state departments of education could save districts time and money by providing funds for evaluation and evidence-building activities, incorporating a gradual spending deadline, providing sustainable funds for particularly effective programs, and assisting districts with documentation and communication efforts.

Research Ethics

This study was assessed by the university IRB office, which noted that it does not meet the definition of human subjects research because it uses interviews with key informants and secondary data on school districts and states. The qualitative analyses draw on interviews with district leaders about the school districts where they work. All interviewees agreed to participate and we take steps to maintain confidentiality.

References

Ambrosio, John. 2013. "Changing the Subject: Neoliberalism and Accountability in Public Education." *Educational Studies* 49(4): 316-333.

Arum, Richard. 2000. "Schools and Communities: Ecological and Institutional Dimensions." *Annual Review of Sociology* 26: 395-418.

Baker, Bruce D. 2018. *Educational Inequality and School Finance: Why Money Matters for America's Students*. Cambridge, MA: Harvard University Press.

Baker, Bruce D. 2017. How Money Matters for Schools. Palo Alto, CA: Learning Policy Institute. https://learningpolicyinstitute.org/sites/default/files/product-files/How_Money_Matters_REPORT.pdf

Baker, Bruce D., Di Carlo, Matthew, Srikanth, Ajay, and Weber, Mark A. 2021. *Albert Shanker Institute/Rutgers Graduate School of Education: School Finance Indicators Database.* Retrieved from: http://www.schoolfinancedata.org.

Barney, Jay B. 2001. "Resource-based theories of competitive advantage: A ten-year retrospective on the resource-based view." *Journal of Management* 27:643-650.

Benitez, Gisselle Rodriguez, Nate Schwartz, and Kate Donohue. 2023. "Tracking Rhode Island's COVID-19 Recovery: District Investments in Curriculum, Professional Learning, and Technology." Rhode Island Education Research Initiatives.

Bidwell, Charles E. 2001. "Analyzing Schools as Organizations: Long-Term Permanence and Short-Term Change." *Sociology of Education* 74: 100-114.

Boughton, H., de Barros, J., Goldhaber, D., Payne, S., & Schwartz, N. (2021). *The Once-in-a-Generation Opportunity: What States and Districts Can Do Now to Learn From American Rescue Plan ESSER Interventions.* (CALDER Policy Brief No. 27-0921). Arlington, VA: National Center for Analysis of Longitudinal Data in Education Research.

Bryant, Jake, Emma Dorn, Leah Pollack, and Jimmy Sarakatsannis. 2023. COVID-19 Learning Delay and Recovery: Where Do US States Stand? McKinsey & Company.

Burns, Kalee, Liana Fox, and Danielle Wilson. 2022. "Expansions to Child Tax Credit Contributed to 46% Decline in Child Poverty Since 2020." U.S. Census Bureau. Retrieved December 21, 2023 from https://www.census.gov/library/stories/2022/09/record-drop-in-child-poverty.html

Clemens, Elisabeth S. and James M. Cook. 1999. "Politics and Institutionalism: Explaining Durability and Change." *Annual Review of Sociology* 25:441-466.

Clogg, Clifford C., Eva Petkova, and Adamantios Haritou. 1995. "Statistical methods for comparing regression coefficients between models." *American Journal of Sociology* 100:1261-1293.

Cornman, S.Q., Phillips, J.J., Howell, M.R., and Young, J. 2021a. Revenues and Expenditures for Public Elementary and Secondary Education: FY 19 (NCES 2021-302). U.S. Department of Education. Washington, DC: National Center for Education Statistics. Retrieved December 14, 2023 from http://nces.ed.gov/pubsearch.

Cornman, Stephen Q., Laura C. Nixon, Matthew J. Spence, Lori L. Taylor, and Douglas E. Geverdt. 2021b. Education Demographic and Geographic Estimates (EDGE) Program: American Community Survey Comparable Wage Index for Teachers (ACS-CWIFT) (NCES 2018130). U.S. Department of Education. Washington, DC: National Center for Education Statistics. Retrieved December 13, 2023 from http://nces.ed.gov/pubsearch/.

Cornman, S.Q., Doyle, S., Moore, C., Phillips, J., and Nelson, M.R. 2024. "Revenues and Expenditures for Public Elementary and Secondary Education: School Year 2021–22 (Fiscal

Year 2022): First Look (NCES 2024-301).” U.S. Department of Education. Washington, DC: National Center for Education Statistics. Retrieved October 28, 2025 from http://nces.ed.gov/pubsearch.
DiMaggio, Paul J. and Walter W. Powell. 1983. “The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields.” *American Sociological Review* 48(2):147-160.
DiMarco, Bella and Maureen Kelleher. 2023. How North Carolina’s Schools Are Staffing Their Pandemic Recovery. FutureEd. Retrieved December 8, 2023 from https://www.future-ed.org/how-north-carolinas-schools-are-staffing-their-pandemic-recovery.
Ebbeler, J., C.L. Poortman, K. Schildkamp, and J.M. Pieters. 2016. “Effects of a data use intervention on educators' use of knowledge and skills.” *Studies In Educational Evaluation* 48:19-31. 10.1016/j.stueduc.2015.11.002
Figlio, David and Susanna Loeb. 2011. “School Accountability.” *Handbook of the Economics of Education, Volume 3*, pp. 383-421. DOI: 10.1016/S0169-7218(11)03008-5
FutureEd. 2022a. 6 Ways to Breakdown How Districts Are Spending Federal Covid Aid. Retrieved December 8, 2023 from https://www.future-ed.org/6-ways-to-breakdown-how-districts-are-spending-federal-covid-aid/.
FutureEd.2022b. How Local Educators Plan to Spend Billions in Federal Covid Aid. Retrieved December 8, 2023 from https://www.future-ed.org/local-covid-relief-spending/.
Hallett, Tim and Amelia Hawbaker. 2021. “The case for an inhabited institutionalism in organizational research: interaction, coupling, and change reconsidered.” *Theory and Society* 50(1):1-32.
Hannan, Michael T. and John Freeman. 1984. “Structural Inertia and Organizational Change.” *American Sociological Review* 49:149-164.
Harris, L.R. , G.T. Brown. 2013. “Opportunities and obstacles to consider when using peer-and self-assessment to improve student learning: Case studies into teachers' implementation.” *Teaching and Teacher Education* 36:101-111. 10.1016/j.tate.2013.07.008
Henken, Rob, Jason Stein, Sara Shaw, and Ari Brown. 2022. Uncharted Waters: Wisconsin’s School Budget Climate and the State’s Two Largest Districts. Wisconsin Policy Forum. Retrieved December 8, 2023 from https://wispolicyforum.org/research/uncharted-waters-wisconsins-school-budget-climate-and-the-states-two-largest-districts/.
Jennings, Jennifer. 2005. “Below the Bubble: “Educational Triage” and the Texas Accountability System.” *American Educational Research Journal* 42(2): 231-268. https://doi.org/10.3102/00028312042002231
Jones, Jeffrey M. 2019. “Conservatives Greatly Outnumber Liberals in 19 U.S. States.” Gallup, Feb. 22 (https://news.gallup.com/poll/247016/conservatives-greatly-outnumber-liberals-states.aspx).
Jordan, Phyllis W. 2022. What Congressional Funding Means for K-12 Schools. FutureEd. Retrieved December 8, 2023 from https://www.future-ed.org/what-congressional-covid-funding-means-for-k-12-schools/.
Lieberman, Mark. 2022. “Why It’s So Hard for Schools to Spend All That COVID Relief Money.” *EducationWeek*. Retrieved December 8, 2023 from https://www.edweek.org/leadership/why-its-so-hard-for-schools-to-spend-all-that-covid-relief-money/2022/04

Locke, Charley. 2022. “American Schools Got a $190 Billion Covid Windfall. Where Is It Going?” *The New York Times Magazine*. Retrieved December 11, 2023 from https://www.nytimes.com/2022/09/08/magazine/covid-aid-schools.html.
Manuel, Erin W. and Camille N. Mikkelsen. 2023. “ESSER III Investments in North Carolina: A Preliminary Analysis of PRC 181 and PRC 182.” EdWorking Paper No. 23-762.
McCauley, Carlas L. 2023. “Allocating Recovery Funding: A Survey of School Districts on Federal Resources.” *Journal of Education Finance* 48(4):440-450.
Meyer, John W. and Brian Rowan. 1978. “The Structure of Educational Organizations.” Pp. 78-109 in *Environments and Organizations*, edited by Marshall W. Meyer. San Francisco, CA: Jossey-Bass.
Neely, Stephen R. 2015. “No child left behind and administrative costs: A resource dependence study of local school districts.” *Education Policy Analysis Archives 23*(26). http://dx.doi.org/10.14507/epaa.v23.1785
Ngo, Madeleine. 2023. “Schools Received Billions in Stimulus Funds. It May Not Be Doing Enough.” *The New York Times*. Retrieved December 11, 2023 from https://www.nytimes.com/2023/06/05/us/politics/schools-stimulus-covid-pandemic-aid.html.
Oliver, Christine. 1991. “Strategic Responses to Institutional Process.” *Academy of Management Review* 16(1): 145-179.
Ordofa, Begna and Amare Asgedom. 2022. “School Accountability and Its Relationship with Learning Outcomes: A Systematic Literature Review.” *Social Sciences & Humanities Open* 6(1):100358. https://doi.org/10.1016/j.ssaho.2022.100358
Paternoster, Raymond, Robert Brame, Paul Mazerolle, and Alex Piquero. 1998. “Using the Correct Statistical Test for the Equality of Regression Coefficients.” *Criminology* 36(4):859-866.
Penninckx, M. 2017. “Effects and side effects of school inspections: A general framework.” *Studies In Educational Evaluation* 52:1-11. 10.1016/j.stueduc.2016.06.006
Pfeffer, J Jeffrey. 1972. “Interorganizational influence and managerial attitudes.” *Academy of Management Journal* 15: 317 - 330.
Pfeffer, Jeffrey and Gerald R. Salancik. 1978. *The External Control of Organizations: A Resource Dependence Perspective*. New York: Harper and Row.
Power, Michael. 1997. *The Audit Society: Rituals of Verification*. New York: Oxford University Press.
Ravitch, Diane. 2020. *Slaying Goliath: The Passionate Resistance to Privatization and the Fight to Save America's Public Schools*. New York: Alfred A. Knopf.
Roza, Marguerite. 2023. “The Stakes Are Only Getting Higher for Pandemic School Aid Spending.” Edunomics. Retrieved December 11, 2023 from https://edunomicslab.org/2023/02/14/stakes-are-only-getting-higher-for-pandemic-school-aid-spending/
Roza, Marguerite and Chad Aldeman. 2022. “Is It Too Late for Districts to Redirect ESSER Commitments to Tackle Learning Gaps? 30 Minute Webinar.” Edunomics. Retrieved December 11, 2023 from https://edunomicslab.org/2022/11/17/30-min-webinar-is-it-too-late-for-districts-to-redirect-esser/
Roza, Marguerite and Katherine Silberstein. 2022. “A Year Ago, School Districts Got a Windfall of Pandemic Aid. How’s That Going?” Brookings Institute. Retrieved December 8, 2023 from https://www.brookings.edu/articles/a-year-ago-school-districts-got-a-windfall-of-pandemic-aid-hows-that-going/

Salancik, G. R. 1979. "Interorganizational dependence and responsiveness to affirmative action: The case of women and defense contractors." *Academy of Management Journal* 22: 375-394.
Schneider, Jack and Jennifer Berkshire. 2021. *A Wolf at the Schoolhouse Door*. The New Press.
School and State Finance Project. 2021. *Processes for Receiving & Using ESSER Funds*. New Haven, CT: Author. Retrieved from https://schoolstatefinance.org/resource-assets/ESSER-Funding-Processes.pdf.
Schwartz, Nathaniel, Hanseul Kang, Susanna Loeb, Jason Grissom, Brendan Bartanen, Jennifer Cheatham, Olivia Chi, Morgaen Donaldson, Renata Freitas Lemos, World Bank, Greer Mellon, Susan Moffitt, Aizat Nurshatayeva, Jayanti Owens, Edieal Pinker, Rachel White, and Seth Zimmerman. 2023. "Studying the Superintendency: A Call for Research August 2023." (August). https://worldmanagementsurvey.org.
Thelen-Creps, C., Clement, D., Nagbe, M., & Bainazarov, T. 2021. "The Elementary and Secondary School Emergency Relief Fund (ARP ESSER)." UCEA policy brief: University Council for Educational Administration.
Tolbert, P. S. 1985. "Resource dependence and institutional environments: Sources of administrative structure in institutions of higher education." *Administrative Science Quarterly* 20: 229-249.
Tyack, David B. 1974. *The One Best System: A History of American Urban Education*. Cambridge, MA: Harvard University Press.
U.S. Bureau of Labor Statistics. 2023. Unemployment Rates for States, 2019 Annual Averages. Retrieved December 14, 2023 from https://www.bls.gov/lau/lastrk19.htm.
U.S. Census Bureau. 2021. Annual Estimates of the Resident Population by Sex, Race, and Hispanic Origin: April 1, 2010 to July 1, 2019. Retrieved December 14, 2023 from https://www.census.gov/data/tables/time-series/demo/popest/2010s-state-detail.html.
U.S. Department of Education. 2022. Frequently Asked Questions Elementary and Secondary School Emergency Relief Programs Governor's Emergency Education Relief Programs. Retrieved May 19, 2026 from https://www.ed.gov/sites/ed/files/2022/12/ESSER-and-GEER-Use-of-Funds-FAQs-December-7-2022-Update-1.pdf.
U.S. Department of Education. 2023. Elementary and Secondary School Emergency Relief Fund. Washington, DC: Office of Elementary & Secondary Education. Retrieved October 13, 2023 from https://oese.ed.gov/offices/education-stabilization-fund/elementary-secondary-school-emergency-relief-fund/.
Weick, Karl E. 1976. "Educational Organizations as Loosely Coupled Systems." *Administrative Science Quarterly* 21(1):1-19.
Zimmer, Ron, Gary T. Henry, and Adam Kho. 2017. "The Effects of School Turnaround in Tennessee's Achievement School District and Innovation Zones." *Educational Evaluation and Policy Analysis* 39(4):670-696.

Tables and Figures

Table 1: State Characteristics in 2019 – Pre-Pandemic

Variable	Kansas	Michigan	Oklahoma	Rhode Island
Current Spending per Pupil	11328	12052	9203	17539
Current Spending per Pupil Rank	31	27	47	8
State Funding Fairness	1.48	1.06	1.42	4.59
State Funding Fairness Rank	22	39	26	3
Total Enrollment	497733	1504194	698891	143436
Title I Expenditures per Pupil	200	290	481	446
Percent State Funded	63.8	59.7	49.1	42.8
Percent Local Funded	27.9	32.0	40.2	49.6
Percent Federal Funded	8.2	8.3	10.6	7.6
Percent Conservative Identification	39	33	43	29
Percent Conservative Identification Rank	14	30	11	37
Percent White	75.4	74.7	65.0	71.4
Percent Black	5.7	13.8	7.4	6.1
Percent Latinx	12.2	5.3	11.1	16.3
Unemployment Rate	3.3	4.1	3.1	3.5
Unemployment Rate Rank	20	38	14	25

Sources: Cornman et al. 2021; Baker et al. 2021; Jones 2019; U.S. Census Bureau 2021; U.S. Bureau of Labor Statistics 2023. Conservative identification measured in 2018.

Table 2: District-Level Descriptive Statistics: All States

	All		Pandemic Timing		
Variable	Mean	St Dev	Pre-COVID	Post-COVID	Diff.
Spending/Pupil (in 1,000s of 2025 dollars)					
Current	15.41	5.80	15.02	16.90	*
Instructional	9.50	4.18	9.28	10.34	*
Support Services	5.30	1.95	5.13	5.96	*
Student Support Services	0.84	0.50	0.79	1.02	*
Central Administration Services	0.42	0.29	0.38	0.56	*
Executive Administration	0.22	0.22	0.20	0.27	*
School Administration	0.65	0.24	0.61	0.81	*
Maintenance	1.41	0.58	1.37	1.55	*
Transportation	0.63	0.43	0.63	0.65	*
Food Services	0.58	0.20	0.58	0.58	*
Salaries	8.81	2.80	8.69	9.28	*
Instructional Salaries	5.94	2.11	5.88	6.17	*
Benefits	3.15	1.75	3.05	3.51	*
Capital	1.68	2.58	1.59	2.06	*
Debt Interest	0.50	0.48	0.49	0.51	*
COVID-19 Years	0.21	0.41	0.00	1.00	n/a
% Black	0.15	0.18	0.15	0.14	*
% Latinx	0.25	0.25	0.25	0.28	*
% American Indian	0.01	0.05	0.01	0.01	*
% Asian	0.05	0.08	0.05	0.05	*
% Free/Reduced-Price Lunch	0.47	0.25	0.48	0.41	*
Child Poverty Rate	17.51	9.50	18.16	15.05	*
Enrollment	62127.26	156979.80	63859.18	55523.96	*
Number of Schools	63.31	133.48	64.26	59.70	*
Year	2016.45	4.01	2015.00	2022.00	*
N (District-Years)	185,508		146,353	39,155	

Sources: F-33 Census 2010-2023; NCES CCD 2010-2023; SAIPE 2010-2023. Includes districts in all states, weighted by enrollment. All currency is in thousands of 2025 dollars per pupil.

Pre-COVID includes years 2010-2020; Post-COVID includes years 2021-2023. Difference column indicates significance of two-tailed t-test between pre- and post-COVID means. * $p<0.05$

Table 3: Estimated Change in District Spending with COVID-19: By Category and State

Spending Category	All States	Kansas	Michigan	Oklahoma	Rhode Island
Federal Revenue	1.246***	0.457***	1.380***	1.221***	1.041***
	(0.025)	(0.064)	(0.049)	(0.101)	(0.207)
Current	0.469***	0.675***	1.182***	0.938***	0.653
	(0.041)	(0.113)	(0.070)	(0.117)	(0.405)
Instructional	0.262***	0.390***	0.508***	0.451***	0.200
	(0.027)	(0.081)	(0.039)	(0.053)	(0.214)
Support Services	0.258***	0.280***	0.679***	0.534***	0.515*
	(0.023)	(0.063)	(0.056)	(0.081)	(0.190)
Student Support Services	0.091***	0.062***	0.135***	0.105***	0.098
	(0.008)	(0.016)	(0.028)	(0.018)	(0.061)
Central Administration Services	0.065***	0.046***	0.204***	0.055*	0.001
	(0.005)	(0.013)	(0.013)	(0.021)	(0.022)
Executive Administration	0.011***	0.009	0.011***	0.034***	0.037
	(0.002)	(0.006)	(0.003)	(0.009)	(0.022)
School Administration	0.039***	0.042***	0.060***	0.047***	0.050*
	(0.003)	(0.009)	(0.004)	(0.008)	(0.024)
Maintenance	0.097***	0.072**	0.207***	0.223***	0.222*
	(0.008)	(0.027)	(0.012)	(0.023)	(0.097)
Transportation	-0.032***	-0.002	-0.012	-0.002	0.057
	(0.003)	(0.026)	(0.006)	(0.004)	(0.037)
Food Services	-0.046***	0.003	-0.005	-0.026**	-0.058*
	(0.003)	(0.016)	(0.013)	(0.009)	(0.024)
Salaries	0.310***	0.312***	0.664***	0.491***	0.134
	(0.021)	(0.070)	(0.044)	(0.060)	(0.152)
Instructional Salaries	0.209***	0.192***	0.342***	0.299***	0.046
	(0.012)	(0.052)	(0.024)	(0.028)	(0.124)
Benefits	-0.016	0.007	0.216***	0.084***	-0.017
	(0.011)	(0.019)	(0.028)	(0.025)	(0.066)
Capital	0.103**	0.346	0.616***	0.019	0.197
	(0.039)	(0.406)	(0.145)	(0.087)	(0.128)
Debt Interest	0.030***	-0.068*	0.036	0.047*	-0.020
	(0.005)	(0.027)	(0.023)	(0.021)	(0.052)
N	169602	3711	7024	6643	468

Sources: F-33 Census 2010-2023; NCES CCD 2010-2023; SAIPE 2010-2023. First column includes districts in all states. Other columns limited to districts in the specified states. All currency is in thousands of 2025 dollars per pupil.

Coefficients estimate the change in spending with COVID-19 (years 2021-2023) in separate models predicting each spending category. All models are weighted by enrollment, include district fixed effects, and control for year, child poverty rate, number of schools, enrollment (log), and percent of students who are free/reduced-price lunch eligible, Black, Latinx, Amer Indian, and Asian.

Robust standard errors adjusted for district-level clustering in parentheses. * p<0.05, ** p<0.01, *** p<0.001

Shaded cells indicate z-test of differences between coefficients is significant at p<0.05 (Clogg 1995).

Table 4: Estimated Change in District Spending with COVID-19: By Category and Context

Spending Category	Low Poverty	High Poverty	Low Federal	High Federal	Low State	High State
Federal Revenue	1.016***	1.570***	1.015***	1.479***	1.106***	1.438***
	(0.014)	(0.048)	(0.014)	(0.044)	(0.022)	(0.045)
Current	0.320***	0.629***	0.293***	0.595***	0.331***	0.587***
	(0.038)	(0.082)	(0.038)	(0.071)	(0.055)	(0.050)
Instructional	0.170***	0.358***	0.169***	0.322***	0.168***	0.351***
	(0.024)	(0.058)	(0.025)	(0.050)	(0.040)	(0.028)
Support Services	0.175***	0.359***	0.148***	0.355***	0.209***	0.294***
	(0.018)	(0.044)	(0.019)	(0.038)	(0.024)	(0.038)
Student Support Services	0.066***	0.121***	0.059***	0.118***	0.073***	0.106***
	(0.005)	(0.016)	(0.005)	(0.014)	(0.007)	(0.016)
Central Administration Services	0.055***	0.081***	0.054***	0.076***	0.057***	0.076***
	(0.004)	(0.011)	(0.004)	(0.010)	(0.006)	(0.009)
Executive Administration	0.013***	0.008	0.011***	0.011**	0.010**	0.011***
	(0.002)	(0.005)	(0.003)	(0.003)	(0.004)	(0.002)
School Administration	0.034***	0.044***	0.032***	0.046***	0.031***	0.046***
	(0.002)	(0.007)	(0.003)	(0.006)	(0.004)	(0.004)
Maintenance	0.085***	0.111***	0.078***	0.113***	0.096***	0.089***
	(0.009)	(0.014)	(0.010)	(0.012)	(0.011)	(0.008)
Transportation	-0.025***	-0.042***	-0.028***	-0.038***	-0.033***	-0.032***
	(0.002)	(0.006)	(0.003)	(0.005)	(0.004)	(0.005)
Food Services	-0.022***	-0.080***	-0.019***	-0.075***	-0.041***	-0.051***
	(0.004)	(0.005)	(0.004)	(0.005)	(0.005)	(0.004)
Salaries	0.221***	0.403***	0.209***	0.387***	0.267***	0.323***
	(0.024)	(0.036)	(0.023)	(0.034)	(0.028)	(0.027)
Instructional Salaries	0.167***	0.252***	0.167***	0.238***	0.186***	0.218***
	(0.015)	(0.022)	(0.015)	(0.021)	(0.018)	(0.015)
Benefits	-0.034*	-0.006	-0.055***	0.008	-0.045**	0.007
	(0.013)	(0.022)	(0.013)	(0.020)	(0.015)	(0.016)
Capital	0.045	0.186**	-0.006	0.218***	0.042	0.183***
	(0.050)	(0.062)	(0.052)	(0.058)	(0.055)	(0.051)
Debt Interest	0.038***	0.020*	0.038***	0.021**	0.030***	0.026***
	(0.007)	(0.008)	(0.008)	(0.007)	(0.008)	(0.007)
N	83808	83240	83976	83736	84089	83623

Sources: F-33 Census 2010-2023; NCES CCD 2010-2023; SAIPE 2010-2023; CWIFT Cornman et al. 2021b. All currency is in thousands of 2025 dollars per pupil. Coefficients estimate the change in spending with COVID-19 (years 2021-2023) in separate models predicting each spending category. All models are weighted by enrollment, include district fixed effects, and control for year, child poverty rate, number of schools, enrollment (log), and percent of students who are free/reduced-price lunch eligible, Black, Latinx, Amer Indian, and Asian.

Robust standard errors adjusted for district-level clustering in parentheses. * p<0.05, ** p<0.01, *** p<0.001

Columns indicate sample is limited to districts above/below 2019 median child poverty rate, reliance on federal, and state funds. Shaded cells indicate z-test of differences between coefficients is significant at p<0.05 (Clogg 1995).

Table 5: Estimated Change in District Spending with COVID-19: By Category and Context, Scaled by Estimated Increase in Federal Revenue

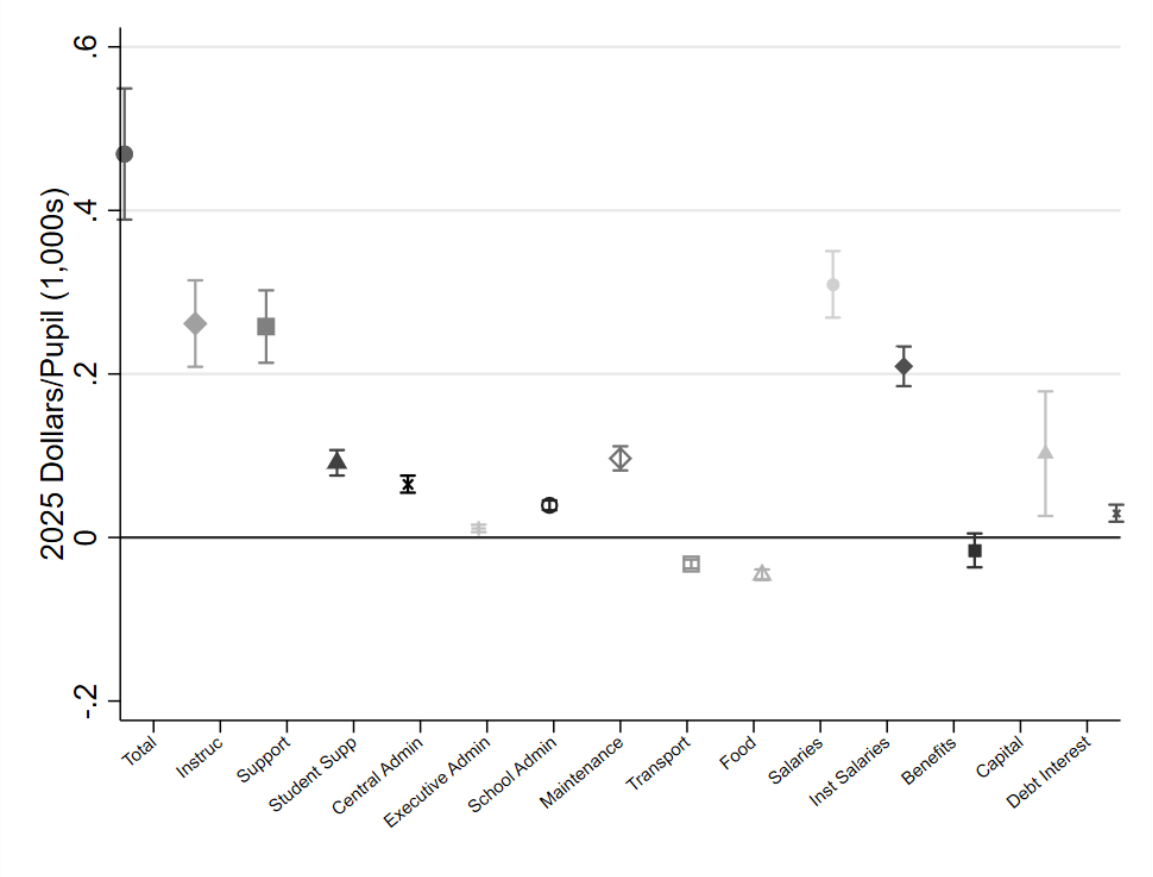
	All States - Scaled by Estimated Federal Revenue Increase					
Spending Category	Low Poverty	High Poverty	Low Federal	High Federal	Low State	High State
Current	0.315	0.401	0.289	0.402	0.299	0.408
	(0.038)	(0.082)	(0.038)	(0.071)	(0.055)	(0.050)
Instructional	0.167	0.228	0.167	0.218	0.152	0.244
	(0.024)	(0.058)	(0.025)	(0.050)	(0.040)	(0.028)
Support Services	0.172	0.229	0.146	0.240	0.189	0.204
	(0.018)	(0.044)	(0.019)	(0.038)	(0.024)	(0.038)
Student Support Services	0.065	0.077	0.058	0.080	0.066	0.074
	(0.005)	(0.016)	(0.005)	(0.014)	(0.007)	(0.016)
Central Administration Services	0.054	0.052	0.053	0.051	0.052	0.053
	(0.004)	(0.011)	(0.004)	(0.010)	(0.006)	(0.009)
Executive Administration	0.013	0.005	0.011	0.007	0.009	0.008
	(0.002)	(0.005)	(0.003)	(0.003)	(0.004)	(0.002)
School Administration	0.033	0.028	0.032	0.031	0.028	0.032
	(0.002)	(0.007)	(0.003)	(0.006)	(0.004)	(0.004)
Maintenance	0.084	0.071	0.077	0.076	0.087	0.062
	(0.009)	(0.014)	(0.010)	(0.012)	(0.011)	(0.008)
Transportation	-0.025	-0.027	-0.028	-0.026	-0.030	-0.022
	(0.002)	(0.006)	(0.003)	(0.005)	(0.004)	(0.005)
Food Services	-0.022	-0.051	-0.019	-0.051	-0.037	-0.035
	(0.004)	(0.005)	(0.004)	(0.005)	(0.005)	(0.004)
Salaries	0.218	0.257	0.206	0.262	0.241	0.225
	(0.024)	(0.036)	(0.023)	(0.034)	(0.028)	(0.027)
Instructional Salaries	0.164	0.161	0.165	0.161	0.168	0.152
	(0.015)	(0.022)	(0.015)	(0.021)	(0.018)	(0.015)
Benefits	-0.033	-0.004	-0.054	0.005	-0.041	0.005
	(0.013)	(0.022)	(0.013)	(0.020)	(0.015)	(0.016)
Capital	0.044	0.118	-0.006	0.147	0.038	0.127
	(0.050)	(0.062)	(0.052)	(0.058)	(0.055)	(0.051)
Debt Interest	0.037	0.013	0.037	0.014	0.027	0.018
	(0.007)	(0.008)	(0.008)	(0.007)	(0.008)	(0.007)
N	83808	83240	83976	83736	84089	83623

Samples and models are the same as those in Table 4. All coefficients are divided by the estimated increase in federal revenue/pupil shown in Table 4.

Robust standard errors adjusted for district-level clustering in parentheses. * p<0.05, ** p<0.01, *** p<0.001

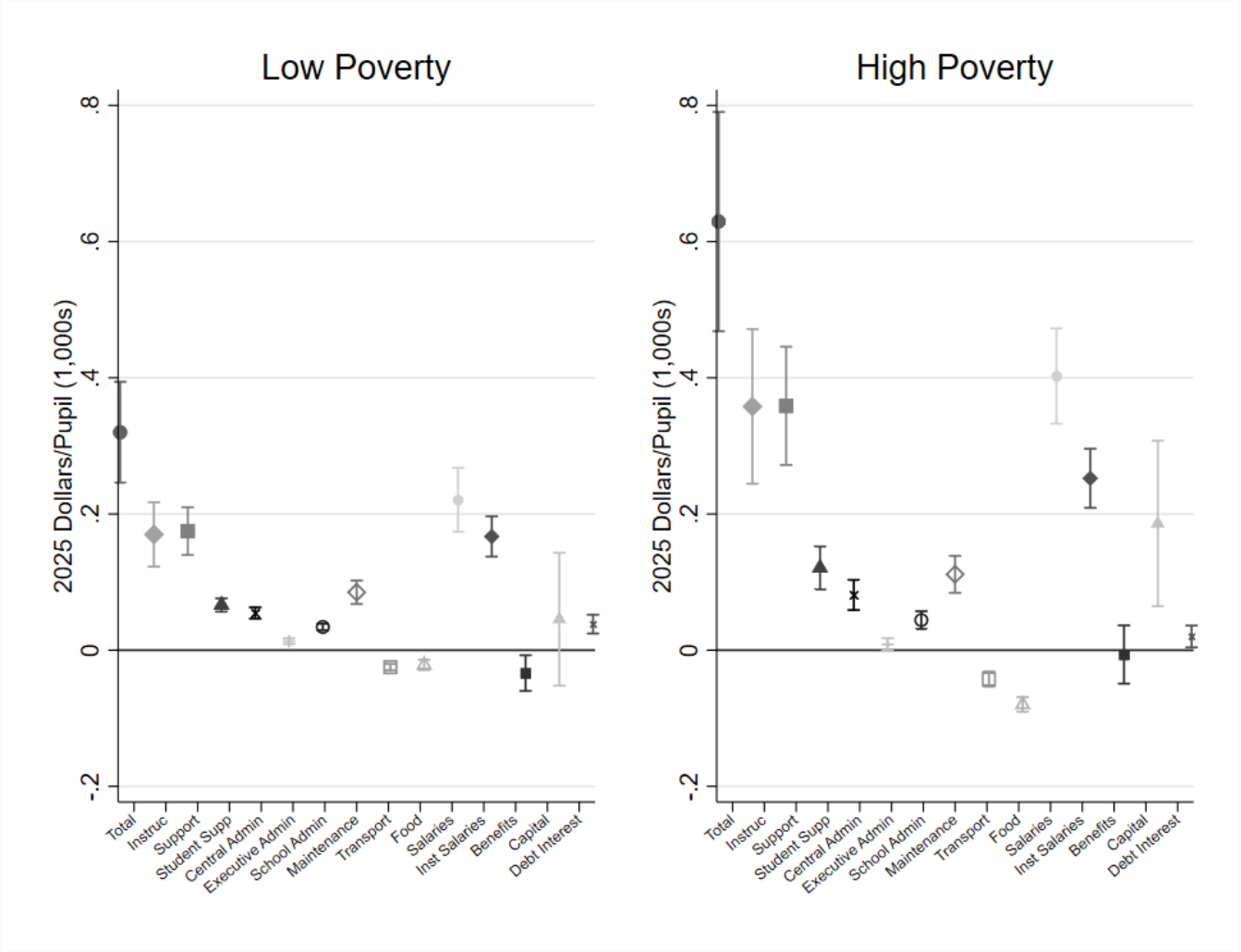
Columns indicate sample is limited to districts above/below 2019 median child poverty rate, reliance on federal and state funds. Shaded cells indicate z-test of differences between coefficients is significant at p<0.05 (Clogg 1995).

Figure 1: Estimated Change in District Spending with COVID-19 by Spending Category



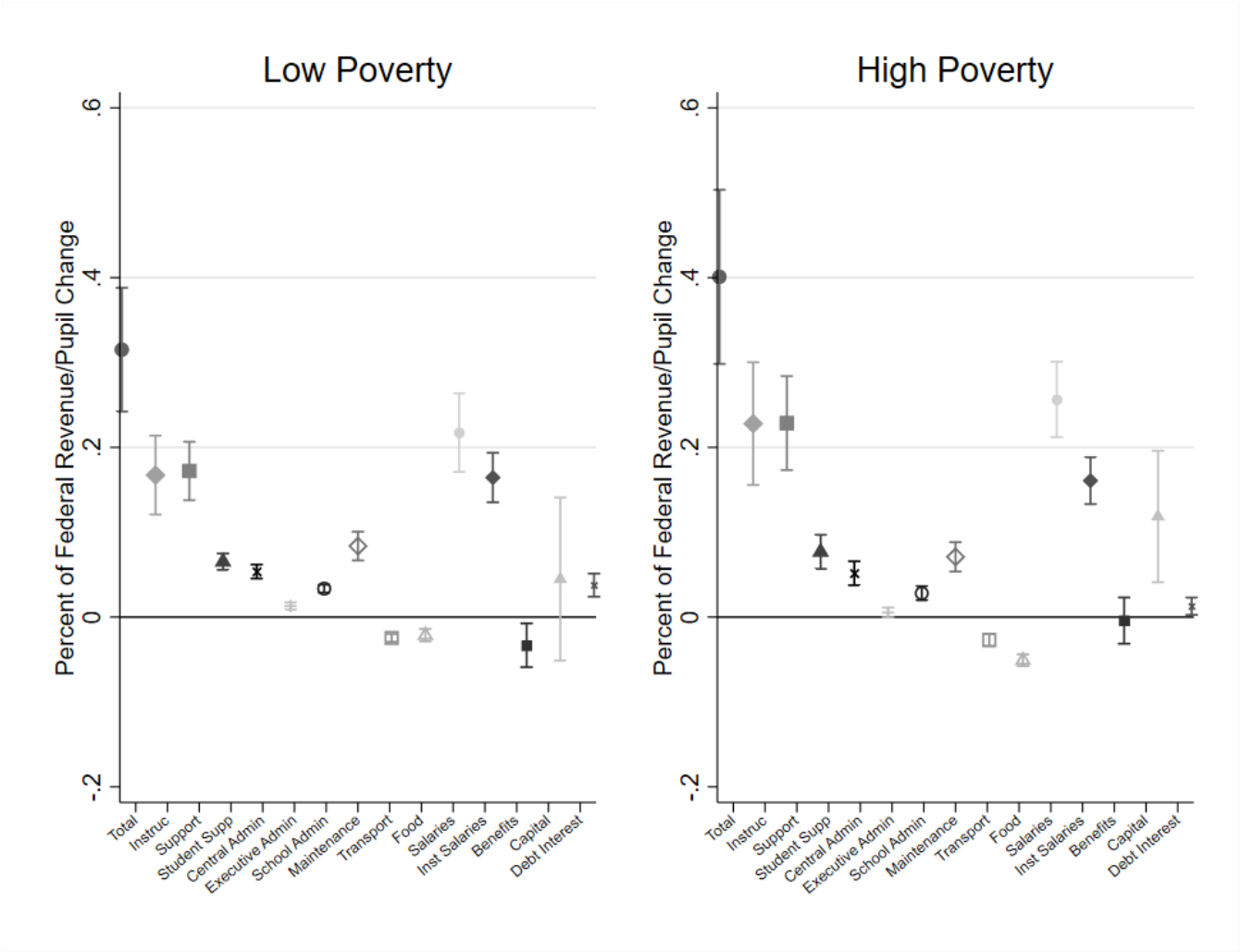
Source: Table 3 column 1.

Figure 2: Estimated Change in District Spending with COVID-19 by Child Poverty Rate



Source: Table 4 columns 1-2.

Figure 3: Estimated Change in District Spending with COVID-19 by Child Poverty Rate: Scaled by Federal Revenue Increase



Source: Table 5 columns 1-2.