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## **The Differential Impact of COVID-19 on Colleges and Universities**

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**Abstract:** The COVID-19 pandemic produced some of the greatest disruptions to higher education in United States history. In March 2020, more than 1,500 institutions transitioned from in-person to online instruction (Marsicano et al. 2020). The decision to transition from in-person instruction to online in Spring 2020 and the subsequent deliberations of whether to resume instruction in-person or remain online for the fall semester were influenced by a series of factors. Administrators reported being influenced by public health officials and politicians as well as health and safety concerns of students and faculty (St. Amour 2020). This paper explores the factors that influenced the decision to remain online or return to in-person instruction in the fall and offers a glimpse into the potential impact of this decision. Specifically, we find the more selective the institution, the greater odds the institution remained online for Fall 2020, net of political influence. This finding coupled with the price of attendance lends support to the hypothesis that market pressures offered a preservative effect for administrators and institutions while more competitive institutions had greater odds of in-person instruction earlier. This paper offers some strategies colleges and universities can implement to effectively respond to challenges brought by the Fall 2020 course scheduling decisions.

**Keywords:** Higher Education, Finance, Research Universities, Course Scheduling, Retention, Enrollment

**JEL Codes:** I2, M1, Y5

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## Introduction

Before March 2020, higher education already faced a myriad of challenges that included declining enrollment, changing student demographics, declining state appropriations at state institutions, and an increasing price of attendance for public and particularly, private institutions. As higher education sought to respond to these challenges, the public grew increasingly skeptical of the value of a college degree, with a record low 18 percent of the public strongly believing that college was worth the cost (Clayton 2018). Heading into the new decade, it became clear that two- and four-year public institutions were still struggling to recover from the Great Recession. State appropriations had not returned to their pre-Recession levels (SHEEO 2019), and private institutions offered tuition discounts to more than half of first-year students on average (NACUBO 2020).

Against this backdrop, in March of 2020 higher education encountered arguably its greatest challenge in history. The World Health Organization declared COVID-19 to be a pandemic as it spread rapidly around the world (Neilson and Woodward, 2020). Hundreds of institutions shuttered in-person instruction for over six months, and many are stretching into nearly a year without face-to-face instruction (Marsicano et al. 2020). Yet, the decision of whether to remain in-person or to transition online was not a simple one. For some institutions, this discussion involved not only the health and safety of students and faculty, but also the question of survival. Research conducted early in the pandemic found that if the pandemic were to continue into fall 2020, approximately half of all private not-for-profit institutions would experience a revenue gap of greater than 5%, and if the pandemic persisted into fall 2021, 43% of those institutions would experience a gap in excess of 20%, signaling the likely closure of many (Bevins et al 2020). Other research found that, “while both private and public schools have faced pressure to keep their doors

open, public schools seem to have had less financial incentive and fewer resources to do so” due to shrinking state appropriations and the opportunity cost of lost revenue from residential services (Broady et al. 2021).

Clearly, there are numerous alarming signs for institutions in the higher education industry. For many, the Coronavirus pandemic served to exacerbate extant concerning trends and to introduce novel risks. Our aim is to explore what factors may have influenced the decision to restart education in-person or to remain online for the Fall 2020 semester. We seek to understand the impact, if any, of the greatest health pandemic in United States history, the political context of the state, and institutional factors on these decisions.

### **Data and Methods**

This article provides research from a unique dataset compiled by researchers at The College Crisis Initiative (C2i). The dataset includes fall and spring course scheduling plans, endowment data, and various institutional characteristics on all Title-IV eligible, degree-granting institutions, with first-time, full-time undergraduates (N= 2,000). This data is integrated with federally reported data found in the Integrated Postsecondary Education Data System (IPEDS). Additionally, we include data from the Centers for Disease Control on COVID-19 cases as well as tracking data on hospitalizations and infections by region and state. Descriptive data are provided in Table 1. All data were collected prior to August 15, 2020.

Analyses of these data were performed using an ordinal regression. The variables presented in Table 2 are factors that impacted the odds of whether colleges held classes online or in-person. These predictive variables include the institution’s SAT-Math 75th percentile score, total cost of tuition and fees, COVID infection rate of the state, and the political party that held the majority control of the executive and legislative branches of the state government as of

August 15, 2020. The dependent variable in this analysis, 2020 Fall Plan, is expressed in terms of the odds of an institution being (1) fully-in person, (2) primarily in-person, (3) hybrid, (4) primarily online, or (5) online-only at the beginning of the semester. An example of a hybrid offering would be a course that had one-third of students attend lecture in person on Monday, a second third attend on Wednesday, and the last third attend on Friday. When not attending a hybrid lecture in person, students attend online.

**Table 1**  
*Descriptive Statistics for Institutional Characteristics*

<b>Variable</b>	<b>All</b>	<b>Public</b>	<b>Private</b>
<b>Total Institutions</b>	<b>2,000</b>	<b>1,140</b>	<b>860</b>
<b>Average Total Price (In-District, Living on Campus)</b>	<b>\$38,719.72</b>	<b>\$22,888.49</b>	<b>\$51,037.39</b>
<b>Average Four-Year Graduation Rate</b>	<b>39.81</b>	<b>28.04</b>	<b>46.90</b>
<b>Average Six-Year Graduation Rate</b>	<b>55.02</b>	<b>49.30</b>	<b>58.46</b>
<b>Average SAT-Math 75<sup>th</sup> Percentile Score</b>	<b>614.01</b>	<b>603.91</b>	<b>620.73</b>
<b>Average Coronavirus Rate Per 100,000 by State</b>	<b>1,756.52</b>	<b>1,788.14</b>	<b>1,714.00</b>

<b>Average Undergraduate Total</b>	<b>6,475</b>	<b>9,340</b>	<b>2,683</b>
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**Table 2**  
*Ordinal Regression Predicting Fall Reopening Plan*

<b>Variable</b>	<b>Exp_B</b>	<b>Standard Error</b>	<b>Wald</b>
<b>SAT Math 75th PR score</b>	<b>1.003**</b>	<b>0.001</b>	<b>6.726</b>
<b>Total tuition and fees</b>	<b>1.000*</b>	<b>0.000</b>	<b>3.467</b>
<b>COVID rate per 100k</b>	<b>1.000</b>	<b>0.000</b>	<b>0.128</b>
<b>State government majority by political party</b>	<b>0.447***</b>	<b>0.169</b>	<b>22.760</b>

\*\*\*  $p < .001$ , \*\*  $p < .05$ , \*  $p < .10$

### **Findings**

The political context of an institution's state of residency influenced its decision to remain online or return to in-person instruction in the fall. One might recall that the driving narrative in the news cycle for months prior to and during the 2020 fall semester was the Presidential election, including the framing of the pandemic. In prior research, one of the authors of this paper found that institutions where Donald Trump carried the state in 2016 had greater odds of being in-person (St. Amour 2020). We extend this analysis to include more proximate leaders to better understand the political context. In our research, we find that the odds of being online-only in a state with the Republican party holding majority control

(Executive and Legislative Control) was .447 times that of a state with the Democratic party holding majority control ( $p=.000$ ). In other words, institutions in Republican-controlled states had greater odds of being in-person in the fall as compared to Democratic-controlled states, which had greater odds of being online.

The number of positive COVID-19 cases as reported at the state level did not significantly impact the decision to remain online or return to in-person instruction in our model. State-level reporting, at the time, was perhaps one of the best proxies for the number of COVID-19 cases. Yet our findings indicate that an increase in the total number of COVID cases per 100,000 (expressed as the number of COVID cases per 100,000 residents in the state) was not associated with an increase in the odds of that institution being online-only ( $p=.721$ ). One might believe that the number of COVID cases in an area would inform the decision to be in-person or online for the fall, yet these data show no empirical support for this claim.

Institutional factors also influenced fall plans. Specifically, an increase in institutional selectivity as measured by an increase in the SAT-Math 75th percentile score was associated with a 1.003 increase in the odds ratio of that institution being online-only ( $p=.010$ ). Institutional factors such as these are crucial for understanding administrative planning, as they underlie a university's financial position or lack thereof. Prior research has found that highly selective institutions, or "Medallion" type institutions, command a market position that enables them to substantially define their role in the higher education space (Zemsky, Shaman, and Baldrige 2020). Zemsky and colleagues (2020) advance a 'market imperative' model, arguing that if more people wish to attend a particular institution, then that institution has greater autonomy in the decision-making process relative to more competitive establishments in the market. Generally, we find support for this assertion. Highly selective institutions like Stanford

University and the University of Washington were among the first to decide to transition to online instruction (Burke 2020) and remain online throughout the fall. Similarly, Harvard University announced that their fall semester classes would be online in early summer (Walsh 2020) before hundreds of other institutions had announced their fall semester plans.

Tuition price was another institutional factor that influenced fall plans. Our regression model shows that an increase in the total tuition and fees was associated with a 1.00 increase in the odds of that institution being online-only ( $p=.063$ ). While this effect may appear insignificant, every thousand dollar increase in the price of tuition and fees increased the odds that an institution would have classes online. This adds up when one considers that tuition can vary in the tens of thousands of dollars between institutions. This finding again offers support for the importance of market position in determining fall plans. Some highly selective institutions like Harvard and Stanford have a substantial number of applicants seeking admission to a finite number of seats. Consequently, these highly selective institutions experience price inelasticity and can expect to meet enrollment goals despite increases in price or decreases in quality (i.e. online instruction). Other institutions, like small, private liberal arts colleges or regional public universities, have less competition for seats, and thus experience greater price elasticity, or fluctuating demand as a result of changes in price.

Often, market price is an indirect function of enrollment pressure and financial stress. If an institution has an enrollment target of 1,000 students to bring in as first-year students, but only 950 students attend, then the institution loses revenue. Consequently, private institutions, which have greater flexibility in offering tuition discounts, will be more likely to engage in tuition discounting to attract the 1,000 students. Even so, while such an institution may meet enrollment goals in this manner, offering discounts still applies downward pressure on revenue. As the rate

of discounting increases over time to attract students, institutions face far greater financial stress. Moreover, as an institution becomes less selective, the likelihood that students will drop out increases (Barnshaw 2018). Institutions therefore must balance the annual demands of a selective enrollment which increases the likelihood that students will graduate on-time (providing additional revenue for subsequent years) and a less selective enrollment which may increase the number of students in the short term but will simultaneously increase the likelihood that students will drop out.

This research finds a connection between the political context of fall plans, the selectivity of institutions, and market price. Broadly, we find that institutions that were more selective, had higher tuition and fees, and were in Democrat-controlled states had greater odds of continuing online instruction in the fall whereas institutions that were less selective, had more competitive prices, and were in Republican-controlled states had greater odds of being in-person. The state's COVID rate per 100,000 residents was not associated with an institution's plans to be online or in-person for the Fall 2020 semester.

### **Implications**

If institutions that are more selective and command a higher market price are able to remain online without substantially risking major declines in enrollment or retention, what strategies exist to help the less selective and more competitively priced institutions?

One approach available to institutions is to utilize the course schedule to improve student retention. Zemsky and colleagues (2020) have argued that in addition to enrollment and market price, retention matters. Student retention is an effective way to stabilize the financial position of an institution over the short- to intermediate-term, particularly among less selective, private, and regional type institutions. Recent research from Ad Astra (Barnshaw 2018) has found that

institutions that offer courses that fulfill degree plans when they are needed and at times that are of interest to students can positively impact student credit hour production and retention.

Effectively managing the course schedule can create efficiencies that improve graduation rates, improve space usage, and ultimately save institutions millions of dollars. Recently, one such institution, Stephen F. Austin, was able to generate efficiencies that led to increases in student credit hour production while saving the institution millions of dollars in the process (Flaherty 2018).

To help institutions address selectivity and price challenges, the Council of Independent Colleges (CIC) has also offered a variety of solutions. The CIC is an education consortium consisting of over 600 private colleges and universities. Most CIC institutions are small, with enrollments around 3,000, and do not have the advantages of state appropriations or economies of scale found in large public universities. These solutions include utilizing intercollegiate athletics as a mechanism to stabilize enrollment (Suggs 2020), demonstrating the effectiveness of private education (Zumeta 2017), offering first year tuition discounts, and focusing on institutional successes around first-year retention (CIC 2010). Taken together, offering a substantial discount (on average 50%) to first-year students, focusing on student success and retention, and attracting intercollegiate athletes that would like to stay for four years are all strategies designed to improve the tenuous financial position of private institutions that are less selective and have a relatively competitive cost of attendance.

The impact of COVID will remain long after the Fall 2020 semester. Institutions, particularly those that are less selective and more price competitive, should focus on strategies that position themselves for intermediate and long-term viability. Previous research from Ad Astra (2020) shows that small but deliberate changes in areas such as enrollment ratio, prime

time ratio, and reducing scheduling waste can provide great potential for improving revenue streams in higher education. For college institutions that are lacking in market power to compete with highly selective institutions, careful planning around retention rates, enrollment, and graduation rates can guide a solid action plan for meeting the challenges of transitioning to a hybrid or online format.

### References

- Ad Astra Information Systems*. 2020. "Five Ways to Improve the Course Schedule". Retrieved February 14, 2021 ([https://www.aais.com/course-schedule-improvement?utm\\_content=129703324&utm\\_medium=social&utm\\_source=twitter&hss\\_channel=tw-87037432](https://www.aais.com/course-schedule-improvement?utm_content=129703324&utm_medium=social&utm_source=twitter&hss_channel=tw-87037432)).
- Barnshaw, John. 2018. "Bending the Curve: How Colleges and Universities Can Rethink the Course Schedule to Graduate More Students, Faster." *Ad Astra Information Systems*, September.
- Bevins, Frankki, Jake Bryant, Charag Krishnan, and Jonathan Law. 2020. "Coronavirus: How Should U.S. Higher Education Plan for an Uncertain Future?" *McKinsey & Company*, April 3. Retrieved February 14, 2021 (<https://www.mckinsey.com/industries/public-and-social-sector/our-insights/coronavirus-how-should-us-higher-education-plan-for-an-uncertain-future?cid=eml-web>).
- Broadly, Kristen, Eliana Buckner, Jennifer Umanzor, and Sarah Wheaton, S. 2021. "Higher education's reopening decisions affected the most vulnerable students." *Brookings*, January 11. Retrieved February 14, 2021 (<https://www.brookings.edu/blog/up-front/2021/01/11/1342345/>).
- Clayton, Dave. 2020. "Postsecondary Paradox," *Inside Higher Ed*, October 10. Retrieved February 14, 2021 (<https://www.insidehighered.com/views/2020/10/08/consumer-perspectives-value-higher-education-and-paradox-underneath-enrollment>)

- Grawe, Nathan. 2018. "Demographics and the Demand for Higher Education," *Johns Hopkins University Press*.
- Flaherty, Colleen. 2018. "When Faculty Lines Pay for Themselves," *Inside Higher Ed*, July 10. Retrieved February 14, 2021 (<https://www.insidehighered.com/news/2018/07/10/stephen-f-austin-optimizes-course-schedule-add-faculty-lines-paid-themselves>).
- Laderman, Sophia, and Dustin Weeden. 2019. "State Higher Education Finance FY 2019," *State Higher Education Executive Officers Association (SHEEO)*.
- Marsicano, Christopher R., Kathleen M. Felten, Luis S. Toledo, and Madeline M. Buitendorp. 2020. "Tracking Campus Responses to the COVID-19 Pandemic," *Davidson College Educational Studies Working Paper*, April.
- National Association of College and University Business Officers (NACUBO). 2020. "Before COVID-19, Private College Tuition Discount Rates Reached Record Highs," May 20. Retrieved February 14, 2021 (<https://www.nacubo.org/Press-Releases/2020/Before-COVID-19-Private-College-Tuition-Discount-Rates-Reached-Record-Highs>).
- St. Amour, Madeline. 2020. "Political Influence on Fall Plans," *Inside Higher Ed*, September 3. Retrieved February 14, 2021 (<https://www.insidehighered.com/news/2020/09/03/state-politics-influenced-college-reopening-plans-data-show>).
- Suggs Jr., David Welch, Jennifer May-Trifiletti, and James C. Hearn. 2020. "Pass or Run? The Impact of Football on Independent Colleges," *The Council of Independent Colleges*, June. Retrieved February 14, 2021 (<https://www.cic.edu/resources-research/charts-data/reports/football-2020>).

The Council of Independent Colleges. 2010. "Alma College." Retrieved February 14, 2021

(<https://www.cic.edu/programs/walmart-college-success-awards/profiles/alma-college.>)

Zemsky, Robert, Susan Shaman, and Susan Campbell Baldrige. 2020. *The College Stress Test: Tracking Institutional Future Across a Crowded Market*. Baltimore, MD: Johns Hopkins University Press.

Zumeta, William, and Nick Huntington-Klein. 2017. "Utilizing Independent Colleges and Universities to Fulfill States' College Degree Attainment Goals," *The Council of Independent Colleges*, April. Retrieved February 14, 2021

(<https://www.cic.edu/r/cd/Pages/Utilizing-Independent-Colleges-2017.aspx>)