



**Balancing Finances, Politics, and Public Health:
International Student Enrollment and Reopening
Plans at US Higher Education Institutions
Amid the COVID-19 Pandemic**

Melissa Whatley[†] and Santiago Castiello-Gutiérrez^{‡,§}

Abstract: Drawing from theories of academic capitalism and resource dependence, this study explores the extent to which international student enrollment related to institutional decisions to shift to in-person instructional strategies during the COVID-19 pandemic. We focus our study particularly on July 2020, a time during which tensions around international students' legal status in the US were especially high. Our results suggest that leaders at private not-for-profit institutions were significantly more likely to shift instructional strategies to include more in-person instruction, thus allowing more international students to enroll but also placing at risk the health of individuals on their campuses and in their local communities. A similar result was not found for public institutions. These results speak to the extent to which private institutions in the US have become financially dependent on international students' tuition and have clear implications for the financial futures of US higher education institutions.

Keywords: International Students, COVID-19, Campus Reopening Plans, Event History Analysis, Resource Dependence Theory, Organizational Theory

JEL Codes: I19, I23

[†] North Carolina State University

[‡] University of Arizona

[§] Consortium for North American Higher Education Collaboration

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Melissa Whatley, Ph.D.
Belk Center for Community College Leadership
North Carolina State University
706 Hillsborough Street
Raleigh, NC 27605
mewhatle@ncsu.edu

Additional Author Information:

*C2i Research Affiliate(s) denoted by **

Melissa Whatley, Ph.D.*
Raleigh, NC, USA
[@melwhat7](#)

Postdoctoral Research Scholar
Belk Center for Community College Leadership and Research,
North Carolina State University

Santiago Castiello-Gutiérrez, Ph.D.

Tucson, AZ, USA
[@scastiello](#)

Postdoctoral Research Associate
Center for the Study of Higher Education,
University of Arizona

Mobility Programs Coordinator
Consortium for North American Higher Education Collaboration

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Introduction

Early in 2020, news circulated worldwide about a new and highly infectious virus called the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) that was causing a disease (COVID-19) with high mortality rates. As more cases began to appear in almost every country, it became clear that the virus was not going to be easily contained, and hence, by early March, the whole world entered a standstill. This unprecedented situation forced the closing of almost all schools worldwide, including higher education institutions (HEIs), in a matter of weeks, leaving nearly 2 billion students taking classes remotely (Schleicher, 2020; UNESCO-IESALC, 2020). HEIs in the United States (US) also had to cancel athletics events, graduations, and even close their residence halls as a result of the COVID-19 pandemic (IIE, 2020b). At the conclusion of the spring term, institutional leaders quickly began to realize that, with an extremely high level of uncertainty regarding the pandemic, things would not be ‘back to normal’ with the resumption of classes in the fall.

In preparation for an unprecedented fall term, HEIs’ reopening plans began emerging in late spring and early summer and included a variety of strategies for returning to instruction. Some plans called for instruction to remain entirely virtual while other plans involved a complete return to face-to-face instruction. Most plans involved a combination of these two extremes, such as a hybrid or hyflex model. Some skeptics of these plans thought that remaining virtual, whether fully or in part, was unnecessary and detrimental to students’ learning. These arguments were often related to the downplaying of the severity of the virus among some segments of the population (Ahmed et al., 2020), or to a shift in public perception in the US from negative to positive feelings about reopening the country (Samuel et al., 2020). In contrast, others thought that HEIs, particularly those planning to offer some in-person instruction, were not doing enough

in their reopening plans to protect campus and community populations from risk of contracting COVID-19, a situation that could lead to death for many vulnerable populations. Many stakeholders, including students, parents, employees, and institutions' surrounding community members, felt that opening campuses would only exacerbate the pandemic's effects on the community's health. Several studies corroborated that HEIs had excellent potential to become 'super spreaders' of the virus (see, for example, Lu et al., 2020).

However, in addition to campus and community health concerns, HEIs also had to consider institutional finances in their reopening plans, given that in the US a large proportion of institutional revenue comes from tuition. In this regard, HEIs felt pressured to reopen for in-person instruction, fearing that maintaining online educational formats would discourage students from enrolling. In unprecedented public discourses, university presidents acknowledged how financial implications were key when designing their reopening plans (Diep, 2020; Lederman, 2020). A survey of 192 college and university presidents conducted in late April by the American Council on Education (ACE) showed that 86% of respondents selected "Fall or Summer enrollment" among their most pressing issues, followed by 64% of respondents who indicated "long-term financial viability" (Turk et al., 2020). Financial pressure was often accompanied by political pressure to reopen. For example, then-President Donald Trump and Secretary of Education Betsy DeVos were vocal about the importance of schools reopening as a signal to a back-to-normal that could also help reopen the country's economy. In their effort to persuade schools to reopen, the government threatened to cut funding for schools that were not planning on fully reopening for in-person instruction in the fall (Baker et al., 2020). Even when national legislation to provide financial relief to HEIs was under consideration, initial messages from the government tied aid to reopening costs as a way to pressure institutions to resume in-

person activities (Murakami, 2020). This position was contrary to other federal guidelines, such as from the Center for Disease Control (CDC), that advocated for ‘lowest risk’ settings that meant that “faculty and students should engage in virtual-only learning options, activities, and events” (CDC, 2020).

In sum, going into summer 2020, HEI leaders had the impossible task of making decisions about reopening while juggling public opinion, resisting government pressures, thinking about their institution’s financial stability, and most importantly, being mindful of the wellbeing of their students, faculty, and staff as well as that of their local community. In July 2020, US Citizenship and Immigration Services (CIS) added an additional complication to the decision-making of HEI leaders of campuses where international students enroll.

Immigration policies in the United States have long prevented international students from obtaining a visa to study in an online format. However, in early March 2020, US CIS published a memorandum indicating that, due to the COVID-19 pandemic, there would be an exception for international students who were already physically in the US, allowing them to remain in the US even when all their classes were online. Institutional decision-makers never thought that US CIS would later indicate that this exception would not continue into fall 2020. However, on July 10, 2020, US CIS reversed this exception to standard visa protocol. Suddenly, international students at institutions planning on remote instruction for the fall would have to change enrollment plans, leave the country, or face deportation. A huge outcry from international students themselves, faculty members, and international educators gave way to official positions by HEIs demanding the government keep the exception. In an unprecedented effort to reverse this policy, some HEIs began legal action against the government while hundreds more signed amicus briefs in support of those lawsuits. In a matter of ten days, and before facing the courts, the federal government

reversed course and announced that they would let students who began their degrees before the fall 2020 to remain/re-enter the country, even if all their classes would be taught virtually.

However, it also specified that students already admitted and set to begin their degrees in the fall would not be given a visa if their institutions were not to offer face-to-face classes.

But what was behind such a rapid, strong, and unprecedented response from HEIs? Although institutions included in their arguments to defend the presence of international students the cultural richness they bring to campus, the strongest arguments used were financial ones. Higher education organizations such as ACE released statements that spoke about the “economic contributions”, supported jobs, and the overall “value to the United States of being the destination of choice for the world’s most talented students and scholars” (ACE, 2020). NAFSA: Association of International Educators has found that a large percentage of the dollars brought in by international students go directly to HEIs as tuition, room and board, and other education-related expenses (NAFSA, 2020a). Indeed, recent empirical research suggests that US HEIs have become increasingly dependent on revenue from international students in recent years, particularly in light of declining financial support from other sources, such as state appropriations (Cantwell, 2015). Simply put, not having international students enroll in fall 2020 could mean a financial catastrophe for many colleges and universities in the US.

In this study, we explore the extent to which international student enrollment may have entered into the decision-making of HEI leaders regarding institutional reopening plans during July 2020. Specifically, we build upon the theory of resource dependence as a framework to understand how HEIs changed their behavior (in this case, shifting reopening plans to include additional in-person instruction) in a way that would minimize the loss of tuition dollars from the enrollment of international students. We hypothesized that, if institutions are, in fact, dependent

on the revenue gained from international student enrollments, the guidance from US CIS released in July 2020 would have encouraged, and even maybe forced, HEI leaders to shift reopening strategies to include more in-person instruction. For example, an institution planning for a fully virtual fall term may have shifted some proportion of courses to a hybrid format. An institution already planning for some hybrid instruction may have changed plans to include some courses that met entirely face-to-face to accommodate additional international student enrollment. These changes would have taken place in the context of extreme uncertainty regarding the enrollment status of international students, an uncertainty that extended to institutional financial well-being. To this end, institutional leaders found themselves in a difficult situation—should they close campuses to in-person instruction and protect the health of their constituents and local communities or return to (at least partial) in-person instruction to protect the financial well-being of their institutions and prevent their international students' deportation?

Background and Literature Review

COVID-19 and US Higher Education

To the best of our knowledge, this is the first study to empirically link international student enrollment to US HEIs' plans to reopen campuses during the COVID-19 pandemic. However, several studies have looked into institutional reopening plans from a campus and community health perspective. The vast majority of these studies presented models that advised against reopening campus to in-person instruction due to the high risk of an increase in COVID-19 cases (Baxter et al., 2020; Benneyan et al., 2020; Yamey & Walensky, 2020). For example, Yamey and Walensky (2020) warned, for example, how “frequent testing will not be feasible in all settings” and how “any prevention strategy that is based on personal responsibility and the expectation that students will never go to parties or have sex is bounded to fail” (p. 1). Assuming

universities' tentative reopening plans to model five months of data, Benneyan et al. (2020) concluded that the risk to increase infections and mortality, both on campus and in the local community was highly unpredictable, depending on factors such as chance and human behavior.

The predictions of many of these studies were unfortunately confirmed. For example, Li et al. (2020) found an increase in confirmed COVID-19 cases in counties with a higher number of students returning to a HEI with an in-person or hybrid mode of instruction. In a very similar study, Andersen et al. (2020) corroborated these findings, showing an increase in COVID-19 incidences in counties where a college or university reopened for face-to-face instruction. Most importantly, their study showed cases increased within the campus's local community after reopening. In this regard, Lu et al.'s (2020) study of 30 HEIs indicated how institutions saw an increase in cases on campus two weeks after reopening, which institutions were somehow able to control. What institutions were not able to control, however, was the spike in COVID cases in their surrounding neighborhoods.

The public health implications of reopening a HEI campus for in-person or hybrid instruction are clear. While institutions may have felt confident in their abilities to contain a potential outbreak among students on campus, they had little control over what happened in local communities external to campus. The research presented in this section suggests that the implications of a re-opened HEI campus for local communities were indeed dire. In addition to the moral choice facing campus leaders when considering possible reopening plans, these leaders had to consider the future of their relationship with the local community, which would be damaged depending on the leader's choice of reopening strategy.

COVID-19 and International Students in the US

Other studies on the impact of the COVID-19 pandemic on HEIs have linked reopening plans to possibilities of exacerbating current inequities among the vulnerable populations around and within campuses (for example, Harper, 2020), including—in the latter case—international students (see Castiello-Gutiérrez & Tozini, 2020; Fischer & Whatley, 2020; Tozini & Castiello-Gutiérrez, 2020).

When campuses were forced to close in March 2020 and students were sent ‘home,’ international students—particularly those living on-campus—were put in a complicated position. Many students did not have relatives in the US, nor did they have another place to live that did not involve travel to their home country. Amid an international wave of travel restrictions, insurmountable prices to fly, and the risk of getting infected or infecting others, the majority of international students decided to stay in the US (Martel, 2020). Conditions for these students were not optimal. While it has been widely documented that many international students struggle to find community in their new host country (see Khanal & Gaulee, 2019 for an extensive review), an event like a pandemic that forces people to isolate can be even more detrimental to students’ mental health (ACHA, 2020). During spring 2020, colleges and universities across the US became ‘ghost towns’ (Burke, 2020), leaving international students without access to many essential services such as dining halls, exercise/recreation areas, and tutoring and counseling centers. By this logic, all things equal, reopening campuses for fall 2020 would be a net positive for international students, who are often more dependent on on-campus resources compared to their domestic counterparts. However, reopening campuses does not necessarily imply a return to face-to-face instruction, as required by the US CIS guidance that was released in July 2020.

International Students and Institutional Finances

The implications of in-person reopening plans for campus and community health and the well-being of students seemed to indicate that remaining closed for in-person instruction during the fall 2020 term would be the most logical from a public health perspective. For the well-being of international students in particular, campuses could reopen for the provision of important student services without a return to face-to-face instruction. However, campus leaders also had to consider the state of institutional finances when making decisions about reopening, particularly with regard to international student enrollment. Early in the pandemic, NAFSA (2020b, p. 2) estimated that US HEIs would lose at least US\$3 billion “due to anticipated international student enrollment declines for fall 2020.” This financial situation was made even more complex for US HEI campus leaders in July 2020 with changes in guidance from US CIS.

Several studies in the past two decades have discussed the financial importance of international student enrollment at many US HEIs. NAFSA has estimated that international students contribute nearly \$40 billion dollars to the US economy, with a considerable percentage going directly to HEIs in the form of tuition, room and board, and other education-related expenses (NAFSA, 2020a). Although there is substantial variation among different types of institutions, research and doctoral universities in the US receive greater net tuition revenue from enrolling more new international undergraduates (Cantwell, 2015). At the graduate level, HEIs with the highest research activity also benefit from enrolling international students in terms of acquiring highly skilled and highly underpaid research labor, an indirect financial benefit for institutions (Cantwell et al., 2018; Lee & Cantwell, 2012). Taylor and Cantwell (2015, 2019) show that by enrolling a larger proportion of doctoral students from overseas, US HEIs benefit both financially and reputationally. In terms of the immediate monetary benefits from tuition,

Heckman and LaFontaine (2010) predicted a decade ago that, given the natural demographic decline of college-age people domestically, the US would have to turn to overseas talent to maintain enrollment trends. As data shows, between 2010 and 2020, total enrollment at US HEIs declined 3.5%, but the number of international students increased 55%—from 690,923, representing 3.4% of total enrollment, to 1,075,496, representing 5.5% enrollment (IIE, 2020a).

While this line of research provides clear evidence of a financial dependency of HEIs on international students' tuition, the current study goes deeper to explore the extent to which HEIs will change their policies to accommodate international student enrollment, even in the context of the moral implications of returning to face-to-face instruction in the middle of a public health crisis, a decision that was most certainly one of life and death for many individuals. This study is an especially relevant and timely contribution to the literature on institutional incentives to enroll international students in a political and social context that deters international students from attending US HEIs (Castiello-Gutiérrez & Li, 2020; Mathies & Weimer, 2018; Rose-Redwood & Rose-Redwood, 2018).

Theoretical Framework

Theories like academic capitalism (Slaughter & Rhoades, 2004) demonstrate that HEIs constantly strive to find new funding sources and revenue. Among many other areas where universities seek external resources is internationalization. Particularly in the Anglo-American world, HEIs often use international education activities as a source for profit, mainly through what Deschamps and Lee (2015) define as mergers and acquisitions. The former can be exemplified by delivering education abroad or establishing branch campuses, and the latter is best exemplified by recruiting international students. As the top destination for international students, the US has pushed HEIs to embark on entrepreneurial and marketing strategies to

attract students from abroad primarily for revenue (Ford & Cate, 2020; Rhoades et al., 2019). As Cantwell (2015, p. 516) says, “academic capitalism theory predicts HEIs will seek to generate revenue from international students even when all other financial conditions are constant,” but what academic capitalism does not explain are the lengths to which an institution will go to maintain this source of revenue. Therefore, the question of how HEIs’ quest for revenue from international student tuition can shape institutional behavior is best responded to, using in addition to academic capitalism, the theory of resource dependence (RDT).

RDT explains how organizations react and adapt to their external environment, including its contingencies and externalities (Pfeffer & Salancik, 2003). It also states that organizations become dependent on—and therefore will seek to get—“critical resources” (p. 3) from the external environment. RDT also establishes that, pushed to seek external resources, organizations will alter their behavior by implementing certain actions and making specific decisions that facilitate the acquisition of resources (Nienhüser, 2008).

Within the realm of higher education, RDT has been widely used to explain how colleges and universities organize their structure, how they are administered, and how they alter their behavior. As explained by Fowles (2014), when HEIs look for alternative sources of revenue, they enter into an implicit bargain that shapes their actions and “steers faculty and administrators in new directions that are potentially at odds with institutional missions” (p. 284). In our study, we are interested in understanding to what extent the reliance on tuition from international students might push an institution to change reopening plans even when such a change puts the institution “at odds” with its mission towards service to the community (whether defined locally or globally), given the high risk of reopening a college campus during a pandemic.

Researchers have also used RDT to explore institutional decision-making regarding student enrollment specifically. Jaquette (2013, p. 515) calls for “contemporary analyses of organizational change...[to] focus on the enrollment economy”. He argues that in the US, some colleges (especially those with weak market positions) drift from their original mission(s) to become comprehensive universities based on their quest for different funding sources. Salazar (2019) demonstrated how public institutions neglect their mission to enroll students from their own community by recruiting instead full-tuition-paying out-of-state students, a category that might also include international students. Building upon Jaquette’s and Salazar’s work, we are interested in understanding whether enrollment, in this case of international students, drove HEIs to make decisions that might contradict their mission towards the greater common-good during the summer of 2020.

Finally, among the first empirical studies to analyze organizational responses to RDT in higher education was Tolbert’s (1985) seminal work. With her study, in addition to showing how HEIs in the US context are dependent on—and shaped by their seeking of—external resources, Tolbert finds significant differences in the effect of resource dependency on administrative differentiation among public and private institutions. This finding is especially relevant to our study since, as explained in more detail in the following sections, we also explore and find differences among public and private US HEIs regarding the relationship between international student enrollment and changes in institutional reopening plans in July 2020. Specifically, we expected that private institutions would have felt more pressure to change instructional strategies to allow international student enrollment, given the financial precarity of many of these institutions compared to their counterparts in the public sector (Taylor & Cantwell, 2019).

Research Question

In sum, while previous literature has documented US HEIs' dependency on international students' tuition, the extent to which HEIs are willing to alter their behavior (e.g., changing reopening plans to accommodate international students' enrollment) to keep this source of funding remains understudied. Using a RDT lens, this study fills this gap by exploring whether international student enrollment significantly predicted an institution switching return-to-instruction plans from less to more in-person strategies during July 2020—the month with the highest uncertainty in terms of the spread of the virus and immigration policies affecting international students. The specific research questions that guide this study are:

- 1) To what extent does international student enrollment predict an institution's likelihood of altering fall 2020 instructional plans to include more in-person instruction?
- 2) Given differences in their dependencies on external entities for funding, are there differences in this relationship for public and private not-for-profit institutions?

Methods

Data

Outcome Variable. The data that we used to explore the relationship between international student enrollment and changes in higher education institutions' reopening plans during July 2020 derived from three primary sources. First, daily information about institutional reopening plans for public and private not-for-profit four-year institutions came from the College Crisis Initiative (C2i), a research initiative at Davidson College that has tracked institutional responses to the COVID-19 crisis since March 1, 2020 (for more information, see <https://collegecrisis.org/>). We limited the dataset to July 2020 to capture changes in reopening

plans that happened on days during the peak of immigration uncertainties for international students in the US. Specifically, we use a panel dataset, with institutions represented 31 times, once for each day of July 2020. We dropped institutions that were already fully online before the pandemic (N=24 institutions) as well as institutions not associated with a US region (N=1) and those without financial information (N=1) (see Footnote 1 for more information). After these exclusions, our dataset comprised 1,996 institutions, 725 public institutions and 1,271 private not-for-profit (for a total of 61,876 institution-day observations).

For our study, we were interested in changes in an institution's reopening plan that involved a shift to more in-person instruction, our outcome variable. This shift could be defined in a number of ways, such as a shift from fully online learning to a hybrid model of course delivery, a shift from a hybrid model to fully in-person course delivery, or a shift from no reopening plan to one that involved an in-person learning component (i.e., hybrid course delivery, primarily or fully in-person instruction). In other words, any shift in instructional delivery that involved a commitment to additional in-person teaching represented a shift that would facilitate additional international student enrollment.

Predictor of Interest and Covariates. Our predictor of interest, the logged percentage of total student enrollments comprised of international students, was derived from a second data source, the National Center for Education Statistics' IPEDS (Integrated Postsecondary Education Data System) survey data. Unfortunately, IPEDS does not include a measure of international student enrollment specifically, but rather classifies international students in the broader category of non-resident students, a category that also includes non-US citizens who are in the United States under a status that does not allow them to remain indefinitely (such as those under the

Deferred Action for Childhood Arrivals (DACA) policy). To this end, we take IPEDS' non-resident category as a proxy for international student enrollment.

We additionally derived several covariates for our study from IPEDS, namely whether the institution offered graduate degrees (defined as Master's, Doctoral, or advanced professional degrees), the region of the US where an institution was located, the percentage of an institution's total revenue that was comprised of tuition/fee revenue (a proxy for an institution's reliance on tuition revenue), and, in the case of public institutions, the percentage of total revenue comprised of state appropriations.¹ This information came from datasets representing the 2017-18 academic year in the case of financial variables and Fall 2018 in the case of all other variables, the most recent IPEDS data available at the time we conducted this study. Since these variables are collected annually for inclusion in IPEDS, they do not vary over time during the period of observation in this study (July 1-31, 2020) and were consequently classified as time-invariant covariates for analytic purposes. IPEDS was also our data source for determining if an institution was a public or private not-for-profit four-year institution. As part of this study's first dataset, C2i also provided an additional time-invariant covariate, representing whether the institution was located in a state with a Republican (GOP) governor. We included this covariate to account for political pressure that an institution's leader might feel to reopen campus for face-to-face instruction. Finally, one of our covariates that did vary over time during our period of

¹ In the case of institutions whose financial information was reported along with a system office or a main campus (the well-known parent/child issues in IPEDS Finance Surveys; Jaquette & Parra, 2014), percentages for the parent (reporting) institution were assumed for the child institutions. This assumption was made after testing several parent/child pairs to ensure that percentages remained approximately the same for all child institutions when disaggregating financial information proportionally by enrollment. After this adjustment, financial information was missing for only one institution, a private not-for-profit: The Chicago School of Professional Psychology at Los Angeles. This institution is dropped from all analyses. The United States Merchant Marine Academy was also excluded as this institution is not associated with a particular US region, and we expected that characteristics of an institution's geographic location, most notably the number of COVID case counts in its general vicinity, would impact decisions about instructional format.

observation was the daily cumulative COVID-19 case counts in the county where an institution of higher education was located. This information was taken from a third data source, the New York Times' COVID-19 data files (for more information, see <https://developer.nytimes.com/covid>). These data files draw from state and local governments, as well as health departments, with the goal of providing a complete record of the COVID-19 outbreak.

Analysis

Because our outcome variable, a change in reopening plans that involved a switch from less in-person instruction to more in-person instruction, is one that happens over time, we estimated two sets of event history models, one for public institutions and another for private not-for-profit institutions. This analytic approach is used to explore events that unfold over time (in our case, a switch in instructional methods), can incorporate both time-variant and time-invariant covariates, and can be used to predict both *if* an event happens (at any point in time) while also accounting for *when* the event happens (Box-Steffensmeier & Jones, 2004; DesJardins, 2003). The result of an event history model is a hazard rate, representing the probability that an event will occur at a given time, given that it has not happened yet (DesJardins, 2003).

In general, an event history model explores each point in time during which an event may occur, called the risk period, and then evaluates whether one of two outcomes happen: success or failure. In our case, this model explores each day of July 2020 and evaluates the relationship that our predictor of interest (the logged percentage of non-resident students enrolled at an institution), as well as our covariates, has on whether an institution changes instructional approach to incorporate more face-to-face learning (failure). If at a given point in time an

observation fails (if an institution switches instructional approach), that observation exits the group of observations at risk of failure, the risk set, and is no longer considered in the model's estimation. If the observation does not fail, then it remains in the risk set and continues on to the next risk period.

We specifically used Cox proportional hazard models to analyze the relationship between changes in reopening plans and the logged percentage of non-resident students. Instead of assuming a functional form for the hazard rate, this approach to event history modeling relies on the data itself to predict it (Box-Steffensmeier & Jones, 2004). An additional advantage of Cox modeling is that it can accommodate multiple failures within the risk set at the same time, meaning that multiple institutions switching instructional methods on the same day is not an issue for the model. The probability of failure, the hazard rate $h(t)$ is defined as in (1):

$$h(t) = \Pr (T = t_i | T \geq t_i, x) \quad (1)$$

Here, T represents time (in this study, days), and t_i is the specific day when institution i switched instructional strategy. In other words, this equation says that the hazard rate is the probability of failure ($T = t_i$) conditional on the institution's having not failed previously ($T \geq t_i$), that is, conditional on the institution's comprising part of the risk set. Covariates can be entered into this model as additional conditions, aside from membership in the risk set, represented as x in (1) (Box-Steffensmeier & Jones, 2004). For each group of institutions (public and private) we ran our Cox model twice, once with and once without covariates for control purposes.

The hazard rate that a Cox model estimates is defined as a conditional logit, that is, the likelihood of an event occurring conditional on survival until the current risk period, as in (2):

$$\Pr(T = t_i | T \geq t_i, x) = \exp(\alpha_t + \beta x_t) / (1 + \exp(\alpha_t + \beta x_t)). \quad (2)$$

Here, β is a vector of coefficients corresponding to both the predictor of interest (in our case, the logged percentage of non-resident students enrolled at an institution) and covariates, both time-varying and time-invariant. α_t represents a constant that is allowed to vary over time (DesJardins, 2003).

Robustness Check

In addition to our primary analyses, we conducted a series of robustness checks that acknowledge that in addition to concerns about international student enrollment, higher education institutions were concerned about domestic student enrollment leading up to fall 2020, another financial consideration for institutional leaders. These additional analyses disaggregated total enrollment into international and domestic student enrollment and entered the log of each of these numbers into our Cox models separately. All other details of these analyses were the same as our primary analyses. The results of these analyses were strikingly similar to those of our primary analyses, described in the following section. For this reason, we provide the results of these robustness checks in Appendix A but do not discuss them in detail here.

Results

Descriptive Statistics

In total, 78 (approximately 11%) of the 725 public institutions switched their instructional plans for fall 2020 to include more in-person instruction, while 130 (approximately 10%) of the 1,270 private not-for-profit institutions did so during July 2020. Table 1 provides additional descriptive information regarding the variables included in our analyses, thus providing a general picture of the institutions included in our sample. On average, public institutions served a smaller percentage of non-resident students (3.76%) compared to private

institutions (6.28%). At public institutions, around 27% of revenue came from student tuition and fees while an additional 25% came from state appropriations, on average. At private institutions, tuition and fees accounted for an average of 54% of total revenues. Around 63% of public institutions offered graduate programs, while around 40% of private institutions did so. Public and private institutions were similarly located in states with a GOP governor, with 46% of public institutions and 43% of private institutions in states under GOP leadership. Regarding the geographic distribution of these institutions, the largest percentages of public and private institutions were in the Southeast (26% and 23%, respectively), while 23% of private institutions were located in the Mid-East. The Rocky Mountains region housed the lowest percentage of both institution types (6% of public institutions and 2% of private institutions), while New England was also home to only 6% of public institutions.

Not surprisingly, at both public and private institutions, the average number of COVID case counts in the county where the institution was located, our only time-variant predictor, was higher at the end compared to the beginning of July. On July 1, the average county-level COVID case count for public institutions was 9,575, while this average for private institutions was 20,138. On July 31, these averages were 14,068 and 26,779, respectively.

Event History Model

Results of our event history models for public four-year institutions (see the first two columns of results in Table 2) suggest no significant relationship between the percentage of non-US resident students enrolled in fall 2018 and a shift towards in-person instruction during July 2020. Indeed, location in a state with a GOP governor appears to be the only significant predictor of this shift for public institutions. More specifically, GOP gubernatorial leadership was associated with an approximate 95% increase in the likelihood of an institution changing

Table 1

Descriptive Statistics for Time-invariant Covariates

Variable	Public Institutions (N=725)				Private Institutions (N=1,270)			
	Mean	SD	Min	Max	Mean	SD	Min	Max
Percent Non-resident Students	3.76	4.10	0.00	27.33	6.28	10.79	0.03	100.00
Percent of Revenue from tuition/fees	27.14	13.42	0.00	72.82	54.09	21.70	0.00	100.00
Percent of Revenue from state appropriations	25.47	13.83	0.00	66.32				
Offered graduate programs	0.63				0.41			
GOP governor	0.46				0.43			
New England	0.06				0.09			
Mid-East	0.15				0.23			
Great Lakes	0.14				0.16			
Plains	0.09				0.11			
Southeast	0.26				0.23			
Southwest	0.10				0.06			
Rocky Mountains	0.06				0.02			
Far West	0.15				0.10			

instructional strategy on a given day relative to the likelihood at public institutions in states without a GOP governor.

Private not-for-profit four-year institutions, on the other hand, present a different story (see columns three and four in Table 2). At these institutions, increases in the percentage of non-resident enrollments were significantly and positively related to a shift towards a reopening plan that incorporated more in-person instruction. For example, a shift from 6% (the average non-resident enrollment at private not-for-profit institutions) to 7% non-resident enrollment was related to an approximate 19% increase in the likelihood that the institution would shift reopening plans on a given day ($p < .01$ in both models). In contrast to public institutions,

Table 2

Hazard Ratios Corresponding to Cox Proportional Hazard Models Predicting a Switch from Less to More In-person Instruction during July 2020

	Public four-year Institutions		Private not-for-profit four-year institutions	
Percent non-US resident (logged)	0.919 (-1.12)	0.874 (-1.35)	1.190** (3.42)	1.191** (3.16)
Percent revenue from tuition/fees		1.004 (0.43)		1.002 (0.43)
Percent revenue from state appropriations ¹		0.994 (-0.63)		
Institution serves graduate students ²		1.398 (1.13)		1.192 (0.95)
GOP governor		1.946* (2.16)		0.770 (-1.12)
County-level COVID case counts (logged)		1.000 (-0.75)		1.000 (-1.55)
Mid-East		1.875 (0.89)		0.655 (-1.23)
Great Lakes		1.196 (0.27)		0.406* (-2.41)
Plains		1.233 (0.29)		0.741 (-0.84)
Southeast		2.548 (1.54)		0.647 (-1.38)
Southwest		1.569 (0.67)		1.469 (1.02)
Rocky Mountains		1.994 (0.93)		0.300 (-1.16)

Table 2 Cont'd.

Far West		0.440 (-0.87)		0.576 (-1.37)
N observations	20617	20597	36344	36344
N subjects	725	725	1270	1270
N failures	78	78	130	130
Log likelihood	-509.345	-493.789	-916.657	-909.065

¹Applicable to public institutions only

²Derived from Carnegie classification, equal to 1 if an institution is classified as doctoral or master's-granting
Note that reference group for region is New England. Z-statistic in parentheses.

* $p < .05$, ** $p < .01$, *** $p < .001$

gubernatorial party affiliation was not a significant predictor of a shift in instructional strategy for private institutions. However, private institutions in the Great Lakes region were less likely to shift instructional strategies compared to institutions in New England ($p < .05$).

Limitations

A primary limitation of this study, as already mentioned, is that for our international student enrollment predictor, we had to use a proxy category that included other non-US residents. Although an imperfect proxy, the IPEDS measure that we used represents the most complete information currently available on international student enrollment at US HEIs. While the Institute of International Education collects and publishes annual data on international student enrollment at US HEIs, institutional responses to this particular data collection survey are voluntary, a situation that results in considerable missing data from many of the HEIs included in this study. For this reason, we chose to use the imperfect, yet more complete, proxy for international student enrollment numbers provided in IPEDS. A second limitation of this study is that, while our results are suggestive of certain relationships in our data, primarily between gubernatorial leadership and reopening plans for public institutions and between international student enrollment and these plans for private not-for-profit institutions, our results are not causal

and should not be interpreted as such. That is, while our results indicate the presence of certain pressures on institutional leadership when considering reopening strategies, we cannot say for certain that international student enrollment, for example, was the primary or even one among many defining factors in leaders' ultimate decisions.

Discussion

The purpose of this study was to explore the extent to which international student enrollment may have entered into the decision-making of HEI leaders regarding reopening instructional plans during the COVID-19 pandemic. Our study focused particularly on July 2020 given unforeseen shifts in policy guidance from US CIS. Theoretically, our study speaks to the extent to which dependence on revenue from international student enrollment enters into the decision-making of HEI leaders. Whether and how to reopen a HEI campus during the COVID-19 pandemic represented a difficult decision for institutional leaders, who had to balance issues related to institutional mission, campus health and safety, rhetoric from vocal politicians, and institutional finances in their decision-making. US CIS's abrupt decision to end the ability of international students to stay in the US even if their institution shifted to entirely virtual instruction, and subsequent decision to rescind this guidance for returning international students, made this decision-making even more complex for institutional leaders.

Our results suggest that private not-for-profit, but not public, US HEIs took international student enrollment into consideration when making decisions about reopening instructional plans during July 2020, reflecting an administrative difference in the nature of the resource dependencies of institutions in these two groups (Tolbert, 1985). Descriptively, private HEIs were located in counties with higher average COVID-19 case counts at the beginning of July 2020 (around 20,000 compared to around 10,000 for public institutions). In spite of this public

health context, our event history results indicated that the higher the percentage of international students enrolled at private not-for-profit institutions, the more likely an institution was to shift to include more in-person instruction in its reopening plan during this month. This result proved to be robust to the inclusion of a number of covariates also thought to impact institutional reopening plans, including local COVID-19 case count numbers, and alternative model specifications (see Appendix A).

Private institutions may have chosen to reopen for additional face-to-face instruction for a number of reasons. Descriptively, private HEIs enrolled a higher percentage of international students compared to their public counterparts prior to the pandemic (an average of 6% compared to an average of 4% at public institutions). Leaders at private institutions may have thought they were making the best decision for international students' well-being (and, perhaps, the well-being of all students), thus fulfilling a mission to serve these students not only in the classroom, but also external to it. That is, because international students rely heavily on on-campus resources (Bista, 2016, Sherry, Thomas, & Chui, 2010), and since private not-for-profit institutions served on average a higher percentage of international students, reopening plans may have been made with a consideration for international students' best interests in mind.

Alternatively, resource dependence theory would suggest that these institutions chose to reopen for additional face-to-face instruction because they are dependent financially on the tuition dollars that come along with international student enrollment (Cantwell, 2015). In other words, private institutions had more to lose than their public counterparts. Given that many private not-for-profit institutions were in a financially precarious situation prior to the pandemic (Taylor & Cantwell, 2019), US CIS guidance in July 2020 gave leaders of these institutions, who were already concerned about institutional financial survival, essentially no choice but to reopen for

in-person instruction if they intended to enroll international students. In this case, our finding reflects the extent to which leaders at private HEIs feel they must sacrifice other aspects of institutional mission, and even the safety and health of community and campus populations, to maintain the lifeline of revenue reflected in international student enrollment.

Our results present additional information regarding factors that may have impacted leaders' decision-making regarding institutional reopening plans during the COVID-19 pandemic. Perhaps surprisingly, given that the pandemic was above all else a public health crisis, the number of COVID-19 case counts in the county where an institution was located was not a significant predictor of a shift in reopening plans for public or private HEIs. This result suggests that institutions either did not consider the prevalence of the virus in their local communities when making reopening decisions or that they had already considered this factor prior to or planned to consider it after July 2020. In either case, it is somewhat surprising that this factor did not emerge as a significant predictor of whether an institution made the decision to offer additional in-person instruction during the month immediately prior to a return to instruction for the fall 2020 term at many HEIs. Additionally, among public institutions, location in a state with a GOP governor significantly and positively predicted the likelihood that an institution would shift to offering additional in-person instruction. This result confirms the findings of other recent work that explores institutional reopening plans (Andersen et al., 2020; Collier et al., 2020) and suggests that institutional leaders in some states were under considerable political pressure to reopen for in-person instruction, in spite of the health risks involved (Collier et al., 2020). Indeed, our models indicate that political factors weighed more heavily than public health itself at the average public four-year institution.

Implications

Our study has important implications for the funding of HEIs in the US, and in particular private not-for-profit ones. As has been well-documented, many of these institutions increasingly find themselves in a situation of financial precarity (Taylor & Cantwell, 2019), a situation that has likely been exacerbated during the COVID-19 pandemic. Our results suggest that this financial precarity, and specifically the dependence of these institutions on international student enrollment, can have very clear implications for public health, not only on their campuses, but also in their local communities, many of which are comprised of populations that are especially vulnerable to the most negative consequences of the pandemic (Benneyan et al., 2020; Harper, 2020). In the short term, providing these institutions with financial relief needed to weather the pandemic without having to make crucial decisions that can mean the difference between life and death for members of the campus and local community is an essential step. This financial relief could be provided at the state or federal level.

In the long term, leaders at all institutions, but particularly private not-for-profits, must take a careful look at institutional funding streams to avoid having to make similarly difficult decisions in the face of future crises. Contingency plans that provide well-considered instructions for how to operate should a single funding stream disappear represent one possible step towards ensuring that future leaders do not have to choose between doing what is best for local and campus communities and what keeps institutions afloat financially. Perhaps more importantly, leaders must also take a critical approach to questioning why they recruit international students to attend their institutions in the first place. If these students are brought to campus solely for revenue purposes, questions arise as to how well-served these students are once they arrive on campus (that is, once they have paid tuition, are these students provided with the resources they

need to be successful, or are they treated as simply additional students on the institution's campus?). Of course, there is nothing inherently wrong with recruiting international students to study on US HEI campuses, and the positive economic implications of these students coming to study in the US can be tremendous for both institutions themselves and local communities, both of whom also benefit from interaction with international students in other, non-financial ways (Ata et al., 2017). However, if international students are not provided with opportunities and resources that enable their success, then institutions risk violating a primary component of their purpose: to provide a high-quality education to *all* enrolled students.

Conclusion

This study's results suggest a financial dependency on international student enrollment at private not-for-profit institutions in the US, a dependency that was highlighted and perhaps exacerbated by the COVID-19 pandemic. While this study provides insight into one aspect of HEIs' financial dependence on revenues from their external environment (Pfeffer & Salancik, 2003), certainly additional dependencies in the context of the pandemic are worth exploration in future research. For example, while our results suggested that public institutions were more susceptible to political pressure to reopen compared to private not-for-profit institutions, these institutions may have been subject to other pressures that factored into their reopening plans, thus laying bare resource dependencies that were not entirely obvious pre-pandemic. For example, at the University of Georgia, instruction on campus during the fall 2020 term was modified considerably from pre-pandemic circumstances (although this institution did offer face-to-face instructional options), but the football team was scheduled to play almost an entire season's worth of games with in-person spectators (Towers, 2020). These games were played in a stadium that, when the university found itself in need of a safe location to offer on-campus in-

person voting for the 2020 presidential election, was not initially offered as a potential voting site, perhaps reflecting a complex political situation in the state at that point in time (Gordon, 2020). Clearly, the COVID-19 pandemic offers a dramatic shift in the external environment on which HEIs depend for resources, thus providing context for better studying and understanding the nature of these dependencies and how they might be better addressed by future institutional leaders.

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Appendix A: Alternative Specification of Models Including Logged International and Domestic Enrollment

	Public four-year Institutions		Private not-for-profit four-year institutions	
Non-US resident enrollment (logged)	0.988 (-0.30)	0.898 (-1.54)	1.142*** (4.14)	1.110* (2.38)
Domestic enrollment (logged)		1.393 (1.79)		1.174 (1.49)
Percent revenue from tuition/fees		1.005 (0.55)		1.001 (0.26)
Percent revenue from state appropriations ¹		0.996 (-0.46)		
Institution serves graduate students ²		1.107 (0.32)		0.765 (-1.15)
GOP governor		1.922* (2.11)		0.792 (-0.99)
County-level COVID case counts (logged)		1.000 (-1.36)		1.000 (-1.47)
Mid East		1.805 (0.84)		0.722 (-0.95)

Appendix A Cont'd.

Great Lakes		1.025 (0.04)		0.433* (-2.23)
Plains		1.106 (0.14)		0.784 (-0.68)
Southeast		2.194 (1.28)		0.680 (-1.22)
Southwest		1.386 (0.49)		1.656 (1.33)
Rocky Mountains		1.610 (0.64)		0.296 (-1.18)
Far West		0.371 (-1.05)		0.700 (-0.88)
<hr/>				
N observations	20617	20597	36344	36344
N subjects	725	725	1,270	1,270
N failures	78	78	130	130
Log likelihood	-509.902	-492.987	-912.801	-904.575

¹Applicable to public institutions only

²Derived from Carnegie classification, equal to 1 if an institution is classified as doctoral or master's-granting
Note that reference group for region is New England. Z-statistic in parentheses.

* $p < .05$, ** $p < .01$, *** $p < .001$