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The COVID-19 pandemic disrupted higher education, particularly community colleges serving significant proportions of traditionally disadvantaged students. This mixed methods study examines how Texas community colleges responded to the crisis and the extent to which they institutionalized pandemic-driven changes. Using state-wide student-level administrative data, and survey and interview data from administrators at ten community colleges, we found that the study colleges rapidly expanded online instruction by leveraging existing learning management systems and faculty expertise, while extending advising, counseling, and basic needs services into virtual and hybrid formats. Guided by organizational resilience theory, our findings show that colleges absorbed the pandemic's disruptions and engaged in transformative change. Through distributed leadership, cross-functional collaboration, and a heightened focus on student well-being, they redefined instructional practices, support infrastructures, and institutional culture, becoming more adaptable and empathetic organizations. These findings may help explain why persistence and completion remained stable post pandemic, despite sharp declines in enrollment in 2020 and 2021. More broadly, the study advances understanding of resilience in postsecondary contexts and offers insights into how crises can drive organizational learning and transformation.

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Resilience and Transformation: The Pandemic's Effects on Texas Community Colleges

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Abstract: The COVID-19 pandemic disrupted higher education, particularly community colleges serving significant proportions of traditionally disadvantaged students. This mixed methods study examines how Texas community colleges responded to the crisis and the extent to which they institutionalized pandemic-driven changes. Using state-wide student-level administrative data, and survey and interview data from administrators at ten community colleges, we found that the study colleges rapidly expanded online instruction by leveraging existing learning management systems and faculty expertise, while extending advising, counseling, and basic needs services into virtual and hybrid formats. Guided by organizational resilience theory, our findings show that colleges absorbed the pandemic's disruptions and engaged in transformative change. Through distributed leadership, cross-functional collaboration, and a heightened focus on student well-being, they redefined instructional practices, support infrastructures, and institutional culture, becoming more adaptable and empathetic organizations. These findings may help explain why persistence and completion remained stable post pandemic, despite sharp declines in enrollment in 2020 and 2021. More broadly, the study advances understanding of resilience in postsecondary contexts and offers insights into how crises can drive organizational learning and transformation.

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The COVID-19 pandemic caused unprecedented disruption across higher education. Colleges and universities were forced to abruptly shift to remote instruction in March 2020 as campuses closed, and students and faculty faced sudden changes in their academic, work, and personal lives. These changes resulted in notable declines in postsecondary enrollment with community colleges especially hard-hit, given the vulnerable populations they serve (Di & Caldwell, 2022).

To aid recovery efforts, federal and state governments allocated substantial funding to postsecondary institutions and issued guidance on how to safely reopen schools. Colleges and universities received billions of Higher Education Emergency Relief Fund (HEERF) dollars to build technological infrastructure, enhance student support services (e.g., mental health support), provide personal protective equipment to college staff and students (e.g., hand sanitizer, masks), and offset major revenue loss (Daniels et al., 2024). Colleges disbursed some HEERF funds directly to students as emergency grants. Texas community colleges—the focus of this study—received almost $1.5 billion from the three rounds of federal funding (Proctor, 2022). The colleges also received state aid through the Texas Emergency Aid Grant Program, the Texas Reskilling Support Fund, and the TRUE Initiative to provide immediate support to students significantly impacted by the pandemic and to expand pathways to living-wage employment (McGee, 2022). Following state guidance, colleges and universities began reopening at various times as lockdown measures were lifted and vaccines became available.

Since the onset of the pandemic, studies have documented the ways in which community colleges immediately adapted how they operated and delivered services to mitigate the pandemic's consequences on student outcomes. For example, in a special issue of the *Community College Journal of Research and Practice (2021),* 14 articles describe the early effects of the pandemic on faculty, students, and the institutions, covering such topics as faculty work overload, technological support for the shift to online learning, financial aid, college communications, and safety protocols (Floyd et al., 2022). With the pandemic behind us, it is an opportune moment to assess the extent to which the urgent pandemic responses led to lasting change within the colleges, and how those changes have influenced their institutional missions.

Our research reports on Texas community college administrators' retrospective perspectives on their responses to the pandemic, and how some adaptations to the crisis have endured. Using a mixed-methods approach that leveraged descriptive analyses of state administrative data, as well as qualitative data from in-depth interviews and responses to an online survey at 10 colleges, we examined how institutions responded to COVID-19 across several areas, including instruction, student support services, technology, as well as how they managed their overall approach to mitigating the disruptions of the pandemic. We then explored the longer-term impacts of the pandemic, including whether any responses were institutionalized, and what challenges remain five years later.

We situate our findings within the academic literature on organizational resilience. This body of work, primarily published in business and management journals, suggests that crises offer organizations an opportunity to grow, adapt, and transform into ones that can operate more effectively in a new environment (Lengnick-Hall et al., 2011). Capitalizing on this opportunity requires organizations to anticipate unexpected change, harness human and financial resources in creative ways, and modify existing structures to deliver an effective response (Hillman & Guenther, 2021). Our study finds that the actions and behaviors of the sampled community colleges during COVID-19 reflect some of the characteristics associated with organizations deemed resilient. Through these experiences, the colleges engaged in new ways of collaborating, learned how to deliver higher-quality online education at scale, and

became more sensitive to and better equipped to address their students' non-academic challenges.

The remainder of the paper is organized as follows. The next section summarizes research on community college responses to the COVID-19 pandemic. We then present a framework for understanding organizational resilience, discuss its relevance to this topic, and preview our study's contribution. Next, we describe our research design, including the data sources and methods for the quantitative and qualitative analyses. We then present our findings and conclude with a discussion of what we learned, how our findings fit within the wider literature examining organizational resilience, and where more research is needed.

Literature Review

While there is extensive research on the effects of the pandemic in public K–12 schools (Al Mazrooei et al., 2022; Huck & Zhang, 2021; Kwakye & Kibort-Crocker, 2021; Leech et al., 2022), much less is known about its transformational impact on postsecondary institutions, particularly community colleges. Aside from one large nationally representative study that documented the use of federal pandemic relief funds by community colleges (Klempin, et. al., 2024), the extant research in this field is dominated by case studies, each one focusing on how COVID-19, soon after the global pandemic was declared, affected a distinct community college in one area of its work (e.g., student support services). This has resulted in a patchwork understanding of how community colleges evolved holistically in response to the pandemic, and limited our knowledge about where additional support may be needed to facilitate their full recovery. Below, we summarize the current literature, categorizing studies according to five relevant themes, and conclude by identifying how our study addresses existing research gaps.

Leadership

In the literature, leadership during the pandemic was not limited to top-level administrators; rather, colleges activated leaders at multiple levels who could make rapid, informed decisions to sustain continuity in learning and services. This included administrators as well as mid-level and program-level managers who stepped up to lead ad hoc committees, coordinate emergency responses, and adapt operations on the fly (Ison et al., 2022). Across the literature, effective pandemic leadership in community colleges hinged on rapid but inclusive decision-making and constant communication. Colleges hosted virtual town halls (D'Amico et al., 2022) to keep everyone informed, and created special teams with staff from different departments to solve urgent problems (Falconetti & Bottorff, 2022; Strayhorn, 2022). At Polk State College, cross-functional "strike forces" that blended academic, finance, and public-safety expertise were empowered to problem-solve (Falconetti & Bottorff, 2022). Program-level managers, like those in Sinclair Community College's dual enrollment office, had to create new policies to meet the needs of both their campus and K–12 partners. Thus, leadership at all levels, not just from the president's office, was crucial for navigating the pandemic (Ison et al., 2022).

Instruction

Studies document how community colleges responded to the emergency by quickly pivoting to remote teaching. For instance, within a single week, faculty at Forsyth Technical and Wilkes Community Colleges migrated nearly all courses online, supported by crash-course pedagogy workshops and parking-lot Wi-Fi for rural learners (D'Amico et al., 2022). In the Los Angeles Community College District, faculty not only learned how to use new applications and devices themselves, but also helped students troubleshoot their access to and navigation of online courses (Swanson et al., 2023). Dual enrollment administrators had to train high-school

instructors on LMS basics to salvage those courses mid-semester, illustrating that instructional resilience also depended on K-12 capacity-building (Ison et al., 2022).

Even with these efforts, some studies show negative effects on student course completion. Courses that were forced online saw more students withdraw or fail, compared to similar courses that had been online from the start (Bird et al., 2022). Course performance metrics worsened in the spring 2020 term, with reductions in course completions and declines in pass rates (Bird et al., 2022; Bulman & Fairlie, 2022). Some colleges offered flexible academic policies, such as extended withdrawal deadlines and pass/fail grading options, to reduce student stress and prevent dropout (Brock, 2021). Additionally, instructional modes remained in flux; some Texas colleges resumed limited in-person classes by fall 2020 while others stayed largely online until 2021—creating a fluid environment that challenged instructors and students unfamiliar with large-scale remote learning.

Technology and Digital Access

Another important area that the literature highlights is how colleges tackled the digital divide by deploying emergency resources to distribute thousands of laptops and Wi-Fi hotspots to students lacking adequate technology (Brock, 2021; D'Amico et al., 2022; Hart et al,, 2021). For instance, Urban Forsyth Tech created “drive-in” campuses with extended Wi-Fi, while its rural counterpart relied on fire-station hotspots, exemplifying place-sensitive strategies (D’Amico et al., 2022). Bronx Community College loaned thousands of laptops, stood up 24/7 help desks, and saw unofficial withdrawal rates[1] fall as students gained stable connectivity—a sign that hardware plus sustained tech-support can translate to persistence gains (Kim & Kessler-Eng, 2022). Still, even given such efforts, students cited uneven broadband and inconsistent course shells as barriers, reminding colleges that device distribution must be paired with affordable internet options and common course design standards (Thanawala et al., 2022). Faculty reported equity concerns, such as students lacking the high-speed internet access that made it possible to stream the more engaging synchronous courses (Fox et al., 2021).

Student Services

A number of studies also focus on how colleges delivered critical student services during the pandemic. Research describes how the financial aid office at a large Texas community college shifted from in-person drop-in advising to phone and email support during the pandemic, but also notes that many students missed the personal connection of face-to-face interactions (McKinnon-Crowley, 2022). In another instance, a college blended virtual counseling, peer mentoring, and multi-modal tutoring to support retention (Thanawala et al., 2022). Examples from North Carolina show how colleges were creative in supporting students in new ways—offering food box pick-ups, tele-counseling, and live “ask-me-anything” sessions that became lifelines for marginalized students (D’Amico et al., 2022). Together, these studies suggest that virtual environments can continue to offer strong support—if colleges invest in both caring staff and user-friendly technology.

Resources

Community colleges relied on a mix of federal, state, and internal funding sources to manage pandemic-related financial disruptions and sustain operations, all of which were important. The large, direct disbursement of federal funds to community colleges was unprecedented and, as noted, supported the transition to distance learning, faculty and staff training, and other core instructional and service needs (Daniels et al.,2024). Funds also were

[1] These are given to students who failed to show up for their registered courses ((Kim & Kessler-Eng, 2022)

provided directly to students. In Texas, $27 million from the Governor's Emergency Education Relief (GEER) fund was allocated to Reskilling Support grants, and an additional $50 million was directed toward the TRUE workforce initiative, which supported last-dollar scholarships and short, industry-focused certificate programs for displaced adult learners (McGee, 2022). Institutions shored up dual enrollment, which provides an important source of tuition revenue for many community colleges (Ison et al., 2022). Targeted grant programs such as Bergen Community College's "STEMatics" initiative provided laptops, hotspots, and stipends to support students (Thanawala et al., 2022).Collectively, these studies emphasize that financial resilience during the pandemic depended on diversified revenue streams, including federal relief, state innovation funding, competitive grants, and alternative enrollment models.

As noted, the studies identified are primarily case studies that document immediate college-level responses to the challenges of the pandemic; broader research that synthesizes responses across multiple community colleges remains relatively rare.[2] The Accelerating Recovery in Community Colleges Network has examined how states and institutions used pandemic-related funding (Daniels et al., 2024; Klempin et al., 2024). Notably, the Klempin et al. research surveyed 170 community colleges across six states, with a particular emphasis on the use of HEERF resources and how effectively colleges believed they were meeting student and institutional needs (2024). The authors found that the colleges experienced similar pandemic challenges and prioritized common objectives, focusing on supporting and retaining existing students. Still, there is considerable room for research that synthesizes findings across multiple community colleges on not just the immediate response but also the longer-term institutional impacts. Our study does this by examining the experiences of ten Texas community colleges, drawing on administrative, survey, and qualitative data to understand the ways in which the colleges showed resilience in the moment and how they have changed permanently.

The Lens of Organizational Resilience

Scholarship on organizational resilience provides a useful lens for understanding organizational responses to crises, and how crises can offer opportunities for innovation, adaptation, and renewal. While we located few studies that apply organizational resilience factors to higher education institutions (see, for example, Moran, 2016), the concept may be useful in helping to explain how colleges endure and perhaps even improve under very dire circumstances.

Researchers define organizational resilience "as a firm's ability to effectively absorb, develop situation-specific responses to, and ultimately engage in transformative activities to capitalize on disruptive surprises that potentially threaten organization survival," (Lengnick-Hall et al., 2011, pg. 31). To be considered resilient, an organization, in the face of adverse environmental conditions, must quickly engage in individual and collective action to deliver a resilient response (Coutu, 2002; Hillman & Guenther, 2021). If successful, the organization emerges from the disruption stronger, better equipped, and more capable of meeting client demands in a new, potentially altered environment (Hillman & Guenther, 2021).

Hillman and Guenther's (2021) integrative conceptual model of organizational resilience informs our discussion of how the actions and efforts undertaken by community colleges in response to the pandemic align with current understandings and interpretations of

[2] Examples of studies that do synthesize COVID-19 research from multiple colleges are Brock and Diwa, 2021 and the series of national surveys of faculty conducted by Tyton Partners at three points in 2020.

organizational resilience in the literature. This model posits that an organization's resources, capabilities, and behaviors facilitate and determine the speed at which it can recover from adversity, and that an organization's evolution directly results from its response to adversity.

Organizational resilience is depicted as a sequence of three distinct stages: pre-disruption readiness, post-disruption response, and post-recovery growth (Hillman & Guenther, 2021). The first stage, pre-disruption readiness, is shaped by an organization's ability to access and leverage resources (the dimension of resilient resources), engage in behaviors that support a decisive, creative, and coordinated response (the dimension of resilient behaviors), and anticipate and accurately interpret challenges (the dimension of resilient capabilities).

The second stage articulates the organization's response to the unexpected event, and suggests that maintaining organizational stability is core to producing a resilient response. Hillman and Guenther's (2021) posit that an organization demonstrates stability when it retains its critical structure and functions (Clement & Rivera 2017; McCarthy, et al 2017). Additionally, a resilient response is a function of how quickly the organization can absorb the impact and return to normal operations. It is thought that organizations that speedily "bounce back" from setbacks are able to access critical resources (e.g., financial and human) and also adapt, repurpose, or harness tools to respond to unexpected challenges efficiently and effectively (Suarez & Montes, 2020).

The final stage of the model relates with the organization's evolvability into a stronger, more effective entity after recovery. It is in this stage where organizations, now operating under more stable conditions, learn from their experiences and assess which changes were effective or ineffective (Lant & Mezias, 1990). Through this assessment, organizations positively transform, adapting and developing new routines and practices that promote continuity and survival in a possibly new environment (Kantur & Iseri-Say, 2012). But beyond internal operational changes, a resilient organization will have cultivated deeper insights about their surroundings, and stronger external networks that can help them withstand future challenges (Kantur & Iseri-Say, 2012).

Data and Methods

Quantitative Component

The quantitative data provide a descriptive context to supplement the qualitative data. Leveraging state-level administrative records, we documented changes in community college enrollment, persistence, and completion at Texas community colleges over the course of the pandemic. We also explored changes in course delivery modality, and trends in instructors' and students' experiences with online learning. We conducted these analyses for all 50 of the Texas community colleges (in aggregate), for the subset of ten selected for our study (in aggregate), for the remaining 40 colleges, and for each of the ten individually.

Data

We used administrative data collected by the Texas Higher Education Coordinating Board (THECB), made available through the Education Research Center at the University of Texas at Dallas, to conduct this descriptive analysis. These data include detailed information on all students attending public community colleges in the state, including their demographic backgrounds, their college readiness status and scores on the state's college placement exam, the Texas Success Initiative Assessment (TSIA), all of the colleges they attend, all of the courses they take (including information on course modality), the grades they receive in all

courses, and all degrees and credentials they earn. The data also include measures of the proportion of credits taught in different modalities, the proportion of credits taken by students who had not previously taken an online course, and the proportion of instructors who had previous online teaching experience.

Methods

We used descriptive quantitative methods to examine trends in community college enrollment, success, and modality of instruction during the COVID-19 pandemic. We followed the Fall 2015-2020 cohorts of Texas community college students longitudinally for five semesters after their matriculation. Students were eligible for inclusion in a cohort if they took most of their first-term courses at community colleges, were enrolled at least in one fall semester from 2015 to 2020, and were not enrolled for at least two semesters (excluding summer) before matriculation. In total, these cohorts included 1,309,286 students. We calculated term-to-term rates of persistence, completion, upward transfer, and dropout for each cohort for five semesters since their initial enrollment.

We also compared the demographic and academic characteristics of student cohorts enrolling in a community college before and after the start of the pandemic. To assess changes in course modality, we calculated the percentage of credit hours taken in one of three modalities in the fall semester of each year from 2015 to 2023: face-to-face, online and hybrid. We also calculated the percentage of returning (not new) teachers who had taught at least one online course in a previous semester, and the percentage of credits taken by students with no previous online courses, from fall 2015 through fall 2022.

Qualitative Component

The main goal of the qualitative component, which sources our most in-depth findings, was to examine how a set of Texas community colleges acted in response to the pandemic and the extent to which their actions transformed how they engage in their work today. Under this broad goal, we had three specific aims. The first aim was to assess how these colleges changed the way in which they delivered instruction, provided student support services, and used technology during the pandemic. The second was to examine how these colleges, during the pandemic, made key decisions affecting how they operated and delivered services (e.g. instruction, basic needs). The final aim was to identify in what ways the pandemic permanently changed the colleges, including institutionalization of pandemic adaptations as well as continuing pandemic-related challenges.

Site Selection

The sample making up our study includes 10 of the 50 public community colleges in Texas. We selected these colleges using Tipton's (2014) probabilistic sampling strategy to enhance the external validity of qualitative findings. This approach uses publicly available data from the Integrated Postsecondary Education Data System (IPEDS) to group colleges into four relatively homogenous categories based on (a) urbanicity, (b) the socio-economic characteristics of their student population, and (c) enrollment size. Using a tool called the Generalizer, we set recruitment targets for each group to achieve a sample representative of the state. While the protocol recommends randomly selecting colleges within each group, we collaborated with the Texas Success Center to prioritize institutions for recruitment. We then recruited colleges in each group according to these priorities until the Generalizer targets were met. Appendix A provides descriptive information for the ten participating colleges.

Administrator Survey

Each participating community college was asked to complete an online survey to gather information about their technological infrastructure, their capacity to deliver and support online services (e.g. instruction, student supports), their efforts to support online learners, and their use of data to promote student success.[3] (The survey can be found in Appendix B.) The survey asked respondents to report this information in two distinct time points: 2019, the year preceding the pandemic, and 2024, the year in which the survey was administered. The survey's temporal design allowed us to establish a baseline of the colleges' engagement in an online environment prior to the pandemic, and the extent to which that baseline shifted after the pandemic. We did not require colleges to report information in each year marking the height of the pandemic (e.g. 2020, 2021) because of concerns about reliability and respondent burden (Groves et al., 2011). Rather, we probed administrators participating in the group interviews, which we describe below, about the specific changes their college made over the course of the pandemic, and which endured after the pandemic.

Respondents included senior administrators such as vice chancellors, vice presidents, deans, and directors, as well as administrators involved in providing student services, instruction, and academic supports. In our correspondence with the colleges, we asked that they restrict survey respondents to those employed at the college prior to COVID-19 to improve the accuracy and completeness of information reported for 2019 and 2024. The Texas Success Center, a partner in this research, facilitated our initial contact, typically the Texas Pathways liaison, with each college.[4] We shared a PDF copy of the survey with our initial point of contact at each college to assist them with identifying administrators best positioned to answer it. We used Qualtrics to administer the survey, and pre-tested it with an administrator from a community college that was not selected to participate in the study. We reviewed all surveys for errors, and employed descriptive quantitative methods to analyze survey data (e.g. we calculated proportions for categorical data).

The survey data were used primarily for two purposes: to inform the subsequent interview questions for the individual colleges, and to enable analyses across the ten colleges of their infrastructure for and delivery of online instruction and services pre-pandemic and currently. For example, survey data on the provision of student supports online in 2019 and 2024 assisted us in probing individual colleges on why or why not they had instituted a certain service online pre-pandemic, as well as showed the shifts across the colleges in providing more services online currently than they did pre-pandemic.

Administrator Group Interviews

At each participating community college, we conducted an online semi-structured group interview with administrators who played a key role in either leading or supporting the college's strategic response to the COVID-19 crisis. In total, 29 administrators participated in the group interviews. The college roles of the interviewees were similar to those of the survey respondents (and in some cases were the same individual). Each interview lasted about one hour and a half. All interviews were recorded, transcribed, and checked and cleaned for errors.

We structured our interview questions to deepen our understanding around four key topics: (a) COVID-19's impact on faculty, staff, and students (e.g. *What kinds of challenges did*

[3] The survey asked respondents to provide a timeline indicating when their college closed, reopened, and resumed pre-pandemic operations. Based on the survey and interview data, there was considerable variability regarding when the colleges phased out of emergency operations.

[4] The Texas Pathways liaison is a representative from a Texas community college who engages with the Texas Success Center to increase the efficiency of program pathways.

your college and students experience because of COVID-19?) ; (b) responses to COVID-19 in terms of instruction, support services, program offerings, and operations (e.g. *How did your college support student academic needs?)*; (c) use of financial resources to support COVID-19 response (e.g. *What resources did your college rely on…?)*; and (d) how the pandemic led to lasting, transformational changes, as well as the ongoing challenges it continues to pose (e.g. *What pandemic-related changes has your college institutionalized?*). In addition, we collected information on the challenges facing each college prior to the pandemic to situate each college within the larger pre-pandemic context.

Before conducting our interviews, we pre-tested our protocol with a senior-level administrator from a Texas community college—one not included in our study—who oversaw student success initiatives during the pandemic. Based on the individual's feedback, we revised the wording of interview questions, and added several new questions deemed important to the study.

Data Analysis

Three of the four authors analyzed interview transcripts concurrently with data collection. We began analyzing interview data by engaging in discussions immediately following each interview. We used these discussions as opportunities to weigh the salience of what was said, revise interview questions to improve clarity, and identify areas where additional probes could be used in subsequent interviews. Once we completed data collection, we drafted one- to two-page memos summarizing each interview transcript to begin identifying college-specific themes, supporting each theme with quotes from administrators.

Next, we used a hybrid coding approach to systematically identify key themes and patterns across all 10 interviews (Miles, Huberman, & Saldana, 2014). First, we developed a set of pre-defined codes guided by our interview questions (e.g. "preCovid_college readiness", "COVID_response_communication", "immediate_changes_faculty", etc.). This deductive analytic strategy enabled us to examine how the pandemic affected relevant community college stakeholders and operations as well as how these colleges addressed the changes precipitated by the pandemic. In the course of applying these codes, we generated additional ones that allowed us to develop a more complete description of how COVID-19 changed these colleges in the short and long-term. We met routinely to reach consensus on code definitions, and to ensure consistent application of the codes across the data.

We then categorized these codes to extract deeper meaning from our data. For example, to infer how colleges altered instruction during COVID-19, we grouped codes related to instruction into thematic clusters that we then used to identify patterns common to colleges. We referred to our memos, created before we began coding, as a check to ensure that we made reasonable inferences and did not overlook relevant findings.

Quantitative Findings

To assess the extent to which the pandemic disrupted enrollment, persistence and completion in the Texas community colleges, we produced Figure 1, which shows these patterns over five semesters for a combined pre-COVID cohort (2015, 2016, and 2017) and then five cohorts that experienced the pandemic (2018, 2019, 2020, 2021, 2022).[5] Both spring and fall semesters are included (i.e., for the Fall 2018 cohort, semester 1 is Fall 2018, semester 2 is Spring 2019, semester 3 is Fall 2019, semester 4 is Spring 2020, and semester 5 is Fall

[5] These findings are presented in more detail in Miller et al., 2024.

2020). The transition from green to orange (and the addition of asterisks after the semester number) in the later cohorts marks the onset of the COVID-19 pandemic in Spring 2020.

Notably, we observed very little change in the rates of completion and upward transfer or persistence after the onset of the COVID-19 pandemic. While surprising in light of the immense disruption to standard operations brought on by the pandemic, this finding is consistent with national data reported by the National Student Clearinghouse Research Center (2025). The only meaningful change shown in Figure 1 is the significant drop in newly enrolled students at the height of the pandemic in Fall 2020. All the cohorts that matriculate before the onset of the pandemic (e.g., those that are green for the initial fall term) are of similar size, around 224,000 students. The Fall 2020 cohort is much smaller with only around 192,000 students, representing a decrease of more than 14 percent in initial fall enrollment. The Fall 2021 cohort is similarly small with around 197,000 students, and only in Fall 2022 did the initial fall enrollment increase slightly to about 203,000 students, but this number still represents a decrease of 9.7 percent from pre-pandemic initial enrollment.

We also anticipated that the pandemic would disproportionately affect certain groups, leading to changes in the demographic composition of cohorts entering college during the pandemic. However, we found no significant changes in the composition of student cohorts entering in the fall semesters of 2020, 2021 and 2022 with respect to race and ethnicity, sex, economic and academic disadvantage status, and first-time-in-college status (Table 1). The primary exceptions were a marked increase in the share of Hispanic students over time and across cohorts, and an increase in the share of students who received a Pell grant among the Fall 2021 cohort which then regressed to the mean for Fall 2022 cohort. The former pattern is consistent with overall trends in the demographics of the college-age population in Texas, and the latter pattern may be attributable in part to disruptions in economic circumstances of students and their parents brought on by the pandemic. Overall, however, the general patterns suggest that the enrollment plans of more vulnerable student groups in Texas community colleges may not have been differentially affected by the COVID-19 pandemic.

The quantitative data did uncover significant changes in course modality and grading patterns. With respect to course modality, our statewide findings closely follow anecdotal evidence of large pandemic shifts (Figure 2). Before Spring 2020, approximately two-thirds of courses were taken in person and a quarter were entirely online. However, in Fall 2020 and Spring 2021, this trend reversed so that most courses were online. After Fall 2021, the big shift in modality partly swung back, with the in-person format predominant again but only barely so.

We also investigated whether there was a change in grading patterns during the pandemic. On the one hand, students may have performed worse in their classes due to pandemic stress and disruption. On the other hand, administrators reported a tendency to be more lenient with students and implementing a “Culture of Care” to support students who were struggling, which suggests that grades may have improved during the pandemic. Statewide, we see a general pattern of grade inflation that began prior to the pandemic and continued through Fall 2021 (Figure 3). The share of completed credit hours for which students received a final course grade of A increased from 32% in 2015 to 37% in 2021. There was a noticeable uptick in As received during Fall 2020 (from 34% to 38%), and the share of As received in Fall 2021 was 37%. The increase in As over the study period was driven largely by decreases in Bs and Cs (from 41% to 36%). The share of completed credits where students received a D, W or F held relatively steady at around 25% to 26% over the study period.

A comparison of trends for our ten study colleges versus the other 40 non-study colleges show some differences and some similarities. With regard to enrollment, while the state overall and the 40 non-participating colleges had declining enrollment during the pandemic, the ten participants on average showed fairly steady enrollment (and one college actually had an increase) (Figure 4). With regard to course modality, the shifts among the study colleges as well as among the non-participating 40 are fairly similar to those across the state as a whole (Figures 5 and 6). Notable differences are that the ten participants shifted more courses to the online format more quickly – by fall 2020 – and also offered more hybrid courses than did the state as a whole or the 40 other colleges on average.

The somewhat faster shift by our ten participating colleges is interesting given that those colleges had on average a larger proportion of instructors with no online teaching experience prior to the pandemic. The average for the state and the 40 non-study colleges is about 37% with no prior online teaching in spring of 2020, but almost 50% for the ten participants (Figure 7). By spring 2021, those proportions converge across the state and our college subsets to around 14%. Regarding the proportions of students without online course experience, the data are very similar across the colleges, with about 40% of students having had no prior online course in spring 2020, and that proportion declining steeply over the subsequent semesters (Figure 8).

These data describe the context in which Texas community colleges, specifically the sampled colleges, were operating. Specifically, the data show that the ten colleges that participated in our survey and interviews were somewhat different from the rest of the state's community colleges, although not strongly so.

Qualitative Findings

College personnel consistently stated that their goal was to prevent interruption to their students' education. Given the severity and scale of disruption that the pandemic caused, this goal was ambitious and courageous. What were their approaches? We distilled three themes from our data: 1) enacting collaborative and flexible responses, informed by multi-directional, multi-faceted communications; 2) ensuring smooth online access to not just courses but to all college services, as well as working to improve the quality and scope of courses and services; and 3) developing a more empathetic institutional culture. We also describe pandemic-related challenges the colleges continue to face, along with their efforts to sustain new student success approaches that were initiated or propelled during the pandemic. Throughout our analysis, we note ways in which the institution exhibited resilient behaviors and capabilities, and how they emerged transformed.

Colleges' Operational Approaches to Responding to COVID-19

Collaborative and Flexible Responses, Informed by Strong Communications

The colleges' clear goal during the pandemic was to continue to educate their students. Our interviewees shared that, in general, college personnel were united in their commitment to their goal, with one college even adopting a slogan – "Our work continues" – to rally their efforts and keep their focus on the students (College F). However, accomplishing their goal would require creativity and new ways of working together. The strategies our interviewees pursued were in line with responses described in the organizational resilience literature as "loosening control" and "enlarging informational inputs" that meet the challenges of disruption and strain (Vogus and Sutcliffe, 2007). Our findings are also consistent with the prior literature on college

leadership during the pandemic (described above) that found that decision-making and action-taking became very distributed.

The colleges formed various committees to decentralize the decisions and actions, and empower staff and faculty with significant autonomy to problem-solve. This increased collaboration far beyond what was typical.

> So, the answer is nobody knew what the next question was gonna be, but we all got in our pockets, our pockets of skill sets, making sure each area was covered and just said 'what do we need to do to support our area?' (College A)

> We were very lucky at this college to have an administration that allowed a lot of flexibility and opportunities for mistakes and just a faculty and staff that said, hey, let's roll up our sleeves and figure this out and take care of us and students. (College B)

Communications in multiple directions became vital to coordinating the many necessary responses. Among college personnel, communications "cascaded" (College I) in every direction, with leaders sharing national and state guidance and college priorities, and administrators and division heads providing support for deans and faculty to implement solutions to instructional and support challenges. Since information about the health risks of the virus changed constantly, frequent communication was vital to "allay fear." (College G)

> I just saw that in an effort to ensure that everyone was on the same page, there was communication all the time about where we are with COVID, what are we doing? How are we going to pivot? How are we going to shift? What do you think about this? What should we change? (College F)

This illustrates what the literature on organizational resilience identifies as "mindful organizing," a mechanism of resilience. It entails frontline employees "continuously developing, refining, and updating a shared understanding of the situation they face, the problems defining it, and what capabilities exist to ensure safe performance" (Vogus and Sutcliffe, 2007, p.3420).

Two-way communications with students was also critical to the colleges' responses. All of the colleges made strong outreach efforts to students via multiple avenues – individual phone calls, emails, texts – to ask what they needed to stay enrolled. In the summer of 2020, one college (A) decided that every student enrolled in the spring and that summer – tens of thousands – would receive a phone call from a staff member. Every call was logged with a follow-up recommendation, such as the student needing a laptop computer, and the staff and faculty making the calls would highlight the students with the greatest needs, forwarding their names to the appropriate staff for assistance. An administrator noted the faculty's commitment to the students:

> And so I think faculty, with that really service-oriented mindset, they really were and are continuing to just go above and beyond to try to connect with students. And you know sometimes they just can't get through to them and you know they don't hear from them and stuff like that. But I see how that really bothers our faculty when they can't get a hold of the student. (College A)

Other colleges made similar "care calls" – calling and emailing all students and keeping records of their outreach. Some colleges focused their efforts on particular groups of students; one made special efforts to connect with students who had been enrolled in face-to-face

courses but disengaged once courses were online (College E), and another targeted students due to graduate in May 2020 (College D). One college established a new, centralized email address for students to share their needs and challenges (College A). Another college had an existing online form for students that could be accessed via a QR code (College J). That college noted the large numbers of students contacting technology services and, when sharing their tech challenges, would often also share financial or food needs – "Students don't differentiate – I need a laptop just as much as I need some financial help or food" (J). This spurred collaboration among different college services.

Our interview data show that multi-directional communications helped college personnel to understand what they needed to do individually and collectively. In line with the organizational resilience literature, employees were empowered and given considerable autonomy to use their own expertise and creativity to respond to the situation (Kantur & Iseri-Say, 2012). All of this occurred within a context of strong meaning and purpose – shared concern for and commitment to their students – which is also an attribute of organizational resilience (Hillman & Guenther, 2021). One result is the development of a lasting sense of tenacity and grit:

> So we were able to do something quite remarkable for a large institution during that time. So what that does for us, I think, in a grandiose type of way, is that whatever challenges that we face, we have the mindset and the ability to meet those challenges, right? So that's I think really important as an institution that we understand that. (College C)

Enhancing Remote Instruction

COVID-19 was declared a pandemic at the beginning of the colleges' spring break when classes were not running. If courses were to resume the following Monday, the colleges had only one week to think creatively about how to use existing resources to quickly scale online access to instruction and services. (One of our study colleges reported taking an additional week to resume instruction and services.) Given that colleges had to move quickly, the study colleges reported investing significant resources to make the transition more seamless for students and for faculty. For colleges implementing 8-week courses, this transition was less abrupt since courses ended when the pandemic was declared. As we describe below, the colleges demonstrated "boundary-breaking behavior of creatively bringing resources to bear and deploying them to generate and capture new or unexpected sources of value" (Williams et al., 2021, pg.2). Faced with a deadline to deliver real-time instruction in one week's time, college employees "creatively brought resources to bear" (ibid., pg. 5) and broke norms by giving agency to online faculty to take leadership roles to scale remote instruction (Wiliams, et. al, 2021).

Leveraging existing and new technological tools

Quantitative findings show that, on average, just under 25% of the credits taken at the study colleges were taken online in the semesters leading up to the pandemic (Figure 5). Administrators from all colleges reported using learning management systems (LMS) (e.g. Canvas, Blackboard) to deliver online instruction prior to COVID-19 and capitalizing on this resource to scale online learning during the crisis. Although colleges did not purchase LMS in anticipation of the pandemic, it nevertheless suggests an awareness of changes in the external environment, specifically student demands for more flexible course options, which helped the sampled colleges reduce their vulnerabilities resulting from COVID-19 crisis (Rahi, 2019). Administrators from several colleges said that many faculty teaching traditional courses used

LMS as a tool to communicate with students. A few colleges required faculty to use LMS for their courses, regardless of how they were delivered.

Interviewees shared that familiarity with LMS and the use of course shells were critical factors that enabled colleges to quickly shift most courses to a virtual format. Without existing LMS contracts in place, and efforts to standardize courses across sections, expanding online learning in such a short amount of time would have been significantly more difficult.

> As an institution, we most certainly utilized Canvas, our learning management system, and we were already moving towards all of our courses having that canvas shell and I think at that time, all of our courses did. So, it was not too much of a stretch for our faculty to engage in the learning management system. (College C)

Colleges also leveraged other resources to ensure that online courses could more closely resemble traditional face-to-face courses. Many supplemented the tools embedded in their LMS with additional technologies not previously used, such as BigBlueButton, YouTube, Zoom, WebEx, Camtasia, and the Ally Tool, among others to improve the quality of online instruction for all students. These tools, some of them open-source and free, allowed faculty to stream and record lectures, measure classroom engagement, administer online assessments, and ensure that instruction was ADA compliant in online learning environments.

Capitalizing on existing human resources and trainings

Administrators from all sampled colleges reported that faculty with online teaching experience mobilized to provide "triage" support to help their less-experienced peers learn how to deliver online courses. This support primarily involved helping faculty navigate the LMS – how to administer assessments, send messages to students, and upload course content – and, to a lesser extent, provide materials to support online course design. This mobilization happened organically, without formal requests or mandates from leadership. Research on organizational resilience shows that involving and giving agency to lower-level staff to make decisions is key to developing a quick and effective response to a crisis (Vogus & Sutcliffe, 2007).

> So, I think that that smaller group and everything that that group had learned and the processes that they put in place during the switch - I think what was going on was they were really then trying to be ambassadors and help other faculty figure out how do you do this. (College A)

A fewer number of colleges said that they used other means to prepare faculty for teaching online. One college took a more formal training approach by assigning instructional designers to provide basic guidance on how to teach online. Through individual appointments, instructional designers provided "one-on-one kind of hand holding…to get faculty through and help get them to a comfort level that they could transition those that had not done it before." (College G). In this sense, faculty ambassadors and instructional leaders played a larger role than just simply showing traditional face-to-face faculty how to use LMS to teach online, but also provided emotional assurances that transitioning to an online format was feasible. In periods of crisis, leaders who offer hope, resiliency, and optimism are instrumental in buffering an organization against failure (French & Holden, 2012).

Another college shared that it adapted components of the multi-part, three-week Quality Matters professional development program to create a modified version that faculty could complete in less time. To ensure ongoing access to training materials, two colleges compiled

these materials into online toolkits or repositories, which were made available through the college's LMS or website. These toolkits included resources on delivering online courses—for example, how to post a welcome message, build an online course, and implement highly engaging online learning strategies (Colleges B, F, H).

Courses that required hands-on learning (e.g. welding) shifted to hybrid formats to follow COVID-19 safety protocols that required minimum spacing between students. Six colleges followed what they termed "A/B" scheduling, which arranged for half of the class to attend lecture online, and the other half to participate in hands-on learning activities. The following course period, students would switch places. Four colleges (Colleges C, E, F, G) reported that they prioritized "return to campus" for students enrolled in workforce programs or soon to graduate in an effort to decrease the risk of non-completion.

While all colleges reported offering training for online instruction prior to the pandemic, it was mandatory at only 5 colleges at that time. But by 2024, it had become mandatory at nine. Also, since 2019, more sampled colleges reported delivering training components that taught participants how to measure online student learning (from eight to nine); how to use Zoom or an analogous online communication platform (from four to seven); and how to send early alerts to help struggling students (from four to seven). Our quantitative analysis, as well as that of others, shows that enrollment in online courses has not returned to pre-pandemic levels (Cook & Acton, 2025), thus requiring more faculty to not just learn how to teach online but also how to do so effectively to support student success. This may be a positive transformation resulting from COVID-19. Some research finds that students perform better in face-to-face courses than in online ones, in terms of grades and lower rates of course withdrawal, but the research also shows that these differences lessened post-pandemic, which could be the result of pandemic-forced improvements in online instruction (Altindag, 2024).

Expanding non-academic student support services

It is well documented that community college students experience lower college completion rates relative to the four-year peers (Goldrick-Rab, 2010). Disparities in success have historically been explained as a problem of academic preparation for college-level coursework, but a growing number of studies have cast attention on material hardship and the unmet healthcare needs (mental and physical) facing community college students, and their negative effects of college persistence and completion (Broton, Mohebali, & Lingo, 2022; Kosiewicz et al., 2024; Wisconsin HOPE Lab, 2015).

Community colleges over the past decade have responded to this evidence by expanding services that directly address students' non-academic challenges, while continuing to provide traditional academic assistance (Martin & Flores, 2023). These services include mental health support, emergency aid, food pantries, and clothing resources, among others. Several interviewees noted that while they recognized, prior to the pandemic, the importance of providing non-academic services to support student success, academic support services like tutoring were much more common (College J). The beginning of the pandemic began to change that perspective when "...phone lines became jammed, inboxes were full" with student queries about student supports (College C). There was concern that students "had more questions and unless we hear from students 'what are their questions' we didn't know how to respond to them" (College C). The pandemic, thus, exposed community college employees, particularly faculty, to the challenges facing students, and its potential impact on student success.

> It's not that faculty were ignorant before of students' needs or hardships… Now though…. the pandemic has increased faculty awareness of our students and their needs beyond the classroom. And I know many of them are looking for ways to increase or to do a better job at helping students, not just in academics or in connection to the academics…(College J)

This greater awareness, in turn, motivated our study colleges to do even more to address the non-academic challenges facing their students, and adopt a "whole student" support approach, which encompassed an expanded array of direct financial assistance, basic needs and health support, and technology assistance. As we share below, many of the colleges participating in this study continued these efforts after the pandemic ended.

Financial Assistance. Research shows that it is often just a modest, unexpected expense that can cut short a student's college enrollment (Akers, 2025). During the pandemic, vulnerable populations, including low-income individuals, women, and people of color, experienced disproportionately higher rates of job loss and income loss relative to other demographic groups (Georgetown Center on Education and the Workforce, n.d.). The overrepresentation of these populations in community colleges motivated many sampled colleges, as one administrator said, "to remove the financial strain of attending college" (College F).

The largest change in student financial assistance during the pandemic was the expansion of emergency aid. According to our survey results, four of our study colleges provided emergency aid prior to the pandemic. In 2024, all ten did. Colleges explained that federal pandemic aid played an instrumental role in the creation of these programs. Interviewees reported spending CARES funds to distribute small cash payments to offset unexpected expenses (e.g. car repairs, medical expenses, family financial emergency), and others also mentioned that they supplemented and continued aid with other sources (e.g. state appropriations, external grants) (College E). Since colleges received aid from multiple sources, interviewees from two institutions reported creating a system to distribute targeted assistance based on individual student needs and characteristics (College D, I).

> We…I mean we gave some nice checks, we staggered it based on what they were enrolled in, but like the students who started coming back early, like in the technical programs in Health Sciences, we gave them more money because we knew they probably had to have childcare and things like that. (College D)

A few colleges bolstered other types of financial assistance beyond just emergency aid to reduce college costs. For example, one college allocated additional funds to forgive student debt (College G), and another institution offered direct financial relief by covering tuition costs to prevent student attrition (College D). Two other colleges launched free college programs during the pandemic, which provided tuition and books for free, and imposed no fees for first-time college students (Colleges E, F). Collectively, these efforts reflect the colleges' concerns with providing sufficient financial support to current students, but also ensuring that new students would continue to enroll.

Basic Needs Support. For a decade, the Hope Center at Temple University has brought attention to food, economic, and housing insecurity among college students. Of the 112,000 community college students surveyed by the Center in the fall of 2020, 61% reported some form of basic needs insecurity (The Hope Center, 2021). The pandemic exacerbated

these insecurities, even among students who were not considered vulnerable before the pandemic (Broton, Mohebali, & Lingo, 2022).

Our data analysis shows that our study colleges expanded the scope and range of basic needs assistance offered during the pandemic, and many have continued those efforts. According to our survey, seven of the ten sampled colleges operated a food pantry prior to the pandemic, while nine reported doing so in 2024. Additionally, four colleges offered clothing resources to students before COVID-19; that number has increased to nine. Adding to our survey results, interviewees from one college said that they now allocate dollars to student accounts to provide free, on-campus meals (College F).

Beyond these specific programmatic changes in basic needs assistance, our findings show that the pandemic signaled to colleges that they could play a larger role in bridging access gaps between students and government and community resources. Survey results indicate that seven colleges reported providing students support to help them apply for public benefits in 2024, up from three colleges prior to the pandemic. In addition, several colleges communicated that the pandemic led them to build strong partnerships with local non-profits to expand basic needs services (Colleges E, J), with some mentioning collaborating with local food banks to establish on-campus drive-thrus for students and the broader community to address food insecurity during the pandemic (Colleges A, B, C). These actions evince a shared understanding that addressing students' basic needs is integral to efforts to improve college retention and completion.

Mental and Primary Health Care. Studies show that a significant share of college students struggle with their mental health, and that community college students are less likely to access care to address their mental health problems (Lipson, Phillips, Winquist, Eisenberg, & Lattie, 2021). In 2020, a Hope Center survey found that one-third of responding community college students reported experiencing moderate to severe anxiety, with a similar proportion experiencing depression (The Hope Center, 2021). It is well documented that the pandemic exacerbated these challenges, leaving many community colleges grappling with how to best address the mental health needs of their students at a large scale (Kosiewicz et al., 2024).

Most of our study colleges had already invested in student mental health care before the pandemic. Nine of our colleges provided mental health counseling in 2019. After COVID, in 2024, all ten did so. What changed was not the provision of mental health services itself, but their scale and how they were delivered. Colleges began offering teletherapy, sometimes through third-party companies. For example, colleges contracted with TimelyCare to provide online therapy services, which ranged from on-demand emotional support to scheduled counseling (Colleges A, E).

An area where we observed a larger shift in healthcare services from the pre- to post-COVID periods is in the provision of primary healthcare. In 2019, only three colleges provided general health services. In 2024, that number doubled to six.

Technology Assistance. The transition to remote learning during the pandemic not only required faculty, staff, and students to change their routines and practices, but also forced community colleges to address longstanding issues related to the digital divide. The pandemic revealed clear gaps in students' access to technology, even among those who had previously enrolled in online courses. As one administrator explained:

> I can say a challenge that we became aware of through the pandemic that I was not aware of prior is our students' lack of access to technology. It became very apparent during the pandemic, but our director of Technology Services was already dealing with that problem. Not having enough laptops to check out, not having hotspots, not having students have access to computers in general. Because we already had a pretty robust number of online classes available to students, but I was not aware of how many students were taking online classes without really having the tools they needed to take online classes. So, that was a challenge we were dealing with that the pandemic brought forward. (College J)

COVID-19 relief funds were used to purchase much of the new technology, including institutional infrastructure and devices for students. Survey results show that prior to the pandemic, in 2019, six of the sampled colleges offered students connectivity support; four provided loaner laptops; two offered mobile hotspots; and only one allowed students to check out webcams. By 2024, this picture had changed significantly: ten colleges reported offering connectivity support; nine provided loaner laptops; eight offered hotspots; and four made webcams available to students. To offset the cost of technology, one college reimbursed students' monthly internet bills during the pandemic (College D).

Making student supports accessible online and visible

While the pandemic motivated our sampled community colleges to expand the provision of nonacademic supports and services, they would have little impact if they were not accessible remotely. Across our sampled colleges, significant resources were devoted to ensuring students could access student supports in an online environment, and were made aware of them.

During the pandemic, colleges adopted a variety of online tools to meet growing demands for student support. One of the first widely used tools was free videoconferencing software (e.g., Zoom, WebEx). Administrators reported using such tools to deliver online instructional content, but also academic and non-academic supports. Since colleges were unfamiliar with the utility of these online communication tools, many engaged in efforts to ensure that they would be used to the benefit of students. For instance, one college piloted Zoom with a handful of advisors to test its effectiveness of helping students; the number of students accessing the service quickly increased to tens of thousands, "so that told us that something is working" (College C). Another college provided basic training on "how you unmute and mute and how do you set up your cameras and put, you know, the background and all that" (College C). Two other colleges began using chatbots to handle student inquiries, with one leveraging a free trial to reduce costs (Colleges A, H). These tools allowed students to access support staff when campuses were closed or had limited access, but also helped colleges to "extend our service hours so we were running any time between 8:00 AM all the way to 10:00 PM." As one administrator shared:

> And so I know we use [the chatbot] with a lot of our student services questions and to be able to just kind of have that online resource available for our students when we did not have staff members available live to answer. You know, like just the evening hours and things like that. (College A)

Our analysis shows that since COVID-19, most colleges have moved student support services into a virtual format while continuing to offer them in person. According to our survey results, fewer than five of the study colleges offered academic advising, health services, mental health counseling, career services or enrollment support for public benefits online before

COVID-19. However, in 2024, health services was the only student support that did not have an online presence among the majority of the colleges. That year, all colleges reported providing online options for academic advising, tutoring, and mental health counseling; nine colleges offered online orientation; and eight provided online career services. Today, the use of video-conferencing is ubiquitous: “You know pretty much anyone, if they can't get to campus, can do a zoom meeting” (College D).

Beyond the widespread adoption of online communication tools, colleges also made efforts to inform students about these new options. The number of colleges that included guidance in student orientations on how to access non-academic supports online (e.g., mental health counseling, basic needs) increased from three to eight. Similarly, the number of colleges providing instructions on how to schedule online appointments with support staff also grew from three to eight.

Building a More Empathetic Institutional Culture

As noted, even before the pandemic, there was growing recognition that addressing students' external challenges is critical to improving college success. However, the pandemic brought these issues to the forefront for many community college personnel—many who previously were unaware of their students’ personal challenges. According to several administrators, the pandemic brought into sharper focus that students were not just learners, but, as one administrator put it, “whole students” with various needs outside as well as inside the classroom (College F). Along with that awareness, college leaders communicated the importance of empathy:

> The other thing that we did, professional development, I use that term loosely, is with our faculty was developing a sense of empathy and flexibility. And we did a great deal of working with faculty about, this is not the time for you to take a hard stance on this or that thing. This is the time for you to be empathetic, for you to talk with your students about how to deal with issues and problems. (College G)

This awareness has continued post-pandemic. Many of the augmented efforts to care for the whole student that were implemented during the pandemic have become institutionalized. This includes the enhanced, direct communications with students; the colleges reported that they are doing more to listen to their students. For example, the number of colleges administering a survey to their students to identify support needs increased from four before Covid to eight, and one college has implemented a student parenting survey (College E). Another college has continued the practice of personal telephone calls that was instituted during the pandemic, now targeting certain groups of students, such as those testing into developmental education, to share the supports available (College G). That college also requires students who wish to withdraw from classes to speak to a staff member, to see if any support can be offered (G). One college hired new staff who serve as “college life coaches”:

> [If a student says:] I need to know how to access the pantry or I need to know how I can get information about, you know, child care or something that is going on campus? So, we have college life coaches. I think we're up to 9 college life coaches and it's continuing to grow and so that was a really innovative idea that we had in the beginning of the of the pandemic and we're like, we don't know how this is going to work, and it's just really blown up, and it's it been a really, really wonderful addition to the college. (College F)

While colleges used HEERF funds to support many of these efforts and the additional staff needed to carry them out, most of the pandemic relief funds were spent by the end of 2022. But, in 2023, Texas House Bill 8, implemented a new, performance-based funding model for the Texas community colleges, which was cited by some of our college participants as providing funds to make the pandemic-era student supports sustainable. Colleges can receive extra money for students who have more support needs, including economically disadvantaged students and academically underprepared students. Under the new funding formula, Texas community colleges received an extra $210 million in the 2024 fiscal year (Dey, 2024).

While overall our study informants believe that the more empathetic culture instilled during the pandemic is a positive transformation that makes them more effective in serving students, some shared tensions that have emerged from students' newly high expectations for support and accommodations. Students now expect instant responses to any query, and convenience. For example:

> So the one thing that we have noticed that kinda changed is the expectation… People expect responses like right away. And people like everything virtual, so "do not tell me where I need to go to the campus to get this thing done." But you know, luckily over COVID all the forms and the processes that we have made them electronic – it does allow them to almost do everything virtually if they choose to. (College C)

The colleges also reported that the general problem of entering students being underprepared academically has worsened since the pandemic (College B). Many noted that high school standards were low during COVID and some schools adopted pass/fail grading. In addition, many new students over-estimate their capabilities for online coursework, because they believe they were successful in online learning in high school. So the colleges are struggling with the right balance between caring for their students but also treating them like adults with accountability.

> They all think that they are great online learners, distance learners, self-disciplined – and they're not. (College J)

> I think students expect nowadays the answers and not the process of finding the answer… And that's a lot of the problems that we're having with students and wanting the answers, not wanting to read, not wanting to submit their assignments, not wanting to do their assignments. But wanting to have an A. (College J)

Even with these new challenges, our college interviewees stressed the positive nature of their stronger culture of listening to and supporting students, as well as the greater accessibility of student supports.

Discussion – Resilience and Transformation

While the pandemic was a traumatic time with many negative consequences, our retrospective study finds that it also led to some positive changes in the colleges that we studied.

The literature on organizational resiliency describes how, when adversity strikes, a resilient response involves collective actions to adapt and improvise to find solutions (Hillman and Guenther, 2021). We have shown how, in the ten Texas community colleges, strong collaboration and communication, distributed leadership, flexibility, and a sympathetic "we're all

in the same boat" attitude led to the changes in instruction and student supports needed to respond to pandemic restrictions. While some of these changes were already underway – professional development for online teaching, student supports increasingly available online, increasing attention to students' nonacademic needs – COVID-19 accelerated these developments, which needed to be made to improve student access to courses and services, regardless of the pandemic. Colleges now offer choices of courses in different modalities, and expanded in-person and online services to fit different students' needs. Our respondents reported implementing more training, increased faculty collaboration, and using new technology tools to improve the quality of online courses, as well as various new options for students to access whatever support they need, such as online faculty office hours.

Given the many challenges that students were facing at the time, the pandemic also spurred the colleges we studied to significantly expand the wraparound support services such as basic needs support, childcare support, and healthcare services (both physical and mental) that they offer to students. Colleges also invested in CRMs and other systems that they could use to communicate about student challenges and connect students to relevant services that could help address their specific needs. These changes, which colleges have been striving to maintain or expand, moved the colleges closer to holistic advising approaches that are held up as best practices by the US Department of Education (National Center for Education Evaluation, 2021).

These changes to operations and course and service delivery were accompanied by several types of cultural shifts within the colleges, which our interviewees noted as being generally positive. For one, there was a shift in perspectives on online learning. Several administrators said that before COVID-19 some faculty were not just unwilling to teach online, but viewed it overall as an ineffective means of education. However, the pandemic pushed many to learn how to teach in a virtual environment, enabling them to see that not only could they teach effectively online, but they could even excel in an online setting (College H).

Our study colleges also noted that the urgent actions they had to take during the pandemic brought about a shift towards more openness to change. In having to eliminate barriers to student learning quickly, immediate problem-solving became the norm, even across different college divisions. Our interviewees expressed a new confidence in their ability to be adaptable, to question the usual way of doing things, and to make changes collaboratively. As one administrator said:

> And I think maybe that's one of the takeaways is I think initially you're gonna get push back from faculty or say, Why do we have to do it this way? And then the realization is, we can do it this way. And the very next realization is how many other ways are there of doing this? I think that that's sort of the bug that a lot of us caught. (College H)

Finally, a culture of care and empathy for students that already existed in many of these colleges was prioritized and strengthened because of the pandemic. Administrators reported now holding themselves "to a higher standard" (College E) in serving students. One college respondent said simply that an outcome of the pandemic is that the college's "customer service improved greatly" (College I).

Resilient organizations learn from the experience of crisis and emerge stronger and more effective. Coming out of one challenge successfully "initiates a positive feedback loop to an organization's capabilities such that they are strengthened and further resilient in the face of novel events" (Vogus and Sutcliffe, pg. 3419). When asked to reflect on how the pandemic

changed their colleges, our respondents reported having developed a new sense of strength and accomplishment:

> I've learned we can be really resilient and that no matter what the challenge is, that we're up to it. It's hard, it takes a lot of time and effort. But I also think that we've learned that we have to take care of ourselves too. It showed me, you know, nothing stopped us from serving students. (College G)

The consensus among the administrators we interviewed at the colleges we studied was that they had emerged from the pandemic understanding that their institutions are somewhat better for the changes forced upon them.

Table 1. Demographic characteristics of student cohorts before and during the COVID-19 pandemic.

Category	Characteristic	2015-2019 Cohorts Average	2020 Cohort	2021 Cohort	2022 Cohort
Race and Ethnicity	White	33.6%	32.7%	29.9%	28.4%
	Black	14.9%	14.2%	13.8%	13.9%
	Hispanic	41.6%	42.7%	46.3%	46.7%
	Asian	4.0%	4.3%	4.2%	4.5%
	Other	5.9%	6.1%	5.8%	6.5%
Sex	Female	55.7%	59.9%	57.2%	56.7%
	Male	44.3%	40.1%	42.8%	43.4%
Disadvantage	Pell-Recipient	38.9%	37.6%	47.6%	41.8%
	Academic[6]	33.4%	32.9%	36.4%	38.7%
First-Time-in-College Status	FTIC	48.7%	47.4%	47.4%	51.7%
	Non-FTIC	51.3%	52.6%	52.6%	48,3%
Intent	Earn an associate degree	51.8%	54.3%	56.0%	53.4%
	Earn a certificate	7.0%	6.5%	7.6%	7.5%
	Earn credit for transfer	25.4%	27.7%	24.7%	22.1%
	Courses for new/better job	3.3%	3.5%	3.6%	3.4%
	Earn a BAT degree	0.1%	0.4%	0.5%	0.3%
	Other	12.3%	7.6%	7.6%	13.3%
Enrollment Status	Full-Time	41.2%	41.8%	42.2%	43.3%
	Part-Time	58.8%	58.2%	57.8%	56.7%
Age	Younger than 24	66.7%	71.2%	72.4%	76.5%
	Older than 24	33.3%	28.8%	27.6%	23.5%

[6] THECB defines a student as “academically disadvantaged” if they are deemed not to have entry level college skills in reading, writing or mathematics. Typically, these are students who test below college-level on the state’s placement exam, the TSIA. Some colleges also report students who did not have a high school diploma or GED at the time of entry as academically disadvantaged. See: https://reportcenter.highered.texas.gov/reports/data/glossary-of-data-terms/

Figure 1: Patterns in enrollment, persistence, drop/stop out, and completion/upward transfer for cohorts across time. Source: Author's analysis of data from the Texas Schools Project Education Research Center.

Figure 2: Percent of credit hours taken in all community colleges in Texas across modalities. Source: Author's analysis of data from the Texas Schools Project Education Research Center.

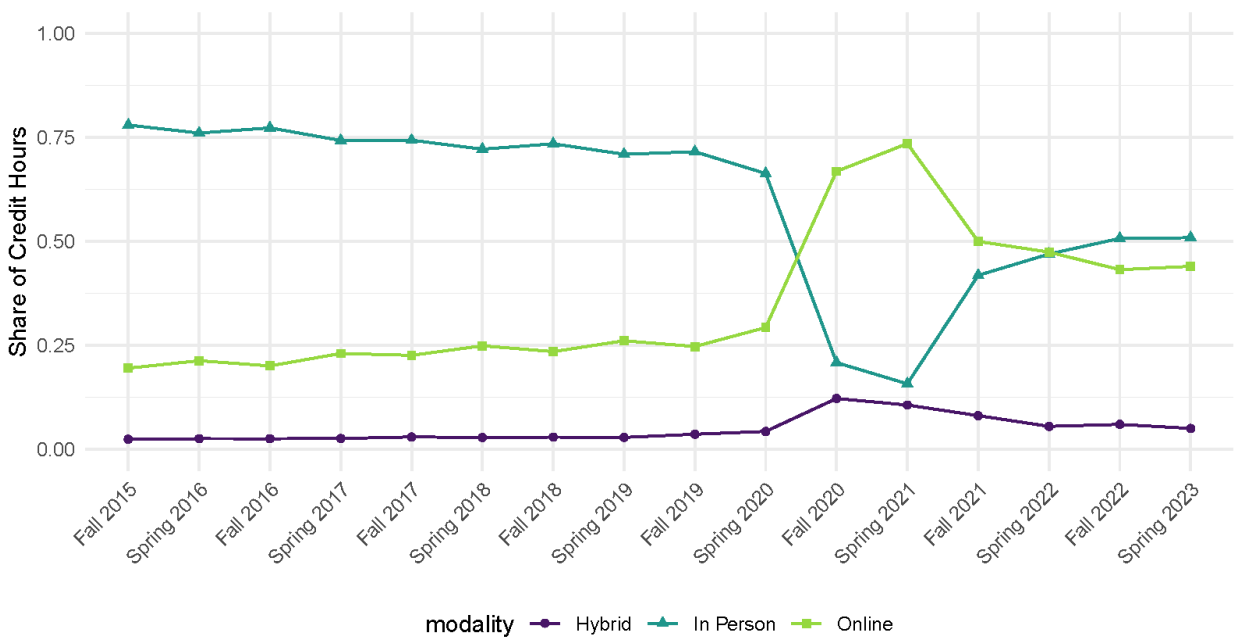


Figure 3: Percent of each type of letter grade given weighted by credits hours. Source: Author's analysis of data from the Texas Schools Project Education Research Center.

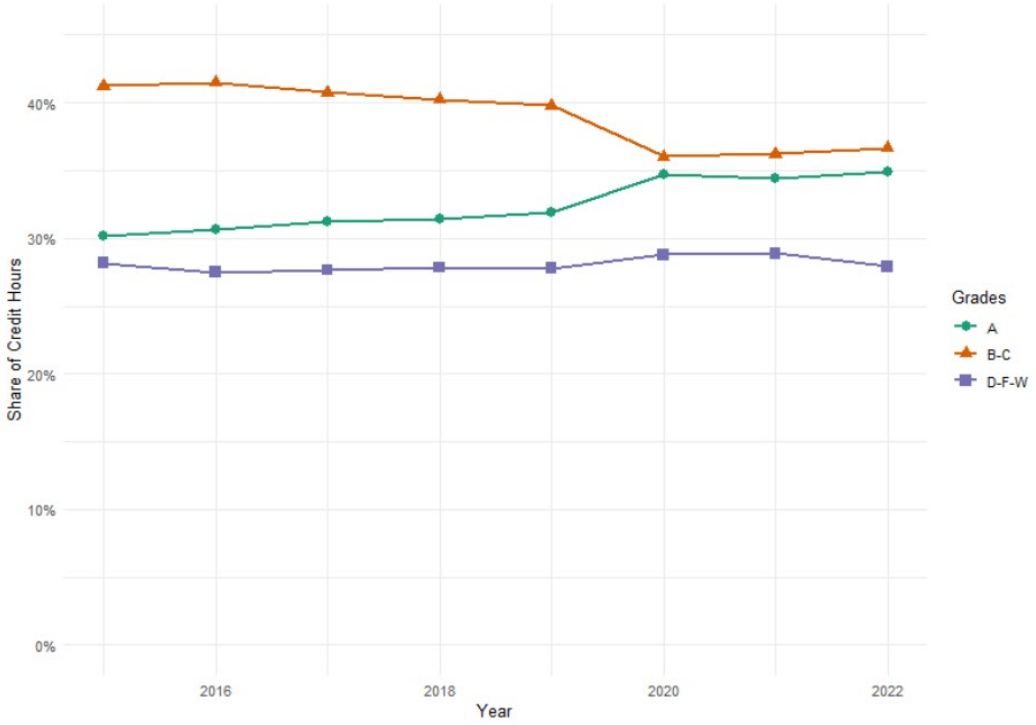


Figure 4: Headcount of students in community colleges in Texas. Source: Author's analysis of data from the Texas Schools Project Education Research Center.

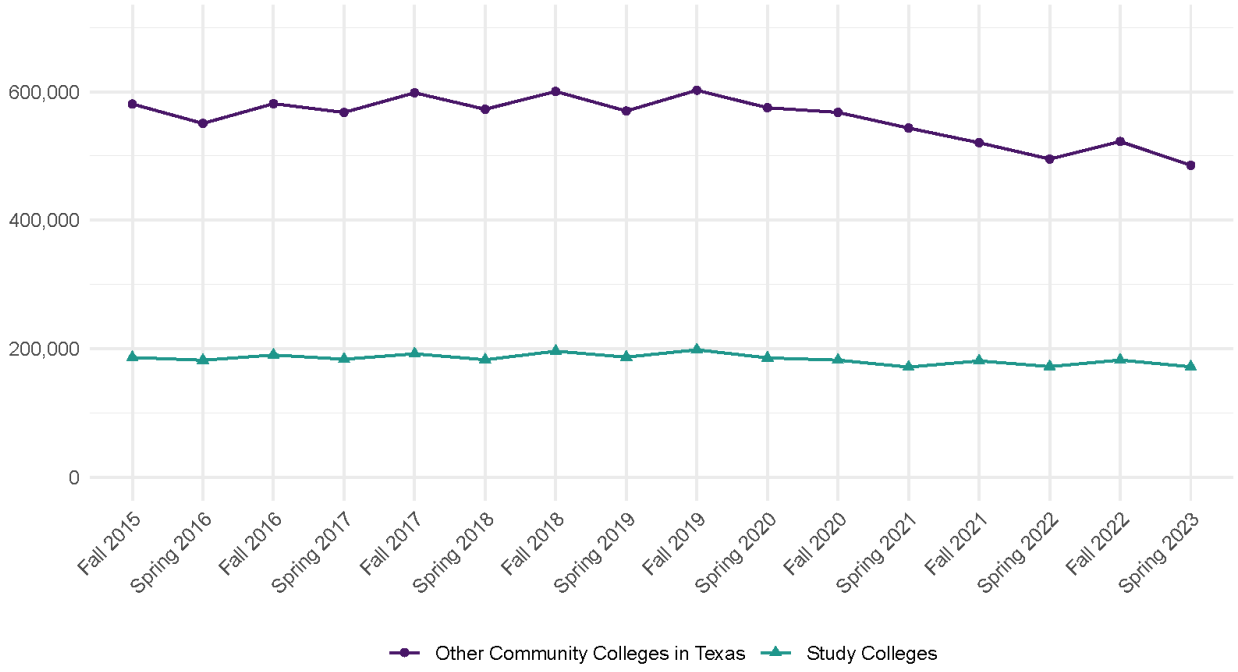


Figure 5: Percent of credit hours taken in the study community colleges across modalities. Source: Author's analysis of data from the Texas Schools Project Education Research Center.

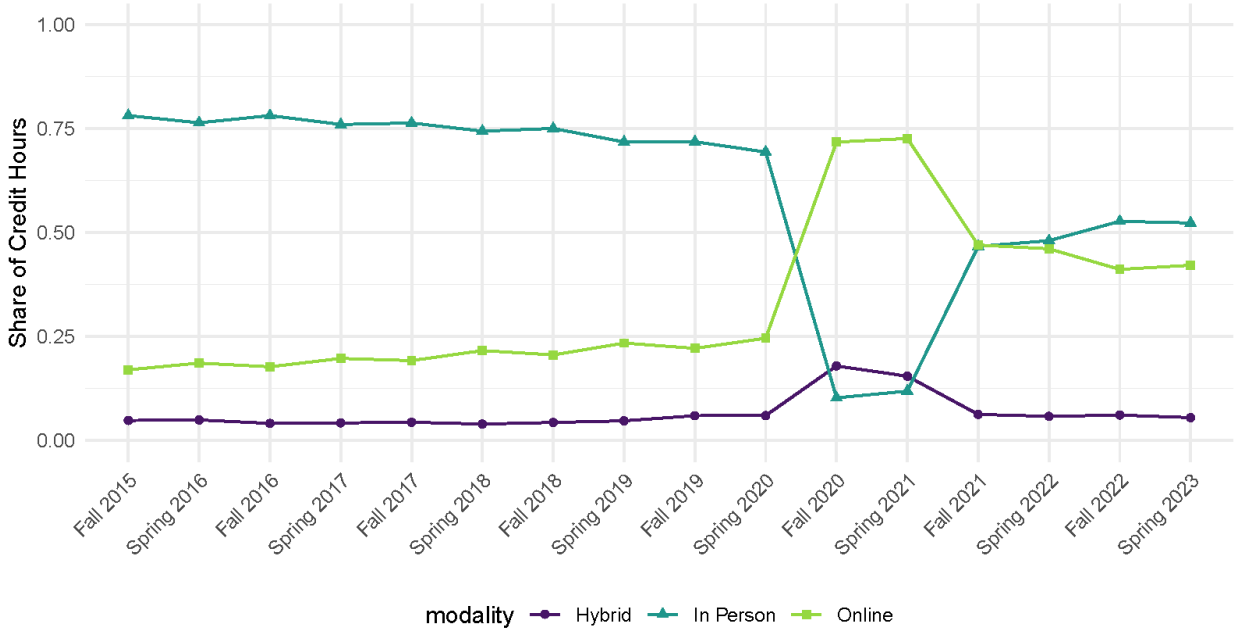


Figure 6: Percent of credit hours taken in all community colleges in Texas other than the study colleges across modalities. Source: Author's analysis of data from the Texas Schools Project Education Research Center.

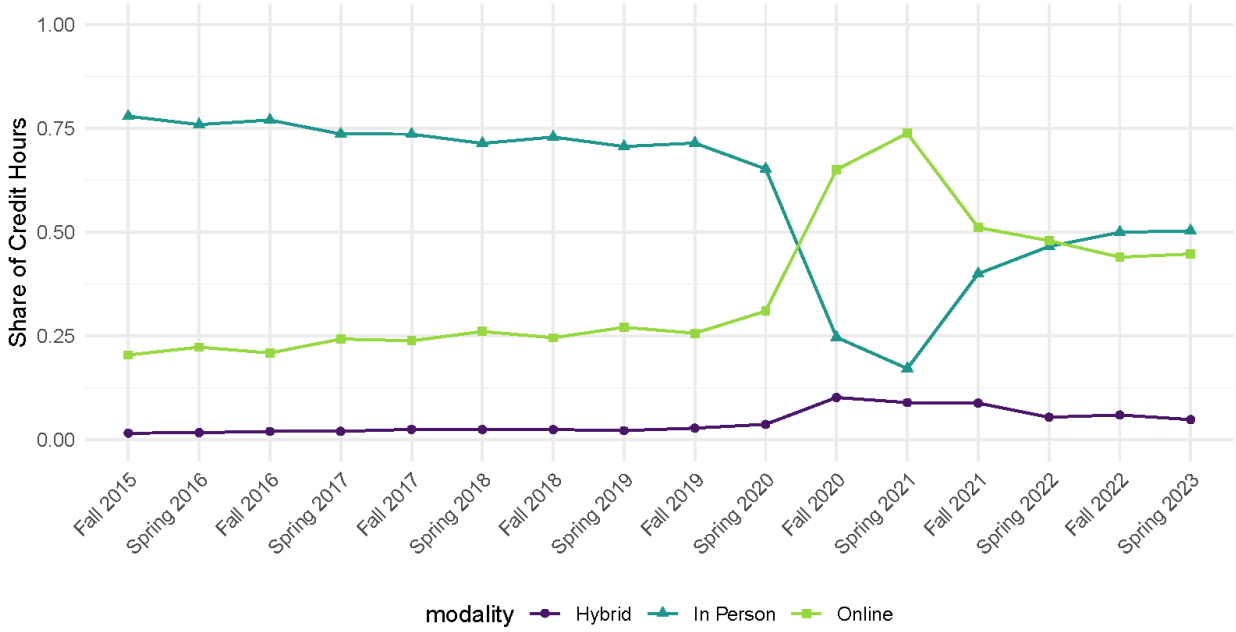


Figure 7: The percent of teachers, weighted by how many students took their classes, that had not taught at least one online class in a previous semester. Source: Author's analysis of data from the Texas Schools Project Education Research Center.

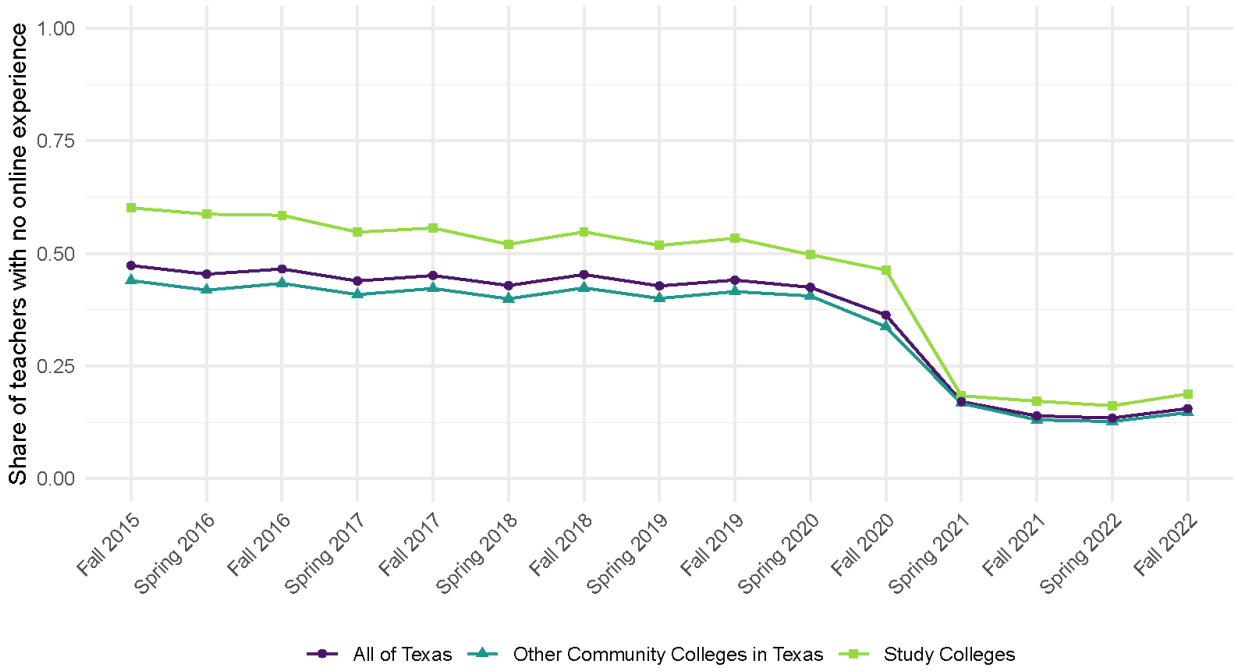
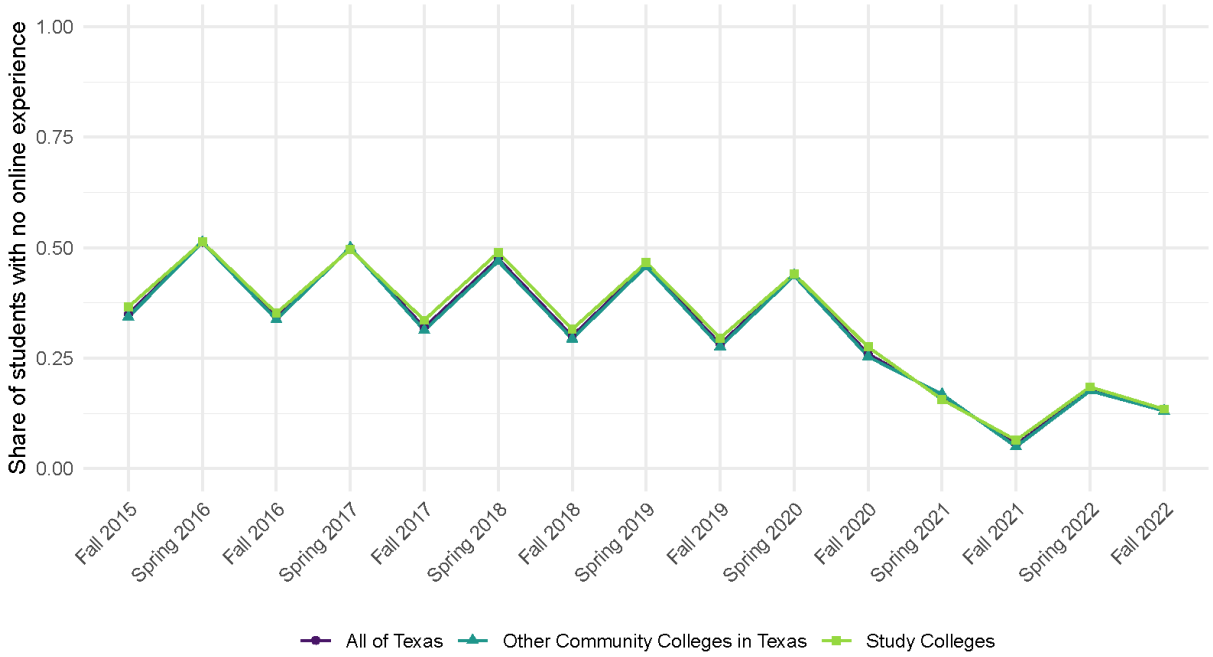


Figure 8: The percent of credits at the community colleges taken by students who had never had an online class before. Source: Author's analysis of data from the Texas Schools Project Education Research Center.



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Appendix A: Sampling Strategy and Study Colleges

Group	# of Community Colleges	Size	Location	Student Characteristics	# of Study Colleges from this Group
1	21	Small	Suburban and Rural	Above-average % part-time students; predominantly white	3
2	4	Large	Urban	Above-average numbers of students of color	1
3	28	Small	Town and Rural	Predominantly female and students over 25; high proportion of Pell recipients	4
4	12	Small	Urban and Town	Above-average Pell Grant recipients; predominantly Hispanic	2

Note: The number of colleges identified here is significantly greater than the 50 noted in the manuscript. This discrepancy is attributed to differences in the way that colleges report data to the federal government for IPEDS. Two large community college systems in Texas report their data to IPEDS by campus, despite the fact that all systems in Texas have moved toward a centralized structure with most programs designed to operate seamlessly across campuses that effectively operate as teaching sites. We treat these systems as a single college in our qualitative study. However, Tipton's Generalizer Tool, which draws upon IPEDS as source data, treats each campus as a separate college. The campuses from large systems that report data separately are all captured in stratum 4 as small colleges in urban settings.