Annenberg Institute
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EdWorkingPaper No. 24-1048

Framing the pandemic: Tracking educational problem formulation, Spring 2020-Fall 2021

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VERSION: September 2024

Suggested citation: Domina, Thurston, Elinor Williams, Cole Smith, Matthew G. Springer, Peyton Powers, and Ethan Hutt. (2024). Framing the pandemic: Tracking educational problem formulation, Spring 2020-Fall 2021. (EdWorkingPaper: 24-1048). Retrieved from Annenberg Institute at Brown University: https://doi.org/10.26300/mf4z-5094

Framing the Pandemic:

Tracking Educational Problem Formulation, Spring 2020-Fall 2021

We use data from the applications North Carolina public school districts and charter schools submitted for Elementary and Secondary School Emergency Relief (ESSER) to investigate the sense that educational leaders made of the pandemic as it unfolded. LEAs understood the pandemic as a multifaceted problem. Nearly all applications addressed four problems: (1) public health, (2) academics and learning loss, (3) student and community well-being, and (4) instructional access. However, we document considerable variation in problem emphasis over time, across LEAs, and across organizational sector. The pandemic was not a single organizational problem, but many simultaneous problems posed in varying and shifting combinations. We argue this multi-faceted organizational view should be a starting point for assessments of LEAs' pandemic response.

When the circumstances in which organizations operate change, organizational actors take stock of the shifting landscape and develop new practices and strategies, asking "What's the story here?," "What should we do now?," and "Is it working?" (Weick, Sutcliffe, and Obstfeld, 2005). This collective "sensemaking" process shapes organizational behavior and helps to explain why different organizations respond differently to shared contextual circumstances (Maitlis & Christianson, 2014; Weick, 1995; Weick, Sutcliffe & Obstfeld, 2005).

In this paper, we examine local and temporal variation in educational leaders' sensemaking around the COVID-19 pandemic between spring 2020 and spring 2021. During the pandemic, leaders navigated complex challenges with limited information and inconsistent guidance. In addition to raising unprecedented questions around instructional delivery and student engagement; the pandemic compelled leaders to engage with public health, student and community needs, staffing and human capital challenges, and local politics (Green, 2020; Sprunt & Turner, 2020; Superville, 2020; Tingley, 2020).

Our analyses provide a unique opportunity to observe hundreds of organizations iteratively making sense of a common organizational challenge over multiple time points. Since sensemaking is a contextually-bound and discursive process, sensemaking theory suggests that collective understandings of circumstances vary both within organizations over time and across organizations. To date, however, a lack of large-scale comparative data available on organizational sensemaking has limited the field's capacity to observe this variation (Diehl & Golann, 2022).

We use data from applications North Carolina public school districts and charter schools submitted for Elementary and Secondary School Emergency Relief (ESSER) to investigate the sense that educational leaders made of the pandemic as it unfolded. Congress authorized the first

wave of ESSER funds shortly after the pandemic's outbreak, as health professionals scrambled to understand this novel virus and educators transitioned to remote-only instruction. Two more rounds of ESSER funds followed. Across these three rounds, Congress allocated nearly $190 billion, a figure that represents 22 percent of total public expenditures on K-12 education in a typical year.[1] Congress delegated the administration of ESSER funds to state education agencies and granted local education agencies (LEAs) broad discretion over their use. North Carolina's Department of Public Instruction (DPI) required LEAs (districts and charter schools) to complete online applications to access their share of funds for each ESSER wave. In structured responses of between 10 and 2,122 words of text, LEA leaders described the challenges the pandemic created and explained how their planned expenditures would address these challenges.

We see these applications as snapshots of LEA pandemic sensemaking. Our corpus of 648 North Carolina ESSER I, II, and III applications allows us to: (1) describe the ways educational leaders made sense of the pandemic as a set of organizational problems; (2) document variation in pandemic sensemaking over time and across organizations; and (3) test the association between organizational and contextual factors—including student demographics, local politics, and COVID prevalence—and LEAs' focus on particular problem formulations.

Our analyses indicate that LEAs understood the pandemic as a multifaceted problem. Nearly all ESSER applications addressed four problems: (1) public health, (2) academics and learning loss, (3) student and community well-being, and (4) instructional access. However, we document considerable variation in problem emphasis over time and across LEAs. Public health

[1] In 2019-20, total expenditures for K-12 public schools in the U.S. were $870 billion according to the National Center for Education Statistics (see NCES Fast Facts: Expenditures; https://nces.ed.gov/fastfacts/display.asp?id=66). The three waves of ESSER funds totaled $189.5 billion ($13.23 billion for ESSER I, $54.31 billion for ESSER II, and $121.97 billion for ESSER III, according to the U.S. Department of Education's portal for the Education Stabilization Fund; https://covid-relief-data.ed.gov).

and instructional access concerns occupied a majority of the text in ESSER I applications, while concerns about academics and learning loss dominate ESSER II and III applications.

Even amidst this dramatic temporal shift, considerable variation exists across LEAs in pandemic problem formulation. While the median ESSER application dedicates 38 percent of relevant text to the discussion of academic and learning loss; nearly 20 percent of ESSER applications dedicate 10 percent or less of relevant text to this problem formulation. We find pronounced differences in pandemic problem formulation across organizational sectors. In all three ESSER waves, charter schools emphasized academic and learning loss problems to a greater degree than traditional public schools. These findings highlight that the pandemic was not a single organizational problem, but many simultaneous problems posed in varying and shifting combinations. We argue that this multi-faceted organizational view should be a starting point of any discussion or assessment of LEAs' pandemic response. Before we ask how well an LEA responded to the pandemic, we must first know what problems an LEA thought the pandemic required them to respond to.

Sensemaking as a Source of Organizational Variation

Sensemaking theory has proven particularly influential in the study of educational policy implementation (e.g., Coburn 2006; Spillane 2004). While policy-makers pursue broad goals by setting new expectations, providing new resources, or realigning incentives, scholars have documented many instances in which a single policy's impacts on teaching and learning vary widely across contexts. Sensemaking helps to explain this heterogeneity by drawing attention to the processes of social cognition that occur when organizational actors update their expectations and behaviors in the face of changing conditions, expectations, or demands. Sensemaking takes

place in the interactions and negotiations among organizational actors. As such, sensemaking processes and outcomes depend upon context-specific circumstances, relationships, values, and expectations (Coburn 2006).

The existing literature on sensemaking in educational policy implementation documents the discursive processes that yield organizational variation in sensemaking (Bridwell-Mitchell & Sherer 2017). Spillane (2004), for example, describes sensemaking around new instructional standards across nine Michigan school districts, observing so much variation that the "policy might best be thought about as plural rather than singular" (p. 177). Similarly designed studies demonstrate variation in sensemaking around the use of data in schools (Bertrand and Marsh 2015), implementation of principal evaluation systems (Donaldson et al. 2021), and understandings school-based racial and socioeconomic inequality (Cobb 2017).

While these studies illustrate the ways context-specific social cognition processes yield disparate understandings of a single policy, they are not designed to systematically document variation in sensemaking over time and across organizations. As such, we know little about how much heterogeneity exists in the sense that educational organizations make of shared challenges or the contextual and organizational factors that account for this variation (Diehl & Golann 2022). Put differently, although there is rich evidence of variation in key organizational practices between charter schools and traditional public school sectors (Dorner, Spillane, & Pustejovsky 2011), as well as variation associated with student demographics (Bertrand & Marsh 2015), resource availability (Dolmans et al. 2014), and local politics (McDonnell & Weatherford 2016), limited evidence exists regarding sensemaking's role in the producing that variation.

COVID, ESSER, and Sensemaking in a Shifting Educational Landscape

The applications that LEAs prepared to access ESSER funds provide a unique opportunity to observe variation in sensemaking across organizations and over time. COVID-19 presented educational leaders with an unprecedented and multidimensional set of challenges. It forced educational leaders to make high-stakes decisions even as public health researchers scrambled to understand basic facts about viral transmission and risks and popular discourse around the pandemic grew increasingly polarized and hostile. As such, we anticipate that the sense that educational leaders made of the pandemic was multifaceted, time-varying, and organizationally heterogeneous.

LEA officials completed applications in which they reflected on pandemic challenges and the ways ESSER funds could be employed to address those challenges at three time points:

- **ESSER I**, authorized by Congress on March 20, 2020 provided $13.2 billion in supplementary K-12 school funding to address the challenges associated with the abrupt shift to remote-only schooling. Lacking strong evidence on best practices for remote instruction or for supporting families and communities in a pandemic, the federal government issued few guidelines regarding the use of these emergency funds and told LEAs it would "not micromanage how you spend these funds" and encouraged them to "rethink the way students access education" (e.g., Sprunt & Turner 2020; Tingley 2020; DeVos, 2020).
- **ESSER II**, authorized on December 27, 2020, provided $54.3 billion in additional federal emergency education funds as schools planned for a return to in-person learning. As with ESSER I, Congress granted local education agencies broad discretion over ESSER II spending. However, by the time ESSER II was authorized, the political discourse around pandemic schooling had become far more contested as debates about the effectiveness of remote instruction and the safety of in-person instruction took center stage (Aldrich 2020; Ujifusa 2021).
- **ESSER III**, authorized on March 11, 2021, aimed to provide schools with the resources to facilitate a longer-term pandemic recovery for the nation's school system. By this time, most U.S. schools—and all North Carolina public schools—had made at least a partial return to in-person schooling. The largest of the three rounds of ESSER funding, ESSER III provided $122.6 Billion for K-12 schools, and set a seven-year timeline for the expenditure of these funds.[2] Like ESSER I and II, ESSER

[2] ESSER III funds are to be obligated by September 30, 2024 for services rendered by September 30, 2028.

III funds were allocated with few stipulations on expenditures except a requirement that LEAs put 20 percent of funds toward addressing "learning loss."

Data

Our analyses address the following research questions:

1. What key problem formulations emerged from North Carolina LEAs' pandemic sensemaking?

2. To what extent do pandemic problem framings vary across ESSER waves and across LEAs?

3. To what extent does variation in pandemic problem framing correlate with variation in organizational context (e.g. local health, economic, educational, and political circumstances)?

We use data gathered from applications submitted by North Carolina LEAs for each of the three ESSER funding waves to answer these questions. Our analytic sample, described in Table 1, consists of 114 traditional public school districts and 102 charter schools in North Carolina that submitted applications for all 3 waves of ESSER funding.[3, 4] We focus our analysis on responses to prompts that guide administrators to describe their districts' needs, the data and processes they used to identify these needs, and the rationales behind their planned expenditures.[5, 6] To consider the links between organizational contexts and pandemic problem

[3] Northampton County Schools' ESSER 2 application was not in the compiled public dataset for ESSER 2 (funding application CRRSA-ESSERII PRC 171) and is therefore not in the analytic sample.

[4] There are 221 charter schools in North Carolina. We have 102 charters in our analytic sample because many charter schools did not submit applications for all three ESSER waves. We search for every charter listed in the Institute of Education Science's Common Core of Data on the NCDPI website and found that many charters did not have ESSER I applications. For ESSER II and ESSER III, we batch-downloaded all available applications for PRC 171, PRC 172, PRC 181, and PRC 182 (ESSER II and III main and supplemental grants) directly from NCDPI. Table A1 shows how NC charters in our sample compare to other charters in the state. We show differences between the charters in and out of our sample in Table A3.1.

[5] We note that although Congress authorized ESSER II four months before authorizing ESSER III, applications for these two rounds of funding were due to DPI on the same day. Even so, the waves had different requirements for spending (e.g. ESSER III's requirement that 20 percent of funds be spent on learning loss) and points of emphasis (e.g. ESSER II directed LEA attention to summer school).

[6] The analytic sample also contains several identical or near-identical responses. We preserve these because they reflect the actual applications and, by extension, problem framings PSUs focused on, or the organizational structure of the PSU. We offer two justifications for preserving identical responses: 1) it is indicative of the PSU's operations

formulations, we supplement these text data with PSU- and county-level data drawn from a range of sources, including the NC Public Schools Statistical Profile, the NC DPI's Federal Reporting of Child Counts, the National Center for Education Statistics' Local Education Agency Finance Survey, the Johns Hopkins COVID-19 Data Repository, the North Carolina Department of Elections, and the U.S. Census Bureau's 2020 Decennial Census. Details about these data sources are available in Appendix 1.

TABLE 1 ABOUT HERE

Analytic Methods

To answer our first research question, we systemically read and inductively coded each ESSER application in our sample. All members of our team first read a sample of applications to identify key constructs. Based on our discussion of that sample, we developed a coding scheme that captured the data LEAs referred to in their applications, the challenges they described, and the initiatives that they planned to implement with ESSER resources (coding scheme shown in Table A3.2). Multiple coders read and coded each application based on this coding scheme. Throughout this coding process, we were struck by LEAs' thoughtful and thorough discussions of their needs, priorities, and plans related to COVID. Based on this qualitative coding process, we noted four key pandemic problem formulation themes that appear in nearly all applications: (1) public health, (2) access to instruction, (3) student and community well-being, and (4) academics and learning loss.

during the pandemic (example: charter networks that submitted similar or identical applications for multiple schools, which could indicate an operator doubling down on their pandemic strategy for all their schools); 2) reflected the same set of needs (example: some PSUs submitted identical or near-identical applications for ESSER 2 and 3, which were due to DPI on the same day).

While it was clear to us qualitatively that these four themes recurred to varying degrees across applications, our qualitative coding approach is not well suited for describing this cross-application variation in *emphasis*. Therefore, building on recent advances in the use of text mining in the social sciences (e.g., Diehl, 2022; Fischer-Preßler, Schwemmer, and Fischbach, 2019; LiCausi & McFarland, 2022; Schwemmer & Jungkunz, 2019), we use structural topic modeling (STM) to quantify the variation we identified in problem formulation emphasis and elaboration across ESSER applications.[7] The STM algorithm uses the prevalence of common words in each document of a corpus and their likelihood of co-occuring to identify a predetermined number of topics (*k*) and quantify their prevalence in each of the corpus's documents. While human coders struggle to assess degrees of emphasis across hundreds of documents, the prevalence measure from STM describes a given application's focus on a certain topic. We provide additional details on our process of preparing the ESSER application data for STM and the STM analysis itself in Appendix 2.

TABLE 2 ABOUT HERE

Table 2 provides an overview of the STM topics we use to measure the prevalence of the four problem formulations in LEAs' ESSER applications. We report the topics that contribute to each problem formulation, the five words most closely associated with each topic (Bischof & Airoldi, 2012), and each topic's prevalence across the full corpus.[8] Four of the 16 topics identified in the STM analysis relate to PSU planning processes. Because our research questions center on how PSUs conceived of and emphasized different problems during the pandemic, we omit these planning-related topics from the analyses to follow.

[7] For our STM analysis, we use the `stm` package in R (Roberts et al., 2019).
[8] We also include word clouds that show additional prevalent words in each topic in Figure A3.1.

The remaining 12 topics relate directly to how PSUs conceived of problems that emerged from or were exacerbated by the pandemic. Using prevalence and frequent and exclusive (FREX) words and text excerpts highly associated with each topic, we group these relevant topics into the four problem formulations we identified as we qualitatively coded ESSER applications.[9] We sum prevalence values for topics within each problem formulation in each application and calculate the proportion associated with each of our four problem formulation themes (excluding discarded topics). We refer to these sums as problem formulation theme proportions.

To answer our second research question, we document mean changes in these four problem formulation theme proportions across the three waves of ESSER applications and describe the variation in theme proportions across LEAs within funding waves.

To answer our third research question, we document associations between organizational or contextual factors and the proportion of LEA ESSER applications devoted to the four key problem formulations. In addition to estimating bivariate associations between LEA contextual factors and theme proportions, we estimate multiple regression models cross-sectionally using data from each round of ESSER funding. These models take the following general form:

$$PF = \beta_0 + \beta_1 Ch + \beta_2 Enr + \beta_3 pBlack/Hisp + \beta_4 IEP + \beta_5 PPRev + \beta_6 COVID + \beta_7 Dem + \beta_8 Rural + \varepsilon \quad \textit{Eq. 1}$$

The outcome in this model, PF, measures a LEAs's degree of emphasis on one of our four problem formulations within an ESSER wave. The LEA-level variables in this model are charter status (Ch); enrollment (Enr); percent Black and Hispanic students ($pBlack/Hisp$); percent students with IEPs (IEP); and pre-pandemic, per-pupil local revenues ($PPRev$). County-level

[9] FREX words, described in Appendix 2, are words that appear frequently within a topic and are also exclusive to that topic.

variables include COVID case rates ($COVID$); Democratic party vote share in NC's 2016 gubernatorial race (Dem); and the percent of the county population that lives in rural areas ($Rural$). To ease interpretation, all variables in these models except charter status are z-score standardized. The time-varying variables—problem formulation theme proportions, enrollment, percent Black and Hispanic students, students with IEPs, and COVID case rates—are standardized within COVID application wave.

Results

Research Question 1: What key problem formulations emerged from North Carolina LEAs' pandemic sensemaking?

Four problem formulations appear in nearly all of the ESSER applications we reviewed:

1. Public health and pandemic mitigation. LEAs wrote extensively about the need to protect students' and employees' health: more than a quarter of the relevant ESSER application text addresses this problem.[10] For example, Craven County Schools' ESSER I application describes having insufficient supplies to keep students and staff safe:

> *…there are insufficient supplies to properly sanitize the school in order to keep students and staff safe. The school does not have enough PPE to protect students and staff.*

2. Access to instruction. From the start of remote schooling, the pandemic forced educators to develop and implement a range of new strategies to provide students with access to instruction. More than 20 percent of relevant ESSER application text addresses this problem, through discussions about access to devices and internet connectivity, instructional staffing,

[10] By "relevant text," we mean the proportion of the corpus with the discarded topics omitted.

curricular development, and teacher training. In a passage that is typical of discussions of instructional access, Mallard Creek STEM Academy's ESSER I application explains:

> *The school currently does not have enough student devices to ensure all EDS students have equal access to the LMS and to work towards a 1:1 platform during remote learning. During the first phase of remote learning, the school distributed as many student devices as possible and will need to replace and supplement those student devices to ensure continuity of learning.... MCSA expects to serve 950 students next year and must increase the number of devices on hand to support all learners.*

3. Student and family wellbeing. At the same time, ESSER applications signalled broader concerns about the pandemic-induced unemployment, poverty, access to services, and other threats to student and family wellbeing. Seventeen percent of relevant application text addresses this problem. DC Virgo Preparatory Academy's ESSER I application, for example, notes that:

> *...During the school closure, teachers and the school social workers have reported increases in the requests from families to support student social emotional needs and potential anxiety. We anticipate additional need for services when school re-opens. During the school closure, students classified as special needs did not effectively participate in additional services required in the areas of occupational therapy, speech, and/or physical therapy.*

4. Academics and learning loss. More than 30 percent of the relevant text in ESSER applications addresses concerns about student academic growth and pandemic learning loss. LEA discussions of this problem often cite data from progress monitoring tools and online programs like iReady to highlight students' lagging achievement. For example, Classical Charter Schools of Leland's ESSER III application reads:

> *...the disruptions that came due the COVID pandemic played a negative effect overall in academic achievement…when comparing [beginning of year] to [middle of year] benchmark tests students in grades 1st-5th scored lower on the MOY benchmark in Reading as*

> *compared to the BOY. All grade levels saw a decline in Math performance when comparing pass rates from BOY to MOY tests.*

Other invocations of the learning loss problem frame focus attention on student subgroups and achievement gaps. For example, Mallard Creek STEM Academy's ESSER III application raises alarms about "*increased achievement gaps year over year for our most at-risk students*," highlighting concerns for economically disadvantaged students, students with learning disabilities, and English Language Learners.

We note that nearly all applications include references to all four problem formulations, though to varying degrees. We use our STM analyses to quantify the relative focus on these four problem formulation themes in ESSER applications.

Research Question 2: To what extent do pandemic problem framings vary across ESSER waves and across PSUs?

Figure 1 illustrates changes in the mean theme proportion for the four pandemic problem formulations across the three waves of ESSER applications. As this figure illustrates, the sense that LEAs made of the pandemic shifted dramatically between spring of 2020, when LEAs submitted their ESSER I applications, and the spring of 2021, when they submitted their ESSER II and III applications. LEAs dedicated an average of 38 percent of relevant ESSER I text to the public health problem formulation and 30 percent to the instructional access problem formulation, which includes concerns about access to internet and devices during online learning. Well-being and academic/learning loss problem formulations accounted for just 18 percent and 14 percent of ESSER I applications, respectively. However, the academic and learning loss problem formulation predominated ESSER II and III applications, accounting for 52 percent of relevant text in both waves. This shift likely reflects changing understandings of the pandemic's

health risks, the movement back toward in-person instruction, and a rising national conversation around pandemic learning loss—as well as federal stipulations that at 20 percent of ESSER III funds be used to address the pandemic's consequences for youth achievement.[11]

FIGURE 1 ABOUT HERE

As pronounced as these temporal shifts are, they conceal a remarkable degree of variation in the ways LEAs made sense of the pandemic in their ESSER I, II, and III applications. Figures 2a-2c illustrate the prevalence of text related to the four pandemic problem formulations during each ESSER wave. Consistent with our qualitative coding, these figures demonstrate that all LEAs addressed all four of the pandemic problem formulations in each of their ESSER applications, which speaks to the complexity of challenges that the pandemic presented to educators. LEAs varied substantially, however, in the amount of text and attention they dedicated to each problem formulation. Distributive plots of the four problem formulation theme proportions in each wave (shown in Figure A3.1) show wide distributions—academic problem formulations in ESSER II and III and public health in ESSER I especially—and even the narrower distributions have long tails, showing that the degree of emphasis different LEAs placed on each problem formulation varied widely.

FIGURES 2a-2c ABOUT HERE

Research Question 3: To what extent does PSU variation in pandemic problem framing correlate with variation in organizational context?

[11] We attribute the similarity between our theme proportion estimates to the fact that these were due to NC DPI on the same day, and PSUs therefore had similar objectives for their ESSER II and III funds. We see several instances of identical or near-identical responses in PSUs' ESSER II and III applications. We also see examples of charter schools operated by the same management organization with identical or near-identical application responses. We preserve these because they reflect the PSUs' priorities at the time, their organizational structure, and/or how they interpreted the application prompts.

Figures 3a-d illustrate associations between several contextual factors and the four pandemic problem formulation theme proportions in LEAs' ESSER applications.[12] The figure's four panels address the four key problem formulations in turn. The first two coefficients in each panel represent bivariate and conditional associations between LEA characteristics and the relative proportion of relevant ESSER I application text the LEA dedicated to each problem formulation. The third and fourth coefficients in each panel represent the same bivariate and conditional associations for ESSER III. The fifth coefficient is the estimate for an additional control in the ESSER III model for the relative proportion of ESSER I text the LEA dedicated to the problem formulation in question.

FIGURE 3 ABOUT HERE

Figure 3a considers factors that correlate with the degree to which LEAs emphasize **public health** problems. Charter schools dedicated nearly 0.9 standard deviations less space in ESSER I applications to the public health problem formulation compared to traditional public schools. This gap remains large and statistically significant after controlling for LEA demographics, resources, and local context. Charters continue to dedicate 0.7 standard deviations less emphasis to the public health problem formulation in ESSER III applications, though this difference is no longer significant net of controls.

While this figure indicates that several other factors correlate with problem formulation emphasis in ESSER I applications, none of these correlations are significant net of controls. Interestingly, Figure 3a also provides some indication that the emphasis on public health in ESSER III applications varies positively with local COVID case counts. Although this

[12] Tables A.3-6 give point estimates that correspond to these figures. Coefficients for the relative proportion of ESSER I text the LEA dedicated to the problem formulation in question are the lagged coefficients (the fifth coefficient in each row, shown in grey) are in Table A3.7 in rows 9-12.

relationship is not statistically different from zero in either the bivariate or multivariate models, it does suggest that local public health conditions may have informed LEAs' ongoing sensemaking as the pandemic changed and developed around them.

Figure 3b reports on the contextual factors that relate to LEAs' focus on the **access to instruction** problem formulation. While this figure indicates that at the pandemic's outset, charter leaders' sensemaking emphasized access to instruction to a greater degree than traditional public schools, this association is not robust to controls and reversed in ESSER III applications.

Figure 3c indicates that emphasis on the student and community **well-being** problem formulation in both ESSER I and III applications is largely unrelated to LEA and community characteristics. Interestingly, however, the final coefficient plotted in this figure, which represents the relationship between an LEA's relative focus on the well-being problem formulation in ESSER I and its focus on well-being problem formulation in ESSER III, points to a notable degree of path dependence in this problem formulation. LEAs that were a standard deviation above the mean in ESSER I well-being problem formulation emphasis were, on average, 0.2 standard deviations above the mean in emphasis on well-being in ESSER III.

Finally, Figure 3d considers the correlates of the **academic and learning loss** problem formulation. The models show that charters dedicated 0.7 standard deviations more emphasis to academics and learning loss in their ESSER I applications, and 0.6 standard deviations more in their ESSER III applications, compared to traditional public school districts. While this difference remains statistically significantly different from zero with the inclusion of controls in ESSER I, it is no longer significant in the ESSER III conditional model.

Discussion and Conclusion

Congress responded to the COVID pandemic's disruptions to normal educational processes by crafting ESSER policy with a clear theory of action: empowering LEAs to spend money with maximum discretion and flexibility. This approach was predicated on the belief that the challenges of the pandemic were multifaceted and varied by locale and that LEAs were in the best position to perceive and respond to those challenges by allocating their funds accordingly. Of course, policy theories are not always borne out in policy implementation, so it remained to be seen whether LEAs take advantage of the flexibility ESSER offered. Previous scholarship on organizational sensemaking provides a strong rationale for ESSER's theory of action, suggesting that LEA understandings of the pandemic would vary both across organizations and over time.

Our analyses test the sensemaking hypothesis sitting at the heart of ESSER's theory of action. Using data from three waves of North Carolina LEAs' ESSER applications, we find that educational leaders saw in the pandemic four distinct problems: public health, student and community well-being, access to instruction, and academics and learning loss. While all LEAs referenced all of these problem formulations in each of their applications, we find substantial variation in problem formulation emphasis over time and across LEAs. In ESSER I applications, submitted early in the pandemic, many educational leaders emphasized public health and ensuring access to instruction. Later in the pandemic, they emphasized academics and learning loss.

These findings serve as a reminder that education leaders confronted multiple, varied, and shifting challenges as they navigated the pandemic. Throughout this crisis, LEAs engaged in dynamic, contextually grounded organizational sensemaking during the pandemic. Contrary to ideas about institutional isomorphism, which point to a tendency for organizations to follow well-established behavioral scripts, the degree of cross-organizational variation we observe

suggests that organizations made sense of the pandemic relatively independently and did so across multiple iterations of sensemaking.

Some of the variation we observe correlates with organizational sector. Charter schools tended to emphasize learning loss problem formulations from the pandemic's outset, dedicating less attention to public health and student and community well-being problem formulations than traditional public schools. We find that pandemic problem formulations are largely unrelated to school and community factors like demographics, resources, and local politics. In one notable exception to this pattern, however, we find that LEAs in communities with high COVID case rates tended to emphasize public health concerns in their ESSER III applications.

Our findings point to two important policy takeaways. First, the ESSER experience should provide support to policy approaches that prioritize empowering local decision-makers to make sense of complex problems facing their schools. Second, given that LEAs made use of the discretion available and provide testimony to the multi-faceted and evolving problems posed by the pandemic, we must preserve this complexity in evaluating the "adequacy" or "success" of their responses. Contemporary retrospective discussions of pandemic schooling have already overwhelmingly reduced the experience to combating "learning loss." Our findings make clear that we should resist such reductionist narratives, as academics and learning loss were just one of several problems educators faced during the pandemic. As we seek to learn from our collective experiences with pandemic schooling, we must account for the many educational challenges the pandemic presented.

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Tables and Figures

TABLE 1: Description of the sample

ESSER Wave	I	II	III
Application Prompts	In the space below provide data the LEA will use to determine its most important educational needs as a result of the disruption in educational services and subsequent shift to remote learning due to COVID-19. In the space below, provide an analysis of the data submitted in Part A that will support allowable uses of ESSER funds (PRC 163) as provided by the CARES Act selected in Part C. For each strategy selected in Part C, provide a description of how each strategy will be implemented, a timeline for providing services and assistance to students and staff in both public and non-public schools, and how the LEA intends to assess the effectiveness of the strategy with special attention to its impact on student learning.	In the space below provide data the PSU will use to determine its most important educational needs as a result of the disruption in educational services and subsequent shift to remote learning due to COVID-19 and return to in-person instruction Include 1) A description of the processes used, and groups involved in the development of the Needs Assessment and Plan specifically for ESSER II funds including, but not limited to, school leaders, classroom educators, and other stakeholders. 2) How the PSU intends to assess and address student learning gaps resulting from the disruption in educational services. In the space below, provide an analysis of the data submitted in Part A that will support allowable uses of ESSER II funds (PRC 171) as provided by the CRRSA Act selected in Part C.	In the space below provide data the PSU will use to determine its most important educational needs as a result of the disruption in educational services and subsequent shift to remote learning due to COVID-19 and return to in-person instruction Include 1) A description of the processes used, and groups involved in the development of the Needs Assessment and Plan specifically for ESSER III funds including, but not limited to, school leaders, classroom educators, and other stakeholders. 2) How the PSU intends to assess and address student learning loss resulting from the disruption in educational services. In the space below, provide an analysis of the data submitted in Part A that will support allowable uses of ESSER III funds (PRC 181) as provided by the American Rescue Plan Act selected in Part C-D.
Application due date	May 29, 2020	May 7, 2021	May 7, 2021

TABLE 1: Description of the sample

ESSER Wave	I	II	III
Pre-Processed Mean (SD) Words per Document	195.83 (205.08)	455.81 (269.09)	480.91 (282.23)
Post-Processed Mean (SD) Words per Document	117.04 (124.58)	284.95 (168.49)	301.79 (180.8)
Pre-Processed Min-Max	0 - 2122	10 - 1042	10 - 1042
Traditional PSUs	114	114	114
Charter PSUs	102	102	102
Overall PSUs	216	216	216

Notes: Descriptive data from ESSER applications North Carolina LEAs submitted to the NC Department of Instruction. “Pre-processed words per document” measures application words before removing stop words and combining n-grams.

Table 2: STM topic descriptions (grouped by theme)

Theme	Topic	Top Words in Topic	Prevalence
Public Health			**21.1%**
	1	staff, train, health, clean, ensur	5.4%
	2	need, covid, addit, school, improv	6.6%
	7	need, purcha, sanit, school, suppli	9.1%
Instruction			**16.2%**
	4	devic, remotlearn, access, technolog, school	8.5%
	12	teacher, support, instruct, addit, need	7.7%
Well-being			**12.6%**
	11	school, current, report, famili, lack	6.5%
	16	need, program, school, also, assess	6.1%
Academic			**24.1%**
	5	data, rate, increa, year, decrea	5.5%
	8	tier, interv, academ, support, risk	4.2%
	9	covid, learnloss, due, analysi, data	3.8%
	10	grade, math, read, gradelevel, profici	7.1%
	13	growth, perform, met, goal, data	3.5%
Omit			**26.0%**
	3	need, data, district, assess, team	7.3%
	6	fund, district, pandem, continu, due	4.7%
	14	measur, monitor, data, survei, assess	6.3%
	15	provid, support, instruct, learn, resourc	7.7%

Notes: Topics generated from running STM algorithm with $k = 16$ on ESSER applications North Carolina LEAs submitted to the NC Department of Instruction. Applications have been processed by removing stop words, combining *n*-grams, and stemming words (removing common suffixes).

Figure 1: Mean Topic Prevalence Across ESSER Waves

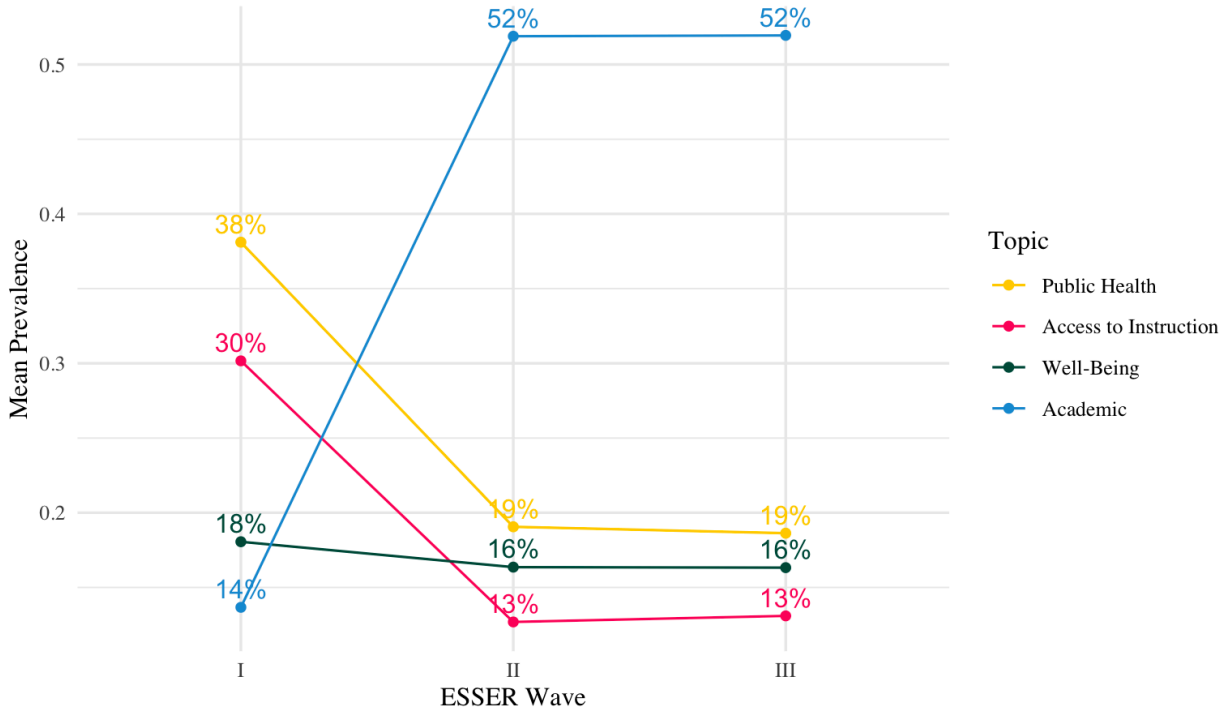


Figure 2: Mean Theme Topic Prevalence Across PSUs

Figure 2a: ESSER I

Figure 2b: ESSER II

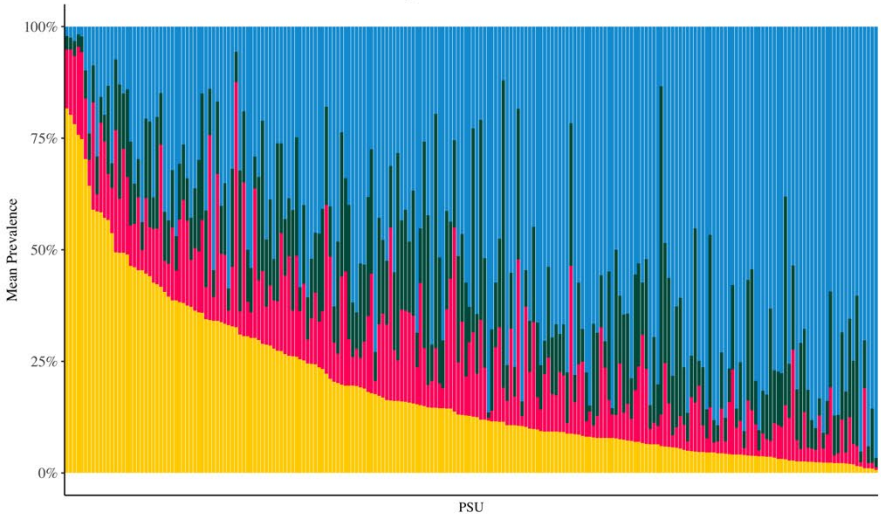


Figure 2c: ESSER III

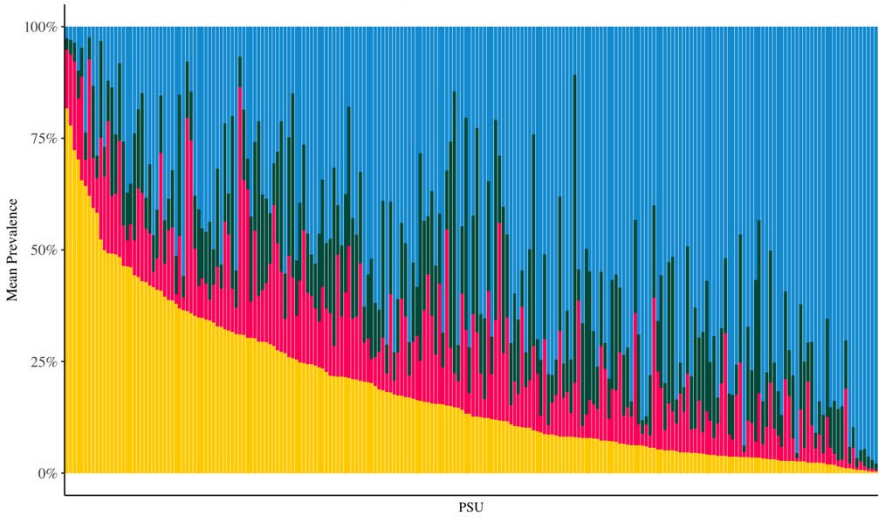


Figure 3

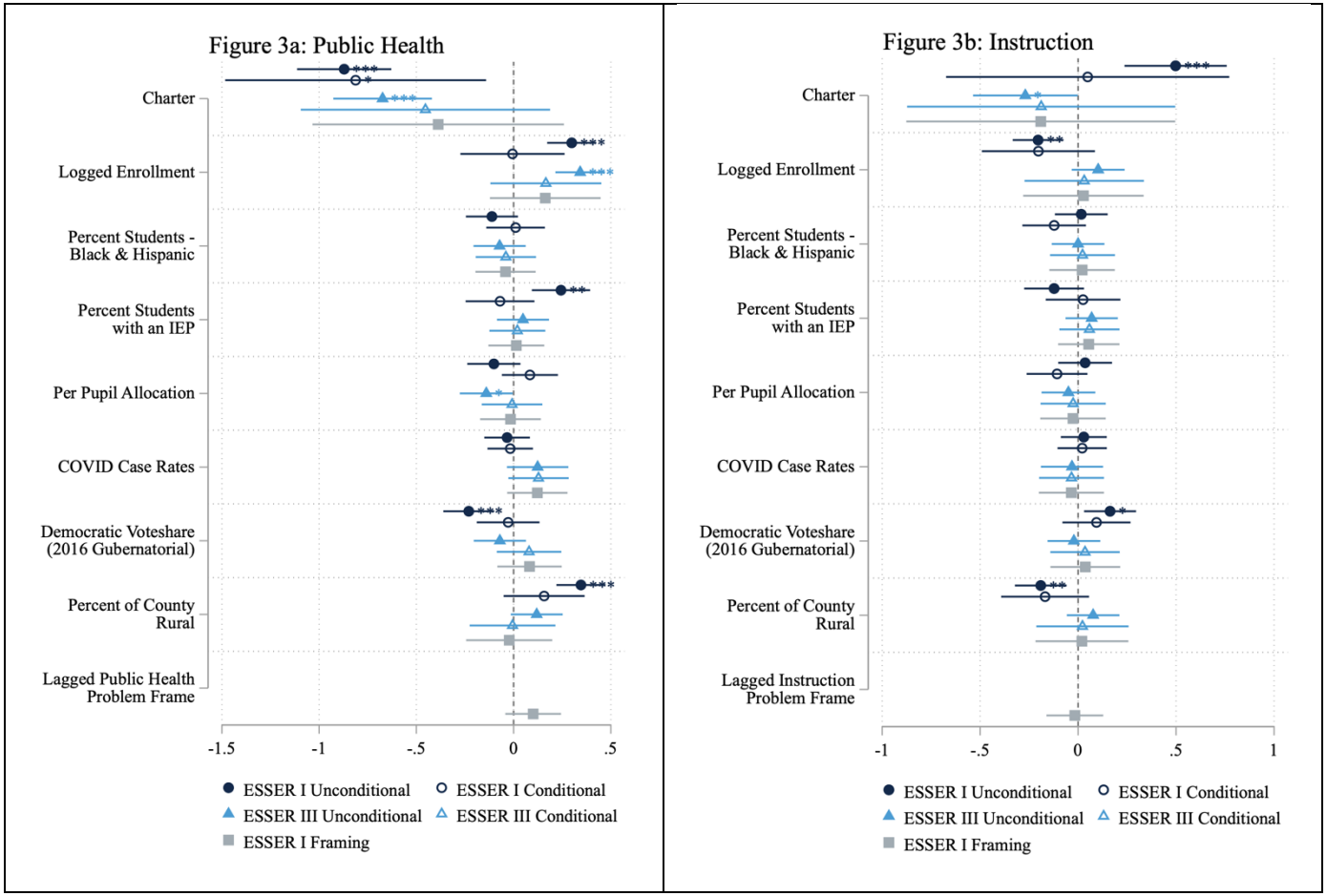
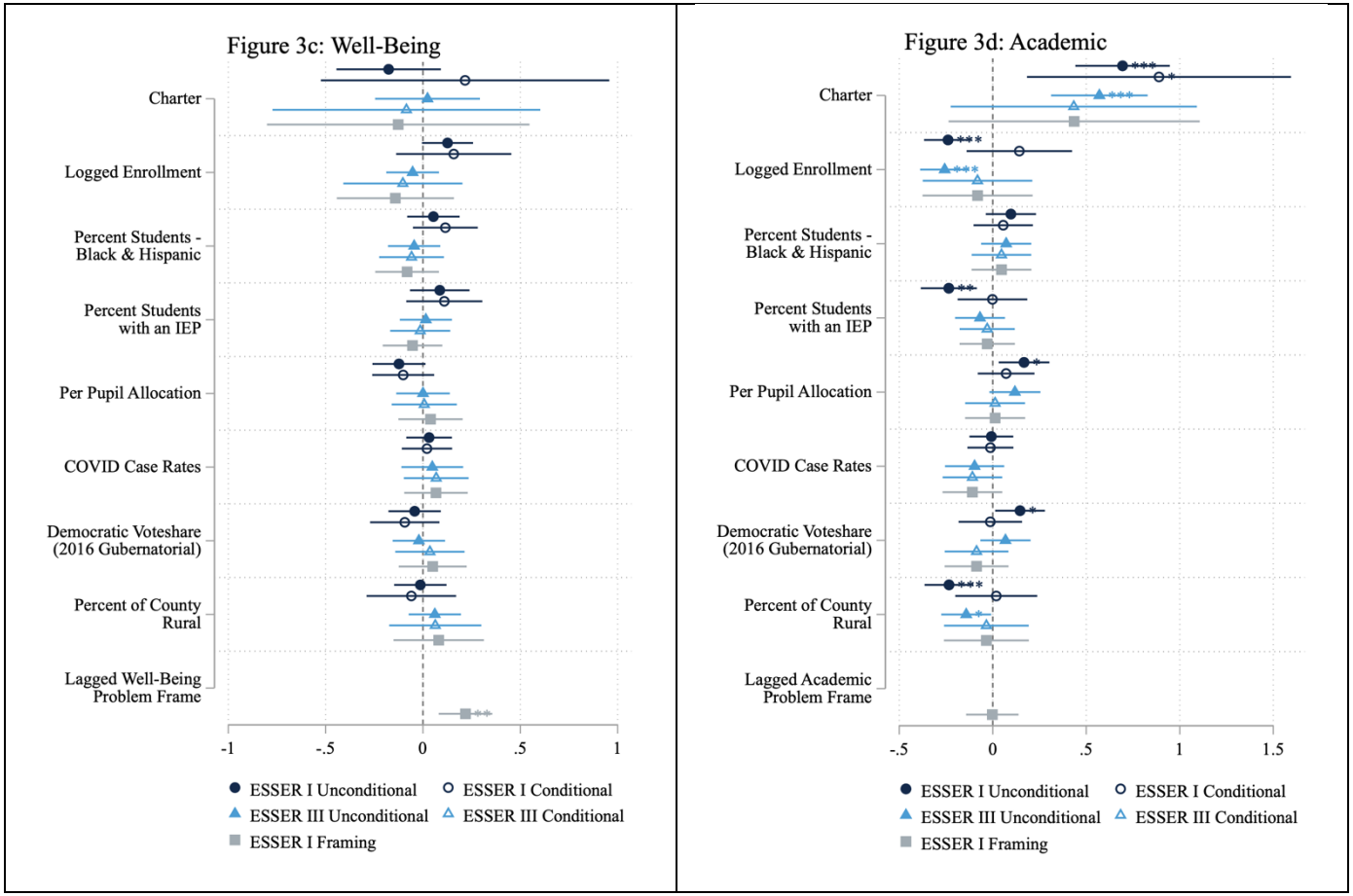


Figure 3a: Public Health
Charter
Logged Enrollment
Percent Students - Black & Hispanic
Percent Students with an IEP
Per Pupil Allocation
COVID Case Rates
Democratic Voteshare (2016 Gubernatorial)
Percent of County Rural
Lagged Public Health Problem Frame
-1.5
-1
-.5
0
.5
ESSER I Unconditional
ESSER I Conditional
ESSER III Unconditional
ESSER III Conditional
ESSER I Framing
Figure 3b: Instruction
Charter
Logged Enrollment
Percent Students - Black & Hispanic
Percent Students with an IEP
Per Pupil Allocation
COVID Case Rates
Democratic Voteshare (2016 Gubernatorial)
Percent of County Rural
Lagged Instruction Problem Frame
-1
-.5
0
.5
1
ESSER I Unconditional
ESSER I Conditional
ESSER III Unconditional
ESSER III Conditional
ESSER I Framing

Figure 3 (continued)



Appendix 1: Additional Detail on Data Sources

In this Data Appendix, we provide additional detail about the data sources we use to supplement ESSER application text data. We divide these supplemental data into PSU-level variables and contextual variables.

PSU-level variables: We examine problem formulation by PSU sector, size, student composition, and pre-COVID revenues.

- We observe directly from our ESSER application data whether PSUs are traditional districts or charter schools.
- PSU enrollment and racial/ethnic student counts come from the NC Public Schools Statistical Profile for the 2019-20 and 2020-21 school years.[1]
- Percentages of students with Individualized Education Programs (IEPs) are from NC DPI's Federal Reporting of Child Counts from April 2020 and April 2021.[2]
- Data on pre-pandemic local revenues come from the National Center for Education Statistics' Local Education Agency Finance Survey (F-33).[3] We divide total local revenues by enrollment and average over three fiscal years: 2014-15, 2015-16, and 2016-17.

Contextual variables: We look at contextual variables related to COVID prevalence, local political leanings, and the percentage of county residents who live in rural areas.

[1] The North Carolina Public Schools Statistical Profile is a collection of statistical information about North Carolina's elementary and secondary schools and is maintained by the NC DPI. http://apps.schools.nc.gov/ords/f?p=145:1.
[2] The Child Count is an unduplicated count of all children with disabilities receiving services in North Carolina. https://www.dpi.nc.gov/districts-schools/classroom-resources/exceptional-children/program-and-fiscal-monitoring/federal-reporting#ChildCount-2823.
[3] https://nces.ed.gov/ccd/f33agency.asp.

- To show relationships between COVID prevalence and problem formulation, we use COVID case numbers per 100,000 people from COVID-19 Data Repository by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University.[4] We sum the number daily COVID cases within each county in the two months leading up to NCDPI's ESSER application submission deadlines, May 29, 2020, for ESSER I and May 7, 2021, for ESSER II and III.
- We use data from the North Carolina State Board of Elections[5] on the Democratic party vote share in the 2016 NC gubernatorial election to show local political leanings.
- We use data from the 2020 Decennial Census from U.S. Census Bureau to calculate the percentage of each county's population that lives in rural areas.

[4] The JHU databases sources NC data from the North Carolina Department of Health and Human Services. https://github.com/CSSEGISandData/COVID-19.
[5] https://er.ncsbe.gov.

Appendix 2: Additional Detail on Analytic Methods

STM identifies common words in a text corpus comprised of numerous documents. It then determines the prevalence of these words within each document and which words tend to co-occur within documents. Through this process, STM identifies a predetermined number of topics (k) consisting of words that are highly prevalent and co-occur within documents. In this Methods Appendix, we describe how we prepare our ESSER applications data for STM and the process of selecting the number of topics (k) for the model.

To execute our structural topic model, we begin by preparing our corpus of text. We first eliminate stop words like "is," "have," "do," "between," and "each" (and their conjugations), as these and similar words will not help inform our topics.[6] Next, we stem words so that STM counts variations of words as the same (e.g., "purchase," "purchases," and "purchasing" become "purchas"). Then, we identify multi-word terms (known as n-grams) that occur commonly in the corpus.[7] We manually select terms from this list that carry a specific meaning in the context of ESSER, COVID-19, or North Carolina schools.[8] For our selected terms, we replace spaces between words with underscores so that the `stm` package will read them as single tokens. We then remove punctuation and numbers from the corpus. Finally, we remove tokens that occur in fewer than five percent and more than 90 percent of our documents, as these tokens will add little meaning or specificity to our output.

Then, using a combination of model diagnostics and theory, we select the number of topics k STM will produce. Diagnostics that indicate how STMs with different values of k will fit the

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[6] Stop words are common words that carry little inherent or intrinsic meaning to inform topic themes. We use the `snowball` package in R to remove stop words. A full list of stop words `snowball` removes can be found here: http://snowball.tartarus.org/algorithms/english/stop.txt.

[7] Examples include (after stemming) "remot learn," "grade level," and "internet access."

[8] Full list of multi-word terms (n-grams) available upon request.

data in terms of semantic coherence (maximized when the most common words in a topic frequently co-occur, Silge 2018), held-out likelihood (a measure of predictive validity, Roberts, Stewart, & Tingley 2019), and residuals.[9] Plots of these diagnostics are in shown in Figure A3.3. When we test values of k between 8 and 30, diagnostic plots indicate that $k = 16$ appears to give comparatively high values for semantic coherence and held-out likelihood. We also manually evaluate output for different values of k between 12 and 25 based on their substantive meaning, specificity, coherence, and interpretability using our own knowledge of the applications and their context, looking for output that balanced less redundancy (i.e., fewer topics that appeared to have similar themes) against clearer meaning and specificity in the topics. Weighing both the diagnostic output for model fit and our interpretation of the output, we set k equal to 16 for our STM. In our model, we include a prevalence factor for application prompt, which accounts for similar prompts across application waves. The output for this model is shown in Table 2 of the main paper.

Once we have our sixteen topics, we examine high-prevalence and high-FREX (words within each topic that are frequent in and comparatively exclusive to the topic) words in each topic. We also identify ESSER applications with high proportions of each topic and read text from these applications. We use these to label each topic as one of the following: topic to omit, public health problem formulation, access to instruction problem formulation, academic problem formulation, or wellbeing problem formulation. We omit four topics that relate to administrative planning rather than problem formulation or sensemaking from our analyses for research questions 2 and 3.

[9] Our values for semantic coherence are comparatively low. We attribute this to how similar the documents in our corpus are to one another

We collapse individual documents, which are at the ESSER wave-by-prompt level, into single documents for each ESSER wave, such that, in each wave, our unit of analysis is a single PSU's full ESSER application. We then combined all topics related to each of our problem formulations into problem formulation themes and recalculated the proportion of each PSU's ESSER application in each wave that was related to each problem formulation theme. Our analysis, therefore, looks at how much of each PSU's ESSER application in a given wave was related to each of our four problem formulations.

Appendix 3: Appendix Tables and Figures

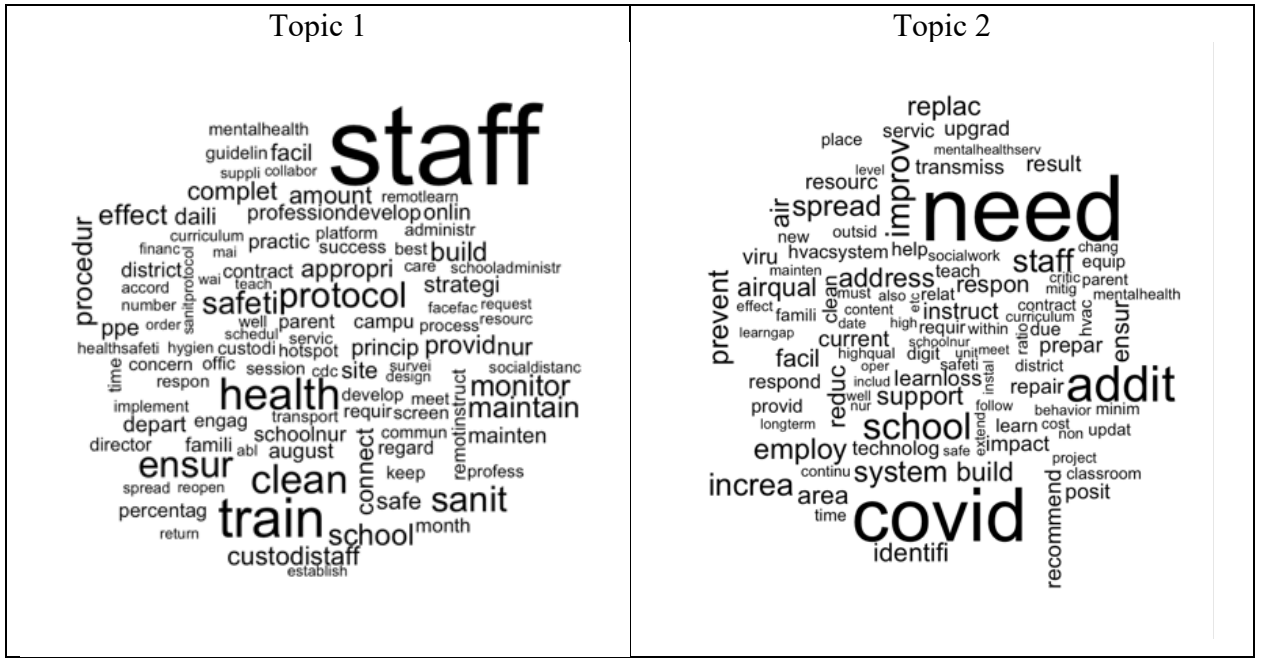
Table A3.1: Comparing in- and out-of-sample charters

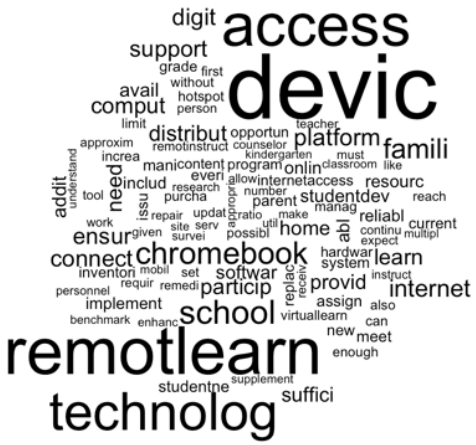
Covariate	In Analytics Sample	Not In Analytic Sample	*p*-value
Enrollment	626.2 (497)	582.8 (450.6)	0.256
Pct. Economically Disadvantaged	41.9 (20.6)	32.0 (25.6)	0.000
Percent Students of Color	0.591 (0.307)	0.461 (0.311)	0.000
Percent of Students with IEP	68.646 (49.959)	59.217 (48.75)	0.025
Local PP Revenue	3,255 (2,162)	3,431 (2,545)	0.373
Student Achievement Index	57.271 (17.679)	64.931 (20.328)	0.000
Gubernatorial vote share (Dem.)	0.527 (0.137)	0.538 (0.136)	0.311
Percent Rural	0.266 (0.27)	0.327 (0.316)	0.007
Covid Case Rate	838.8 (457.1)	787.4 (438.0)	0.138
Per Capita Income	57,184 (10,734)	57,290 (11,814)	0.903
N	102	126	

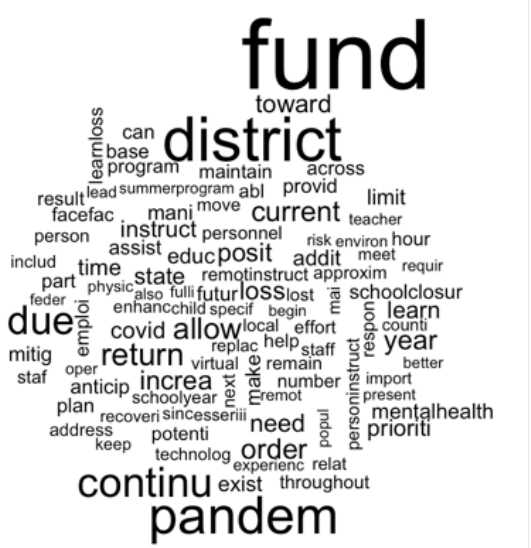
Table A3.2: Qualitative coding scheme

Categories	Health and Safety	Technology	Academic Resources	Personnel	Mental Health	Vendors and Partnerships
Subcodes by category	Sanitation supplies/PPE	Devices for students	Academic assessment	Professional development/training	Mental health services	Community partners
	Sanitation protocols and training	Devices for teachers	Tutoring	Hiring	Social-emotional learning	Vendors/products
	Sanitation staff	Ed tech for special needs students	Offline learning resources	Overtime pay		
	Facilities upgrades	Internet connectivity	Schedule changes (e.g., remote, hybrid, reopen)	Additional responsibilities		
	Food services/meals	Software/ed tech program	Academic intervention	Stipend or bonus		
			Extended learning time	Tuition assistance		
			Summer learning			
			Other academic resources			

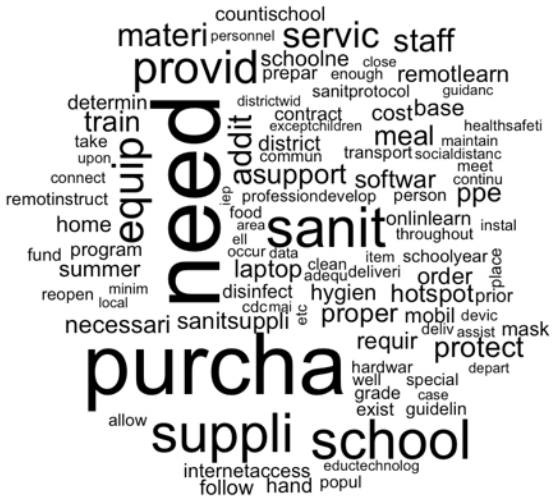
Figure A3.1: Topic word clouds



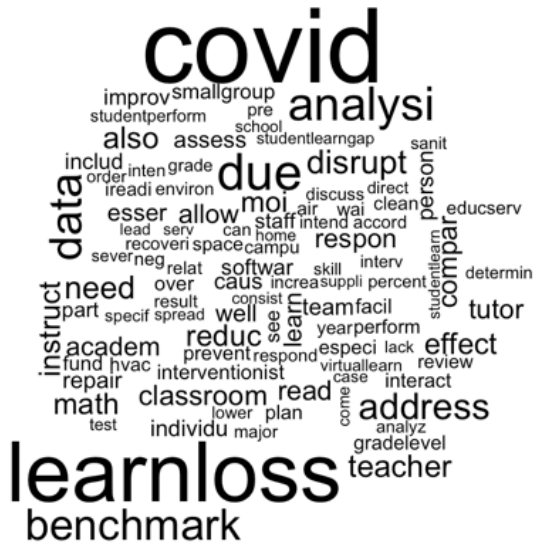
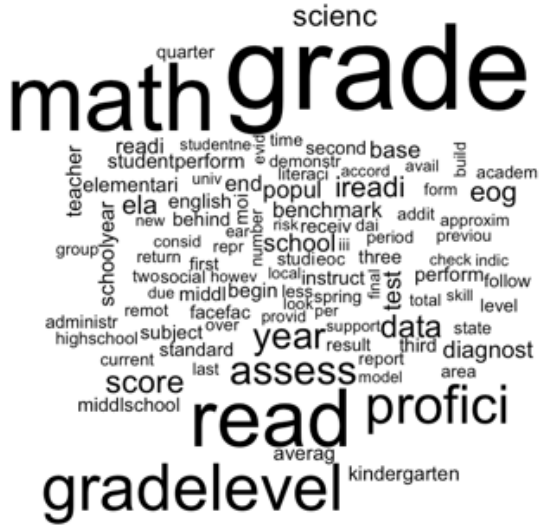
Topic 3	Topic 4
	

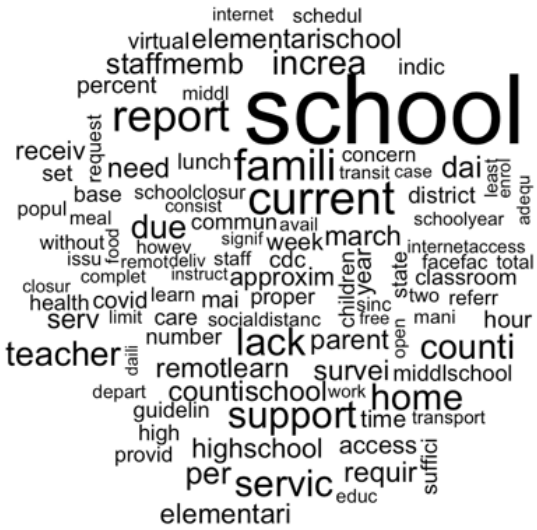
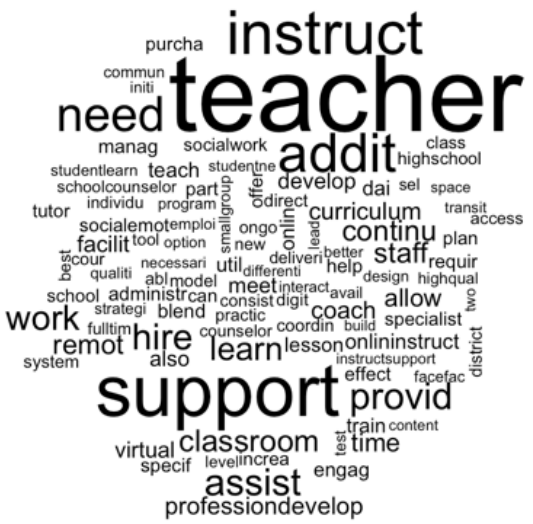
Topic 5	Topic 6
	

Topic 7



Topic 8

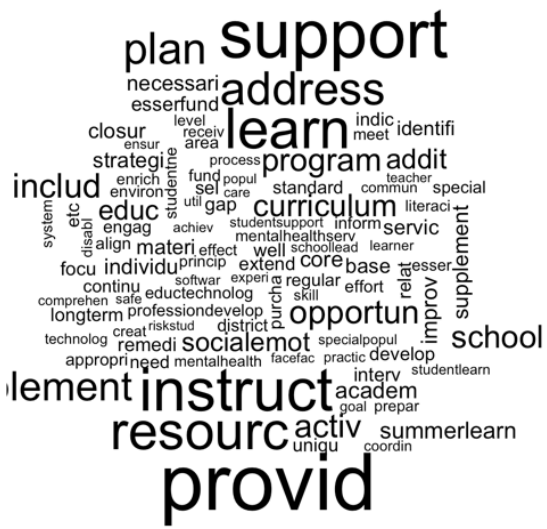
Topic 9	Topic 10
	

Topic 11	Topic 12
	

Topic 13

Topic 14

Topic 15



Topic 16

Figure A3.2: Problem formulation distributions

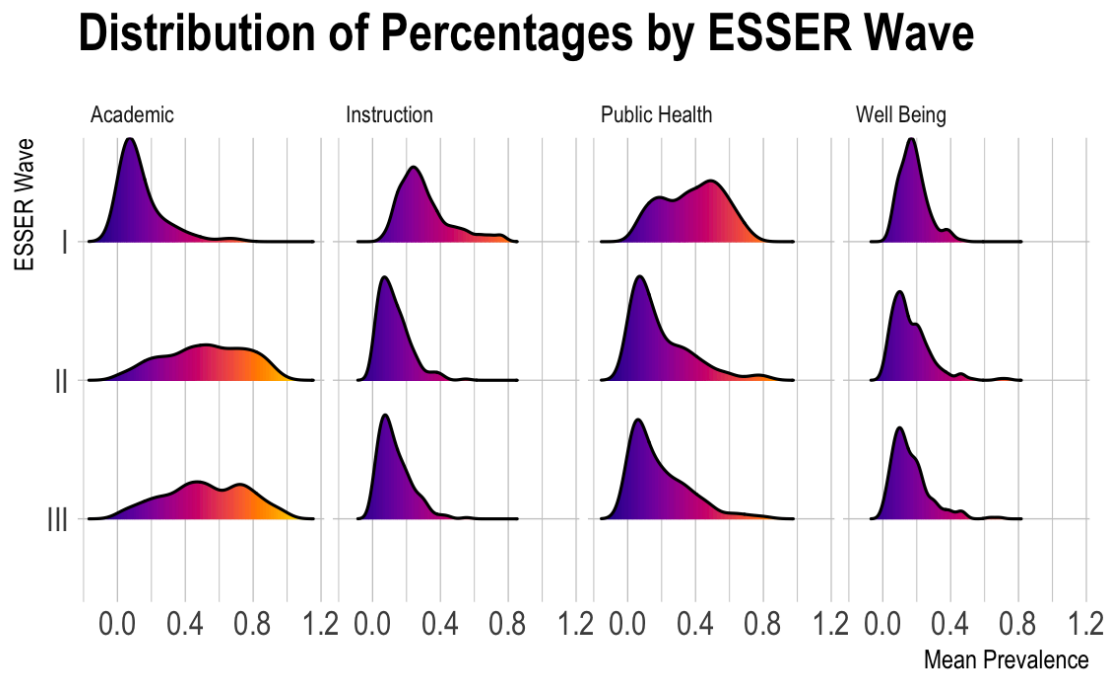


Table A3.3: Regression coefficients: Public Health

	ESSER I		ESSER II		ESSER III	
	Bivariate	**Full**	**Bivariate**	**Full**	**Bivariate**	**Full**
Charter	-0.871***	-0.812*	-0.527***	-0.553	-0.674***	-0.454
	(-7.09)	(-2.39)	(-4.00)	(-1.66)	(-5.24)	(-1.39)
Logged Enrollment	0.299***	-0.00566	0.255***	0.0407	0.342***	0.166
	(4.67)	(-0.04)	(3.82)	(0.27)	(5.29)	(1.15)
Percent Students - Black & Hispanic	-0.111	0.0103	-0.0375	-0.0398	-0.072	-0.0399
	(-1.64)	(0.13)	(-0.55)	(-0.49)	(-1.06)	(-0.51)
Percent Students with an IEP	0.244**	-0.0699	0.114	0.106	0.0483	0.0192
	(3.21)	(-0.78)	(1.69)	(1.42)	(0.71)	(0.26)
Per Pupil Allocation	-0.102	0.0839	-0.105	-0.0616	-0.140*	-0.00802
	(-1.46)	(1.15)	(-1.51)	(-0.76)	(-2.03)	(-0.10)
COVID Case Rates	-0.0335	-0.0174	0.0884	0.0723	0.124	0.128
	(-0.56)	(-0.29)	(1.1)	(0.9)	(1.54)	(1.63)
Democratic Vote Share (2020 Gubernatorial)	-0.231***	-0.028	-0.0505	0.0398	-0.0706	0.0795
	(-3.47)	(-0.34)	(-0.74)	(0.46)	(-1.04)	(0.95)
Percent of County in Rural	0.346***	0.157	0.0513	-0.143	0.119	-0.0056
	(5.41)	(1.49)	(0.75)	(-1.25)	(1.75)	(-0.05)
Constant		0.360*		0.234		0.186
		(2.19)		(1.34)		(1.1)
N	216	216	216	216	216	216

Table A3.4: Regression coefficients: Access to Instruction

	ESSER I		ESSER II		ESSER III	
	Bivariate	**Full**	**Bivariate**	**Full**	**Bivariate**	**Full**
Charter	0.497***	0.0487	-0.319*	-0.402	-0.269*	-0.189
	(3.76)	(0.13)	(-2.36)	(-1.18)	(-1.99)	(-0.54)
Logged Enrollment	-0.204**	-0.203	0.108	-0.0556	0.102	0.0311
	(-3.11)	(-1.39)	(1.58)	(-0.37)	(1.5)	(0.2)
Percent Students - Black & Hispanic	0.0162	-0.122	0.105	0.135	-0.000149	0.0225
	(0.24)	(-1.48)	(1.55)	(1.65)	(-0.00)	(0.27)
Percent Students with an IEP	-0.123	0.0252	-0.0242	-0.0415	0.0691	0.0578
	(-1.58)	(0.26)	(-0.36)	(-0.54)	(1.02)	(0.74)
Per Pupil Allocation	0.0358	-0.108	-0.132	-0.107	-0.0494	-0.0253
	(0.51)	(-1.37)	(-1.90)	(-1.29)	(-0.71)	(-0.30)
COVID Case Rates	0.029	0.0207	-0.0801	-0.093	-0.0312	-0.0336
	(0.49)	(0.32)	(-1.00)	(-1.13)	(-0.39)	(-0.40)
Democratic Vote Share (2020 Gubernatorial)	0.163*	0.0937	0.0176	0.0432	-0.0215	0.0353
	(2.42)	(1.06)	(0.26)	(0.49)	(-0.32)	(0.39)
Percent of County in Rural	-0.191**	-0.169	0.0882	0.029	0.0766	0.0221
	(-2.85)	(-1.48)	(1.3)	(0.25)	(1.13)	(0.18)
Constant		0.360*		0.234		0.186
		(-0.07)		(1.2)		(0.49)
N	216	216	216	216	216	216

Table A3.5: Regression coefficients: Well-being

	ESSER I		ESSER I		ESSER I	
	Bivariate	**Full**	**Bivariate**	**Full**	**Bivariate**	**Full**
Charter	-0.176	0.216	-0.0281	0.141	0.0233	-0.0851
	(-1.30)	(0.58)	(-0.21)	(0.41)	(0.17)	(-0.24)
Logged Enrollment	0.126	0.158	-0.00954	0.0221	-0.0531	-0.103
	(1.89)	(1.05)	(-0.14)	(0.14)	(-0.77)	(-0.67)
Percent Students - Black & Hispanic	0.0536	0.115	-0.0865	-0.0669	-0.0454	-0.0587
	(0.78)	(1.36)	(-1.27)	(-0.79)	(-0.67)	(-0.70)
Percent Students with an IEP	0.0863	0.11	0.0197	-0.00192	0.015	-0.0142
	(1.11)	(1.11)	(0.29)	(-0.02)	(0.22)	(-0.18)
Per Pupil Allocation	-0.123	-0.102	-0.0146	0.0255	0.000163	0.00663
	(-1.78)	(-1.26)	(-0.21)	(0.3)	0	(0.08)
COVID Case Rates	0.0316	0.0205	0.0449	0.0663	0.0479	0.068
	(0.53)	(0.31)	(0.56)	(0.79)	(0.6)	(0.81)
Democratic Vote Share (2020 Gubernatorial)	-0.0428	-0.0936	-0.0525	0.0318	-0.021	0.0357
	(-0.63)	(-1.04)	(-0.77)	(0.35)	(-0.31)	(0.4)
Percent of County in Rural	-0.0136	-0.0597	0.0964	0.138	0.0609	0.0632
	(-0.20)	(-0.51)	(1.42)	(1.15)	(0.89)	(0.53)
Constant		0.360*		0.234		0.186
		(-0.35)		(-0.44)		(0.16)
N	216	216	216	216	216	216

Table A3.6: Regression coefficients: Academics

	ESSER I		ESSER II		ESSER III	
	Bivariate	**Full**	**Bivariate**	**Full**	**Bivariate**	**Full**
Charter	0.694***	0.889*	0.527***	0.498	0.570***	0.433
	(5.42)	(2.48)	(4)	(1.48)	(4.35)	(1.3)
Logged Enrollment	-0.239***	0.142	-0.226***	-0.0195	-0.257***	-0.0814
	(-3.67)	(0.99)	(-3.37)	(-0.13)	(-3.86)	(-0.55)
Percent Students - Black & Hispanic	0.097	0.056	0.0289	0.00956	0.0718	0.0465
	(1.43)	(0.7)	(0.42)	(0.12)	(1.06)	(0.58)
Percent Students with an IEP	-0.235**	-0.00161	-0.085	-0.0623	-0.0681	-0.0297
	(-3.09)	(-0.02)	(-1.26)	(-0.83)	(-1.00)	(-0.40)
Per Pupil Allocation	0.167*	0.0714	0.135	0.0745	0.118	0.0125
	(2.43)	(0.93)	(1.95)	(0.91)	(1.71)	(0.15)
COVID Case Rates	-0.00744	-0.0126	-0.0564	-0.0497	-0.097	-0.109
	(-0.13)	(-0.20)	(-0.70)	(-0.61)	(-1.21)	(-1.34)
Democratic Vote Share (2016 Gubernatorial)	0.146*	-0.013	0.0557	-0.0612	0.068	-0.0865
	(2.16)	(-0.15)	(0.82)	(-0.70)	(1)	(-1.00)
Percent of County in Rural	-0.234***	0.0187	-0.118	0.03	-0.142*	-0.0339
	(-3.52)	(0.17)	(-1.74)	(0.26)	(-2.10)	(-0.30)
Constant		0.360*		0.234		0.186
		(-2.45)		(-1.24)		(-1.03)
N	216	216	216	216	216	216

Table A3.7: Wave I problem formulation predicting wave III problem formulation, conditional

	Wave III Predicted by Wave I			
	Public Health	**Instruction**	**Well-Being**	**Academics**
Charter	-0.388	-0.191	-0.127	0.435
	(-1.18)	(-0.55)	(-0.37)	(1.28)
Logged Enrollment	0.163	0.027	-0.142	-0.0811
	(1.13)	(0.17)	(-0.93)	(-0.54)
Percent Students - Black & Hispanic	-0.0414	0.0204	-0.0817	0.0466
	(-0.53)	(0.24)	(-0.98)	(0.57)
Percent Students with an IEP	0.014	0.0544	-0.0537	-0.0295
	(0.19)	(0.68)	(-0.69)	(-0.39)
Per Pupil Allocation	-0.0159	-0.0263	0.0387	0.0126
	(-0.20)	(-0.31)	(0.46)	(0.16)
COVID Case Rates	0.122	-0.0344	0.0668	-0.109
	(1.55)	(-0.41)	(0.81)	(-1.34)
Democratic Vote Share (2016 Gubernatorial)	0.0818	0.0367	0.05	-0.0865
	(0.97)	(0.41)	(0.56)	(-1.00)
Percent of County in Rural	-0.0226	0.0195	0.0809	-0.0339
	(-0.20)	(0.16)	(0.69)	(-0.29)
Lag Academic	0.101			
	(1.39)			
Lag Well-Being		-0.0167		
		(-0.23)		
Lag Instruction			0.218**	
			(3.13)	
Lag Public Health				-0.00239
				(-0.03)

Constant	0.157 (0.92)	0.09 (0.5)	0.0542 (0.3)	-0.18 (-1.02)
Observations	216	216	216	216

Figure A3.3: Diagnostic plots