ARCC NETWORK
ACCELERATING RECOVERY IN COMMUNITY COLLEGES

ARCC Network Brief
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How Remote is Success?

The impact of course modality on community college student success

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Community colleges play a vital role in providing affordable access to higher education, particularly for low-income students, first-generation students, and students of color (Community College Research Center, 2021). Community colleges are continually innovating to help mitigate the obstacles to enrollment their students face, including work and caregiving responsibilities, inadequate transportation, food insecurity, and unforeseen financial difficulties. To address these barriers, some community colleges have increasingly adopted distance education (also referred to as online learning) as a way to provide flexible options for students to engage in their education (Kurlaender, et al., 2024). Online learning has seen significant growth in recent years, particularly during the COVID-19 pandemic when the share of students taking any online courses at community colleges increased 71 percent from Fall 2019 (34% of students participating) to Fall 2022 (58% of students participating) (National Center for Education Statistics, 2022). While this shift to online learning was necessitated by the public health emergency, it has remained popular among students and faculty and is seen by colleges as a potential way to re-engage students who paused or delayed their education during the pandemic (Kurlaender, et al., 2024).

Despite the potential for increased access and flexibility, previous research indicates that online courses may drive down student achievement (Alpert et al., 2016; Bettinger et al., 2017; Hart et al., 2018; Kofoed et al., 2021; Xu & Jaggars, 2013, 2014), with researchers largely attributing these adverse effects to factors such as reduced in-person interaction, lack of time management skills, unreliable internet access, and insufficient adaptation of teaching methodologies to the online environment (Cole et al., 2021;

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Kofoed, et al., 2021; Xu & Jaggars, 2014). However, during the pandemic, colleges made significant investments to improve online education through enhanced connectivity options, faculty training, and software. With 96% of community college leaders planning to reassess the modality of their educational offerings (Jaschik & Lederman, 2021) and in light of the pandemic-era investments in online course quality, there is a pressing need for current research on the effects of distance education on student academic outcomes.

In this brief, we begin to address these questions in the context of the Los Angeles Community College District (LACCD). In particular, we ask:

1. What is the impact of attempting credits in distance education modalities on student academic outcomes?
2. How do these effects vary by the number of credits attempted in distance education modalities?
3. How do these effects vary by the type of distance education modality attempted?
4. How do these effects vary across student populations?

Key Findings

Our findings suggest that…

1. Taking any credits online led to small or no differences in immediate academic outcomes, and a slight decrease in persistence.
2. The effects of online course taking were the most positive for students who took some but not all their credits online in a term, relative to students whose credits were all in person.
3. The impacts of synchronous courses were worse than asynchronous courses.
4. The negative effects of online education were the smallest for students who were less than 24 years old and those with prior term GPAs above a 2.0.

The Los Angeles Community College District

This study takes place in the Los Angeles Community College District, the largest and one of the most diverse community college systems in California and the United States. LACCD consists of nine campuses enrolling over 100,000 students annually. More than two thirds of LACCD students attend part-time, and almost half aim to transfer to a four-year institution. The district serves a diverse student population, with over two thirds identifying as Latina/o/x and significant representation from Black, Asian, Filipino, multiethnic, and White

students (Los Angeles Community College District, n.d). Each LACCD campus is designated as a Hispanic Serving Institution. Los Angeles City College and Los Angeles Harbor College also hold the designation of Asian American and Native American Pacific Islander-Serving Institutions and Los Angeles Southwest College is recognized as a Predominately Black Institution (Minority Serving Institutions Exchange, 2024).

In response to the pandemic, LACCD rapidly expanded its online learning infrastructure, distributing around 40,000 devices, providing internet access, and allocating nearly $160 million in student aid through the Higher Education Emergency Relief (HEER) Fund. They also invested over $700,000 in stipends for faculty training for online teaching, dedicating 394,890 hours to enhancing instructional equity and effectiveness.[1] As a result, their focus on online learning has become a strategic tool for increasing student engagement and flexibility. By exploring the LACCD context, our research provides valuable insights into the promise of distance education for community colleges nationwide, addressing gaps in understanding how course modalities impact student success since the onset of the pandemic.

In this study, we focus on five course modalities offered in LACCD:

- In person: The course is taught in an assigned room on campus, with faculty and students expected to attend in the classroom each session in person.
- Asynchronous online: The course does not have an assigned room on campus; all work is completed on students' own schedules with content available on-demand.
- Synchronous online: The course does not have an assigned room on campus; there are live class sections/lectures via an online platform such as Zoom.
- Hybrid/blended learning: The course has an assigned room on campus, with part of the class taught in person and part taught online, with a prespecified schedule of what will be in which modality.
- HyFlex/dual delivery (certain LACCD campuses only): The course has an assigned room on campus with built-in or portable technology (cameras and microphones that automatically pivot to the speaker, such as Owls) to facilitate communication between in-person and virtual attendees; faculty lead in-person class sessions and students choose day-to-day if they will attend in person or virtually.

Data and Analysis

We utilize student-level administrative data from LACCD to answer our research questions. Covering the academic years from 2017-2018 to 2023-2024, this dataset includes details on student demographics, transcript records, financial

enrolled across the nine LACCD colleges and participated in courses during the fall and spring terms of the 2017–2018, 2018–2019, and 2021–2022 through 2023–2024 school years.[2]

We use a mix of descriptive and quasi-experimental approaches to answer our research questions. In particular, we use an approach called propensity score weighting[3] to estimate the effects of attempting credits in online modalities on student outcomes. We employ a descriptive multivariate regression to estimate how the relationship between modality and academic achievement may differ across student subgroups.

For our analyses, we examine the relationship between online education and student success by focusing on outcomes that capture aspects of academic performance and progression. We focus on three outcome variables:

- fall semester credit accumulation;
- fall semester GPA; and
- continued enrollment in the following spring term.

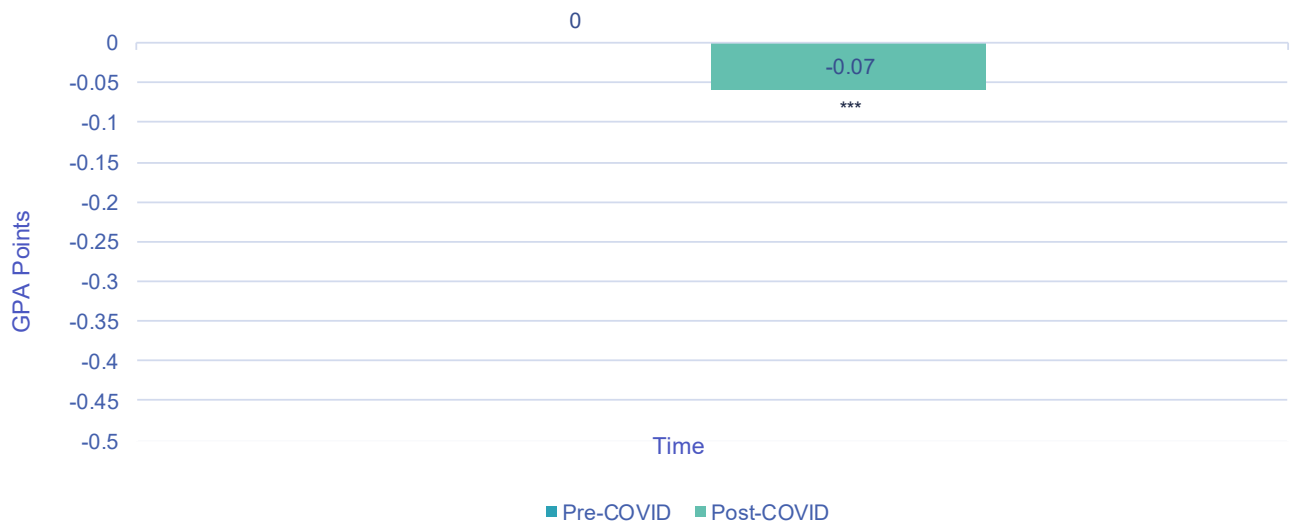
All our analyses account for factors that may impact both a student's decision to take online courses and their academic outcomes. These variables include student demographic characteristics like race/ethnicity, sex, age, and need-based aid receipt, as well as academic characteristics like college attended, participation in the Los Angeles College Promise,[4] and enrollment intensity.

Findings

What is the impact of attempting credits in distance education modalities on student academic outcomes?

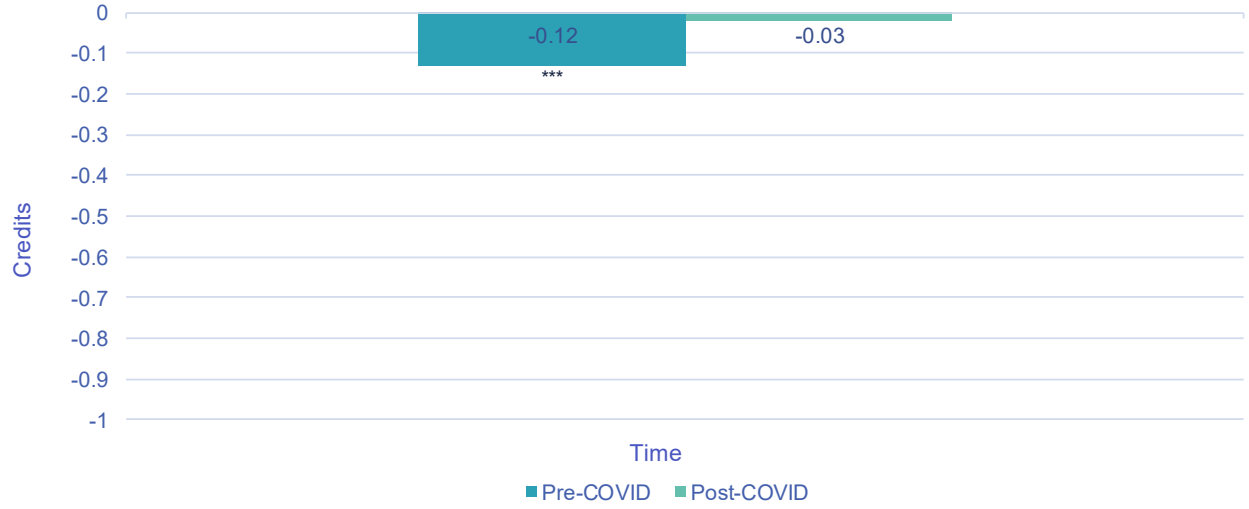
To answer this question, we look at whether a student attempted any credits online in a given term. We use our propensity score weighting framework to isolate the relationship between this indicator and students' achievement and persistence. Our results suggest that online course taking negatively impacts students' academic outcomes. As seen in Figures 1–3, students who enrolled in online courses earned, on average, 0.12 fewer credits and were two percentage points less likely to continue compared to their peers who did not take online courses prior to the start of the pandemic. The negative effect on credit attainment is reduced in the post-COVID-19 years (2021–2024), although on average students taking online courses still earned 0.07 fewer GPA points and were five percentage points less likely to persist.

Figure 1: Average Change in Term GPA if Student Attempts Any Credits Online in the Fall



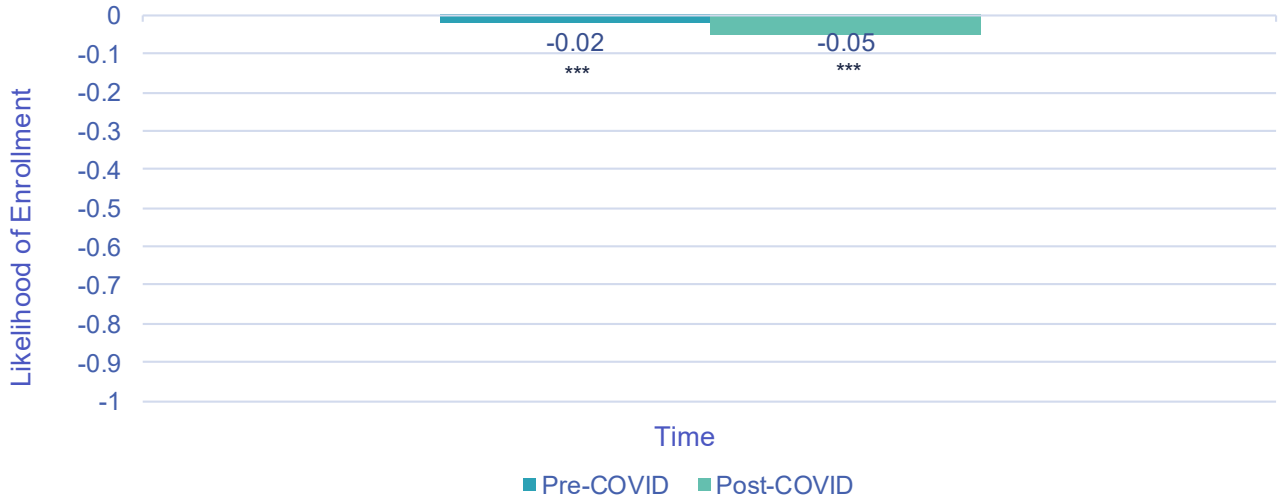
Note: Pre-COVID includes AYs 2017-18 and 2018-19. Post-COVID includes AYs 2021-22, 2022-23, & 2023-24. * p<0.05, ** p<0.01, *** p<0.001. Sample includes FTIC and continuing students.

Figure 2: Average Change in Credits Earned in Term among Students Taking Any Credits Online



Note: Pre-COVID includes AYs 2017-2018 and 2018-2019. Post-COVID includes AYs 2021-2022, 2022-2023, & 2023-2024. * p<0.05, ** p<0.01, *** p<0.001. Sample includes FTIC and continuing students.

Figure 3: Average Change in Likelihood of Spring Enrollment if Student Attempts Any Credits Online



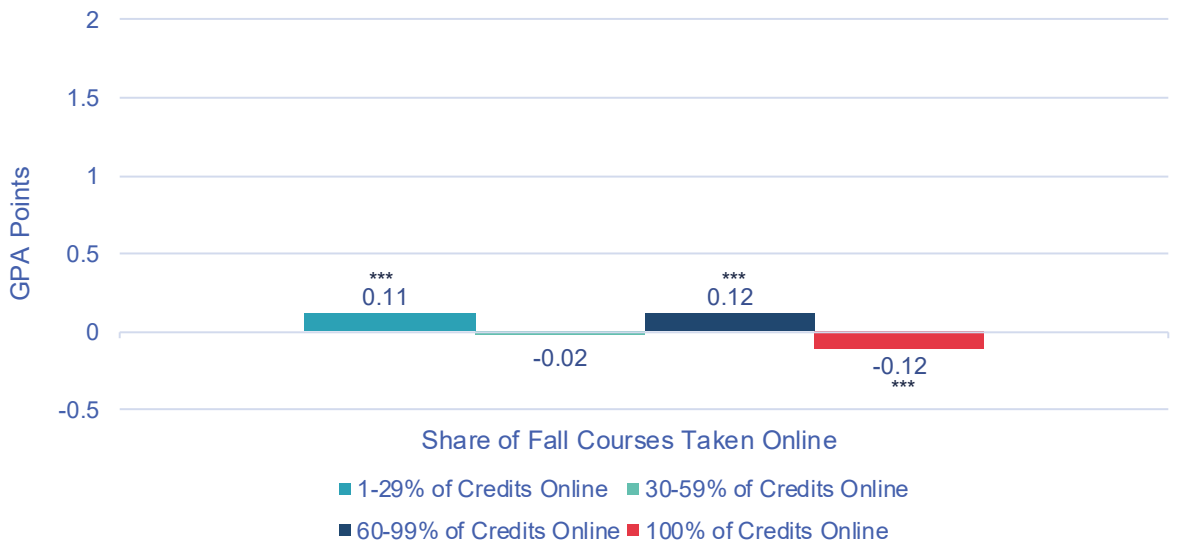
Note: Pre-COVID includes AYs 2017-18 and 2018-19. Post-COVID includes AYs 2021-22, 2022-23, & 2023-24. * p<0.05, ** p<0.01, *** p<0.001. Sample includes FTIC and continuing students.

How do these effects vary by the number of credits attempted in distance education modalities?

Turning to the question of dosage, we see that students who took some, but not all of their credits online, tended to have better academic outcomes. For this analysis, we generate four binary treatment variables to understand how student impacts vary by dosage of online course taking in the post-COVID-19 years.[5] We divide students who took distance education courses in the 2021–2022 through 2023–2024 school years into four groups: 1%–29% credits online, 30%–59% credits online, 60–99% credits online, and 100% credits online. Students taking 25% of their credits online (or one of four courses), for instance, fall into the 1%–29% group. Those with no online credits serve as the reference group.

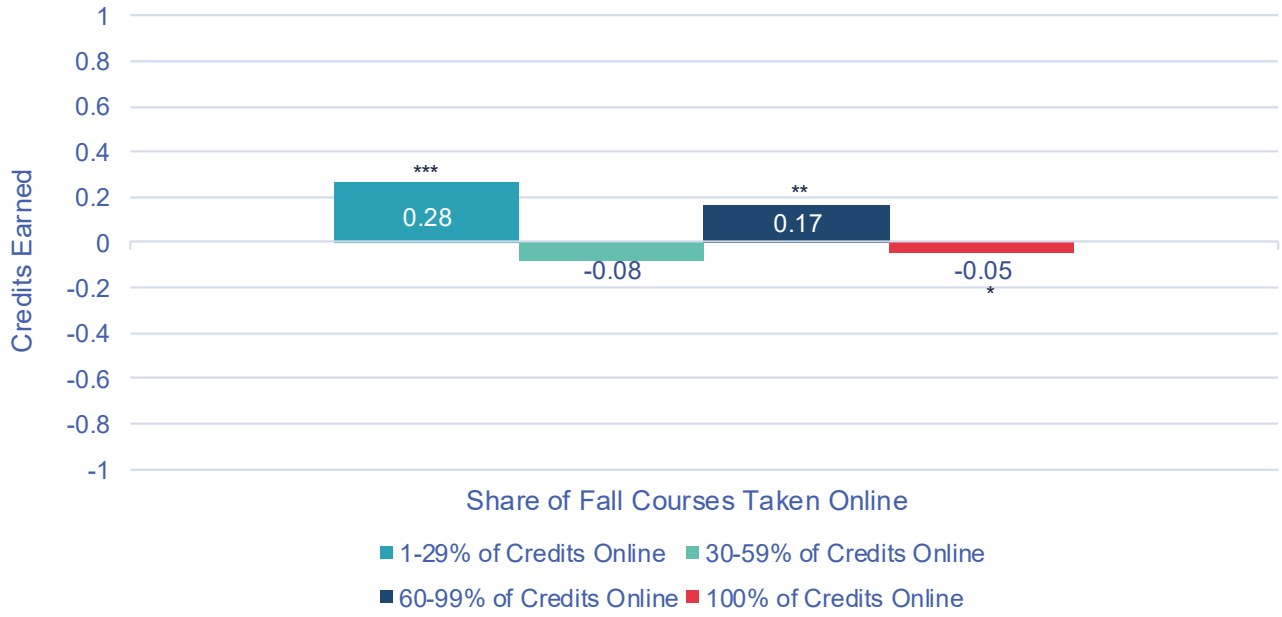
As shown in Figures 4–6, we see that, on average, students who took all of their credits online in the post-COVID-19 period earned 0.12 fewer GPA points, 0.05 fewer credits, and were six percentage points less likely to continue to the spring. There is also a noticeable trend of larger, positive coefficients on term GPA and credits earned for the groups taking 1–29% and 60–99% of their credits online.

Figure 4: Average Change in Term GPA by Share of Credits Attempted Online



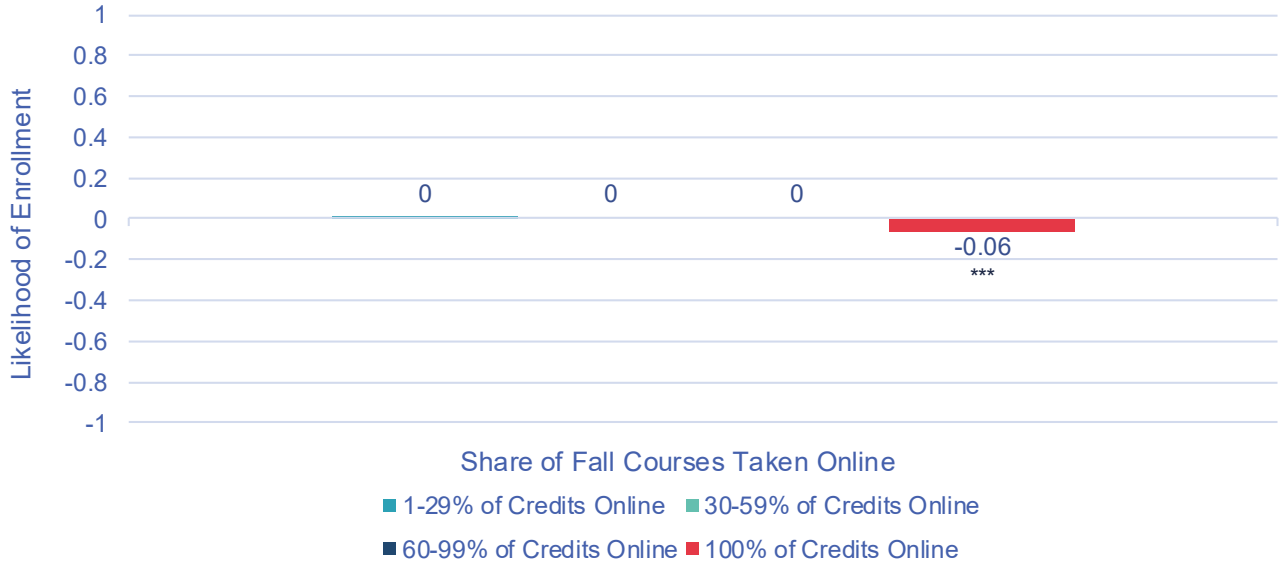
Note: Analyses are post-COVID and include AYs 2021-22, 2022-23, & 2023-24. * p<0.05, ** p<0.01, *** p<0.001. Sample includes FTIC and continuing students.

Figure 5: Average Change in Term Credits Earned by Share of Credits Attempted Online



Note: Analyses are post-COVID and include AYs 2021-22, 2022-23, & 2023-24. * p<0.05, ** p<0.01, *** p<0.001. Sample includes FTIC and continuing students.

Figure 6: Average Change in Likelihood of Spring Enrollment by Share of Credits Attempted Online



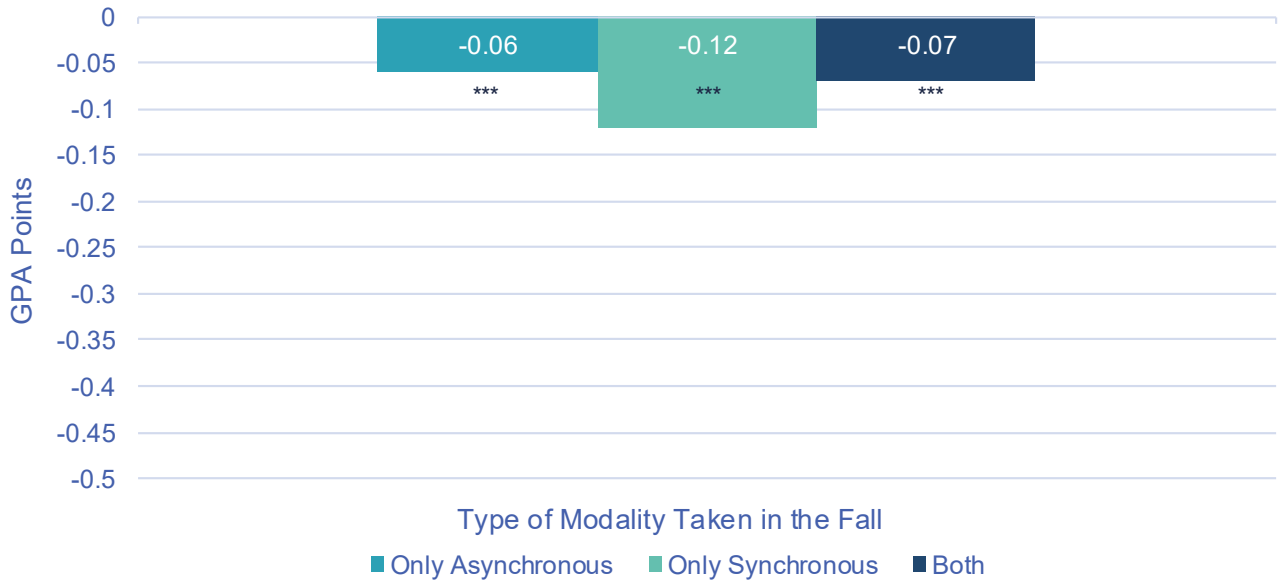
Note: Analyses are post-COVID and include AYs 2021-22, 2022-23, & 2023-24. * p<0.05, ** p<0.01, *** p<0.001. Sample includes FTIC and continuing students.

How do these effects vary by the type of distance education modality attempted?

Focus groups with LACCD faculty suggested that student experiences vary greatly across modality types within the general umbrella of distance education (Swanson et al., 2023). In particular, we heard that synchronous courses may have lower levels of student engagement than asynchronous courses. To test this idea, we split students into three groups: those who only took asynchronous courses, those who only took synchronous courses, and those who took both. We then compare each of those groups to students who only took in-person courses, using our same propensity score weighting approach.

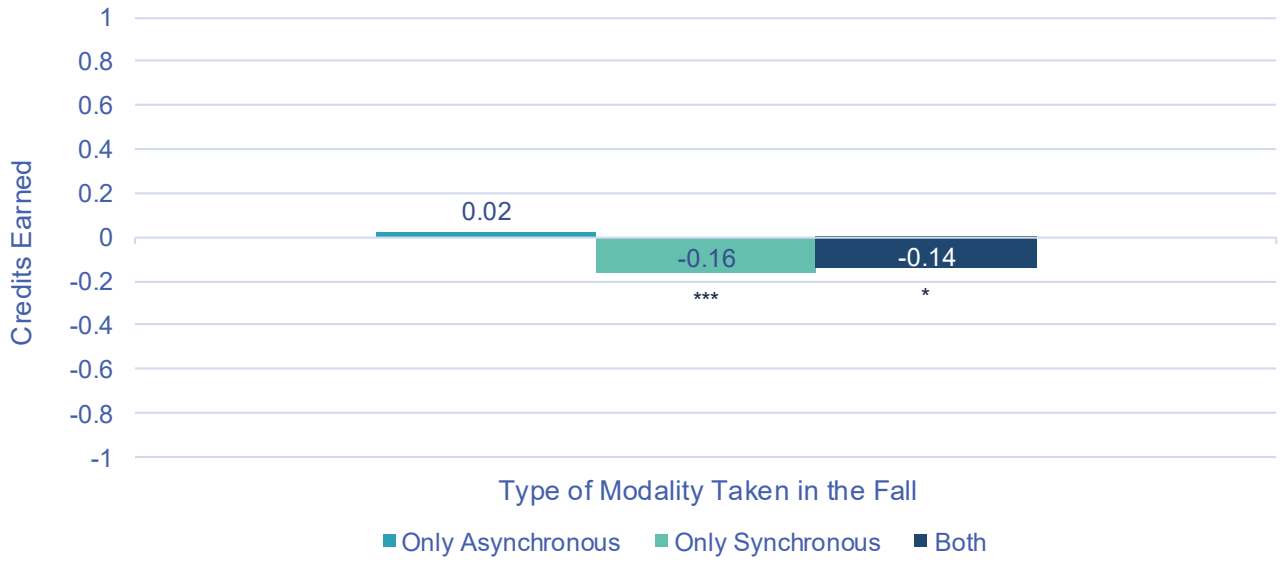
The results of these analyses, shown in Figures 7–9, suggest that the negative impacts of online course-taking are indeed larger for synchronous than asynchronous modalities. We find that synchronous courses led to lower GPAs (a decrease of 0.12 points), fewer accumulated credits (0.16 fewer), and a decreased likelihood of persistence (five percentage points) relative to in-person instruction. While synchronous courses most consistently have negative estimated impacts on student outcomes, negative coefficients on term GPA, credits earned and persistence are also present for students in asynchronous-only and mixed formats, with some statistically significant estimates. This lends further evidence to our finding that taking online courses, regardless of specific modality, may negatively affect student outcomes.

Figure 7: Average Change in Term GPA by Taking Any Hours Asynchronously, Synchronously, or Both



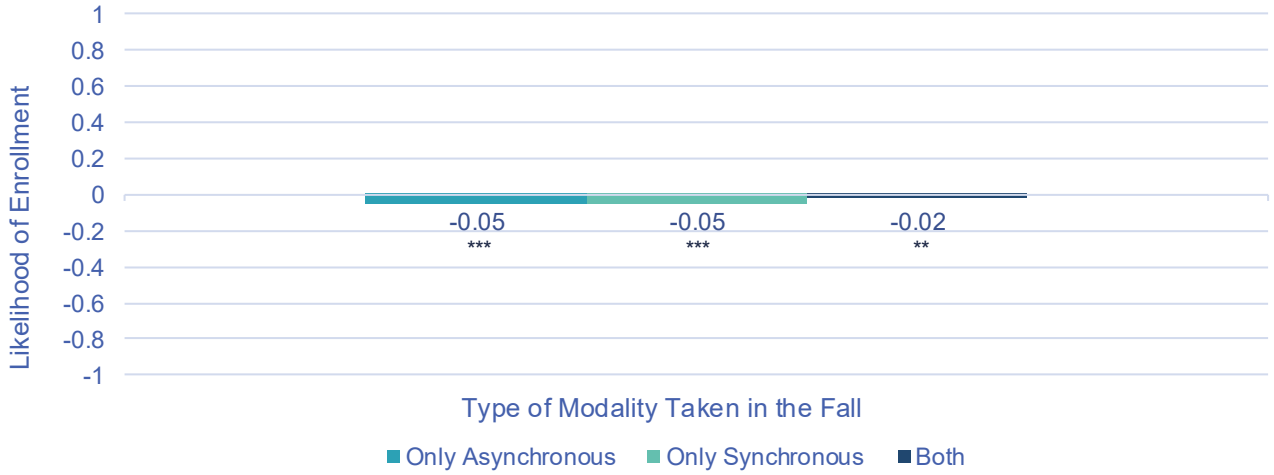
Note: Analyses are post-COVID and include AYs 2021-22, 2022-23, & 2023-24. * p<0.05, ** p<0.01, *** p<0.001. Sample includes FTIC and continuing students.

Figure 8: Average Change in Term Credits Earned by Taking Any Hours Asynchronously, Synchronously, or Both



Note: Analyses are post-COVID and include AYs 2021-22, 2022-23, & 2023-24. * p<0.05, ** p<0.01, *** p<0.001. Sample includes FTIC and continuing students.

Figure 9: Average Change in Likelihood of Spring Enrollment by Taking Any Hours Asynchronously, Synchronously, or Both



Note: Analyses are post-COVID and include AYs 2021-22, 2022-23, & 2023-24. * p<0.05, ** p<0.01, *** p<0.001. Sample includes FTIC and continuing students.

How do these effects vary across student populations?

To explore whether the effect of taking courses online varies across student populations, we interact a continuous measure of how many credits a student took in any distance education modality in a given term with an indicator for whether they are part of a particular subgroup in academic years 2021–2022 through 2023–2024. Our results indicate that the effect of attempting credits online varies depending on student characteristics. Specifically, the effects of online courses tend to be worse (negative and larger) for first time in college students over 24 years old than for their peers. Prior academic achievement also shapes the relationship between online course taking and outcomes, as the effects of distance education are better (positive and statistically significant) for continuing students who had GPAs above 2.0 in the preceding term.

Looking Forward

Our results suggest that the impacts of online courses have shifted since the pandemic. The negative impacts of online course taking on credit accumulation that we find prior to the pandemic disappear in the 2021–2022 through 2023–2024 school years. This is potentially due to investments in faculty development, student technological access, and increased familiarity with online learning.

Despite gains in credit accumulation, there is evidence that there is still a penalty for attempting credits in distance education modalities. On average, students who took online courses after the pandemic tended to earn slightly

lower GPAs than their in-person peers. Our analyses also indicate that, across all time periods, students enrolled in online courses were less likely to continue to the spring term compared to those enrolled solely in in-person classes.

Our results also show that the type of online learning matters, as the impacts of synchronous courses tend to be more negative than asynchronous courses. This is aligned with qualitative evidence from LACCD suggesting that instruction is redesigned to promote student engagement and learning for asynchronous courses, while students may be more likely to be distracted or disengaged in synchronous courses that don't offer flexible scheduling or participation options.

Our results also suggest that how many credits students take online shapes the impact of online course taking on academic outcomes. Students attempting some of their credits online typically achieve higher GPAs and earn more credits, with less negative impact on persistence compared to those taking all credits online. It is possible that having an in-person anchor course can help connect students to the campus community and resources, while having multiple courses online allows students to develop skills specific to online course taking. In separate analyses, we do see a connection between students' performance in online courses in a given term and their likelihood of taking and succeeding in future online courses. Researchers should continue examining the specific skills that allow students to succeed in online course modalities as well as effective practices that help students build those skills.

While our analyses suggest that online courses may have improved since the pandemic in terms of their effects on short-term academic outcomes, we find persistent, negative impacts of distance education on students' likelihood of persisting to the next term. In most analyses, the negative impact on student persistence has persisted or worsened, reducing persistence likelihood by up to 5 percentage points— around 3,000 fewer students. This is concerning, as the goal of online education is to offer flexibility that helps students stay enrolled so they can complete a credential. At the same time, descriptive analyses show evidence that online course offerings may be increasing access to college course work. Students enrolled in online classes during a term attempt more credits compared to those taking only in-person courses. Additionally, students who previously discontinued their studies and later returned were more likely to take all of their courses online than those with continuous enrollment. This suggests that online education may enhance college access in two ways: enabling students to take heavier course loads and providing returning students with more flexible learning options. However, further research is necessary to understand the balance between increased accessibility and the observed negative impact of online learning on student persistence. Such insights will help the district identify practices that effectively support student persistence when students take courses online.

While our analyses use a rigorous framework to try to isolate the relationship between course modality and student success, there were other changes happening at the time that may also be at play. For example, challenges posed to K–12 instruction during the pandemic, observed declines in achievement (Education Recovery Scorecard, 2025), and increases in mental health concerns for students (Center for Collegiate Mental Health, 2021) could mean students are enrolling in community college with greater academic and social needs that are harder to meet in online settings or, indeed, are exacerbated by them if students are less likely to build connections with peers, faculty, and on-campus support services. Additional research is needed to understand how the ecosystem of student learning has changed since the pandemic and how community colleges can adapt to meet the needs of incoming students, regardless of modality.

Taken together, our findings suggest that…

- LACCD's investments in distance education seem to be identifying ways to enhance student success while maintaining the flexibility that students appreciate in online courses.
- Students may be most likely to benefit from the flexibility of online courses if they also take some credits in person.
- Further research is needed to understand the reasons behind the varying effects of online education across student populations and to foster success across learning modalities for all students.
- Additional studies are required to assess the impact of innovative distance education models, such as hybrid and HyFlex courses, introduced during and after the pandemic but not yet mature enough for evaluation. These models might offer a balance between the benefits of remote and in-person learning, though initial qualitative findings suggest they could be particularly challenging for faculty.
- Researchers and practitioners need to continue working together to identify strategies that boost student persistence, particularly among students who take courses in online formats.

These findings provide a foundation for researchers and policymakers to explore key questions facing the community college sector. How should distance education courses evolve as they become more prevalent and attract more students? Do students develop skills specific to online learning, and can community colleges accelerate this development? If distance learning is an effective strategy for enrolling or re-enrolling students, what additional support or changes in teaching practices and course design are needed to ensure student success? Although this work does not answer all these questions, our results help define the post-COVID-19 landscape of online education, where these questions need to be addressed.

Endnotes

1 Estimates from LACCD internal records.

2 We excluded data from the 2019–2020 and 2020–2021 academic years due to issues that prevent accurate classification of course modalities during that period.

3 For our analyses, we generate inverse probability of treatment weights (IPTW), which assigns weights to individuals based on the inverse of the probability that they would receive the treatment (in this case online education) they actually received, given their baseline characteristics. By applying these weights, IPTW creates a synthetic population in which the distribution of covariates is balanced across groups, mimicking the conditions of random assignment. We then apply these weights to an outcome model. This approach allows us to estimate the causal effect of the treatment on the outcome by reducing confounding from measured variables.

4 LACP provides full-time, first-time students with a range of student supports, including tuition and fees for two years of enrollment, dedicated advisors, coaches, a summer bridge program, a first-year experience, and priority enrollment.

5 Due to data limitations, we only examine student outcomes in the post-COVID-19 period for research questions 2-4.

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