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Promising or Predatory? Online Education in Non-Profit and For-Profit Universities

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T. Hamilton, and Charlie Eaton

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Promising or Predatory? Online Education in Non-Profit and For-Profit Universities

Christian Michael Smith, Amber D. Villalobos (equal authors), Laura T. Hamilton, and Charlie Eaton

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Abstract

Online education is a rapidly growing segment of the postsecondary system, and recent growth is concentrated at non-profit universities. Research shows that Black and low-income students are disproportionately represented in online programs; however, research on the outcomes of exclusively online education, especially at four-year non-profit universities, has been limited. Two narratives have emerged about the consequences of the access that online education provides: one describing it as promising, and the other describing it as predatory. We harness both institution-level data and individual-level data to intervene in this debate. We show that online education is related to worse educational outcomes in non-profit and for-profit sectors, including lower retention and graduation rates. A sensitivity analysis suggests that selection into online education is unlikely to explain these results. Attending online is also related to some less desirable student loan repayment outcomes across sectors. Our results suggest that online education is a form of “predatory inclusion,” in that access is coupled with increased risks for students relative to comparable peers attending in-person. In light of our findings, we propose that the provision of online education by for-profit entities—even in the non-profit sector—may play a central role in producing poor student outcomes.

Keywords: online education, predatory inclusion, higher education, racial inequalities, class inequalities, for-profit college, college retention, college completion, student loans

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Online education is the fastest growing segment of postsecondary education (Protopsaltis and Baum 2019). Contrary to popular belief, it is no longer primarily a for-profit phenomenon. Our analyses show that exclusively online undergraduate enrollments at four-year non-profit universities roughly doubled between 2012 and 2019.¹ In contrast, for-profit enrollments, regardless of modality, declined in this period, although online education remains central to the for-profit sector (Deming, Goldin, and Katz 2012).

Scholarship on exclusively online student enrollment and outcomes is, however, limited. Evidence comes primarily from research focused on single courses; not surprisingly, findings can be mixed (see Protopsaltis and Baum [2019] for a review). Research on online education also tends to focus on the for-profit sector (Bettinger et al. 2017) or community colleges (Johnson and Mejia 2014; Kaupp 2012; Shea and Bidjerano 2019; Xu and Jaggars 2013), utilizes older data preceding sharp increases in online education in the non-profit sector (Ortagus 2018), or does not disaggregate across sectors (Hoxby 2018).

Data limitations have been the primary barrier to scholarship on exclusively online programs, especially research on four-year non-profits. However, this is changing. Substantial growth in online education has increased the number of universities offering online education. In addition, it has recently become possible to compare undergraduate students who spent time in non-profit exclusively online programs to those whose education was in-person.

In this paper, we focus on online degree programs at four-year universities in the United States. Four-year universities are those that offer at least a bachelor's degree.

Our comparative analyses examine stratified samples of schools. We compare aggregate student outcomes for exclusively online and non-online students at non-profit and for-profit universities. These schools have different funding structures: Non-profit colleges and universities reinvest profit in the school, while for-profit universities disburse profit to the institution's investors (Whitman 2021). For-profit universities are privately-owned institutions. By contrast, non-profit universities can be privately-owned or public institutions, and are thus grouped in our analyses. All four-year universities can offer degree programs fully online.

We utilize 2012-2019 Integrated Postsecondary Education Data System (IPEDS) data, merged with College Scorecard data, as well as 2012-2017 Beginning Postsecondary Students (BPS) Longitudinal Study data, to provide a comprehensive picture of student outcomes in exclusively online postsecondary programs. Unlike much prior research, we disaggregate by sector. We ask: Compared to similar in-person students, do online students experience worse educational outcomes, including: a) lower retention and graduation rates, b) higher student debt burdens, and c) less desirable student loan repayment outcomes?

Our study provides insight into ongoing debates about online education. On one hand, enthusiastic speculation emphasizes the potential for online education to “disrupt” higher education by bringing high-quality content to disadvantaged communities (Christensen and Eyring 2011; Meisenhelder 2013; Stokes 2011). By contrast, others note that online education is most problematic for marginalized students (Jaggars 2011) and suggest that online degree programs prey on disadvantaged communities (Cottom 2020).

Both perspectives point to the fact that Black and low-income students, who have historically experienced exclusion in four-year postsecondary education, are concentrated in online course work (NCES 2019; Snyder, de Brey, and Dillow 2018). The question, however, is whether access to online education has resulted in equitable outcomes. Seamster and Charron-Chénier (2017) argue that inclusion can be “predatory” when “members of a marginalized group are provided with access to a good, service, or opportunity from which they have historically been excluded but under conditions that jeopardize the benefits of access” (pg. 199-200). Predatory inclusion typically occurs when an “alternative provider... frames itself as expanding access to a valuable opportunity” but offers a product that “carries significant costs and risks” relative to that offered by traditional providers (Charron-Chénier 2020:372). Alternative providers may be for-profit providers even at non-profit universities.

Indeed, while prior research has described for-profit colleges, many of whom are largely online, as predatory (Cottom 2017; Deming, Goldin, and Katz 2012), the online program managers (or OPMs) running exclusively online programs at most non-profit universities are for-profit companies, too. In some cases, OPMs at non-profits are even former for-profit colleges (e.g. Kaplan University became Purdue Global). For-profit status means that profit is the primary motive of the online provider. Many OPMs are backed by private equity and venture capital—financing structures known to emphasize investor profit (Author 2022). At non-profits, this may conflict with the stated institutional mission and/or utilization of public funds to promote the public good. Thus, online education providers are structurally similar in both for-profit and non-profit universities.

High concentrations of marginalized students in online education paired with negative student outcomes in either sector may be a signal of predatory inclusion.

Obtaining a complete picture of online education in four-year US higher education requires examining *both* sectors separately. Sectors have unique histories and enroll different students, such that aggregated data may mask important differences. In addition, our analyses center four-year programs because the benefits of a four-year degree, especially from a traditional non-profit provider, are well-documented (Hout 2012; Webber 2014). We do not address the pivot to online education during the pandemic; however, our findings may have implications for the expansion of online education spurred, in part, by COVID-19.

THE GROWTH OF ONLINE EDUCATION

The mail-in correspondence course is online education's direct predecessor (Whitman 2018; American Center for the Study of Distance Education 2021) and may offer a useful historical lens for exclusively online education.

The correspondence course was popular in the 1920s among high school and grade school non-completers and later among veterans utilizing the 1944 Servicemen's Readjustment Act, known as the GI Bill. As Whitman (2018) documents, the explosion of correspondence schools in the wake of the GI Bill, "fed a simultaneous explosion in misleading advertising, predatory recruiting practices, sub-standard training, [and] outright fraud." A 1950 exposé in the *New York Times* argued that there were "more than 1,000 questionable or outright fraudulent schools and colleges in this country.... fleecing students of millions of dollars annually" and noted that "a large proportion of [these] are correspondence schools" (Fine 1950:30). A report issued by President

Eisenhower's Bradley Commission pointed to correspondence courses' low completion rates and low employment utility for veterans.

In the 1970s, correspondence schools, like online education today, were touted as innovative vehicles for expanding educational access (Whitman 2018). With the passage of the 1972 Higher Education Act amendments, correspondence schools found a new and lucrative source of funding—Basic Educational Opportunity Grants, later called Pell Grants. Yet, problems continued. A subcommittee commissioned by Congress concluded that a “great many students are enrolled in courses they do not complete, especially in home study schools, and some students are the victim of outright fraud” (as quoted in Whitman 2018). Ultimately, the 1992 Higher Education Act amendments cut off for-profit correspondence courses from federal student aid.

The first *online* distance college program was launched in 1989 by the for-profit University of Phoenix. For-profit colleges would come to rely on online education to serve a substantial share of their students (Allen and Seaman 2016). Deming et al. (2012: 141) conclude that, from 2000 to 2009, online for-profit colleges “increased from almost nothing to become the largest part of the sector.” Federal policies facilitated this shift. In 1992, Congress implemented the “50 percent rule”: universities had to deliver at least half of their programs, or enroll half of their students, in physical classes to participate in federal student aid programs. However, waivers (provided primarily to for-profits, in 1998) and a wholesale exemption (in 2006) led to massive for-profit online enrollments (Mettler 2014; Protopsaltis and Baum 2019).

Non-profit institutions did not invest as heavily in online education until after 2010. This was not for lack of interest. As early as 2006, three-quarters of public

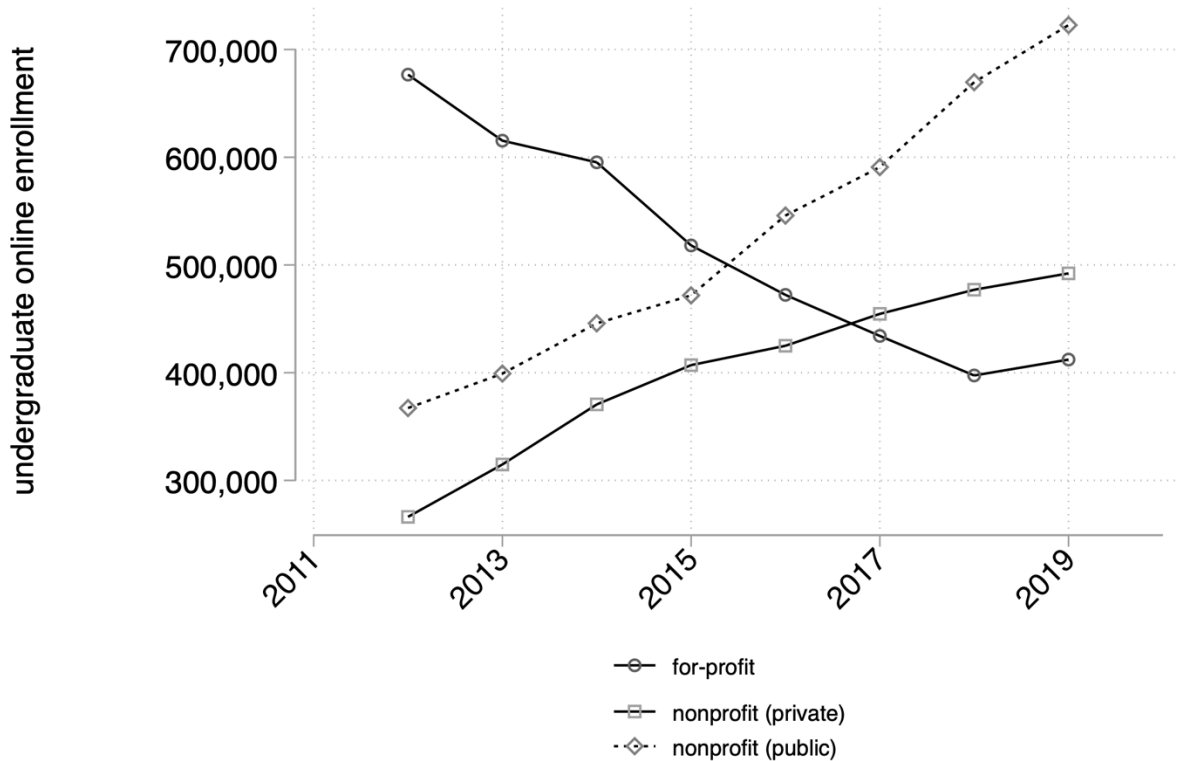
universities reported that online education was critical to the long-term strategy of the institution (Allen and Seaman 2016). Schools were seeking compensatory revenue streams after declines in state and federal subsidies (Loss 2012). Online education offered an answer. Public universities responded to declines in state appropriations by increasing online enrollments (Ortagus and Yang 2018).

Most non-profit campuses, however, had little capacity to launch exclusively online programs. Consequently, both public and private non-profits started outsourcing to OPMs. OPMs are for-profit companies that provide a broad range of services, from instructional design, to marketing, student recruitment, curricular provision, operational services, technological platforms and more (Marcus 2021; Mattes 2017). Examples include 2U, Academic Partnerships, All Campus, ed2go, Education Dynamics, Pearson Online Learning Services, and Wiley Education Services, among others.

During the first two decades of the 21st century, the number of OPMs, and universities' use of them, increased. Some estimates suggest that up to 80% of non-profit institutions delivering online education are utilizing OPM services (Newton 2016). These programs are run by for-profit companies. A majority of OPMs are backed by private equity or venture capital, creating strong incentives to increase investor profit (Author 2022; Fligstein 1993). Some are re-branded for-profit colleges. For instance, in 2018 for-profit Kaplan sold Kaplan University to newly established Purdue Global, a non-profit online university run by Purdue University, and entered into an agreement that made Kaplan the sole OPM. Access to federal student loans and direct subsidies, as well as limited consumer information about college performance, may create conditions ripe for OPM profit maximization at the expense of students (Author 2020).

OPMs have supported dramatic growth in online education. Figure 1 displays exclusively online undergraduate enrollments in four-year universities over time since 2012, the first year that IPEDS asked schools to report the percentage of their enrollments that were online. Immediately visible is the rise in enrollments at non-profits, especially public institutions. By contrast, large declines in online for-profit enrollment occurred during this period (even while the share of for-profit enrollments that are online increased). This was due to a dramatic and secular drop in for-profit enrollments, following the enrollment peak in 2010. By 2019, exclusively online undergraduate enrollment at for-profit colleges was about a third of that at non-profit universities.

Figure 1. Number of IPEDS-Recorded, Undergraduate Students Enrolled Exclusively in Online Education at Four-Year Institutions, 2012-2019.



PROMISING OR PREDATORY?

Marginalized students are disproportionately concentrated in online coursework. These students are more likely to be Black, low-income, employed, female, have children, be enrolled part-time, and have independent financial status (NCES 2019; Snyder, de Brey, and Dillow 2018). Whether this makes online education promising or predatory is a topic of debate.

The rapid rise of online education in the non-profit sector has been accompanied by claims that it will revolutionize postsecondary access and equity—echoing claims about correspondence schools decades earlier (Christensen and Eyring 2011; Meisenhelder 2013; Stokes 2011). As Protopsaltis and Baum (2019) describe, proponents argue that online education expands access to students who are not geographically mobile and have family and work obligations that make traditional course schedules difficult to accommodate.

Discourse around online education’s promise for “disruption” and “innovation” is perhaps best distilled in the MOOC (Massive Open Online Course) movement that coalesced in 2012. As Gebre-Medhin (forthcoming) describes, elite private non-profit universities promised to bring high quality and free postsecondary education to the masses. However, today, MOOCs often operate like OPMs, using free university content to attract a global learner base that might pay for courses and degrees (Hill 2021). This approach can be predatory, as it draws in users who may not have been seeking programs with tuition costs.

A growing body of work suggests that online programs may exemplify predatory inclusion (Cottom 2020). Research on predatory inclusion in higher education has

focused primarily on exploitative lending and financial practices that allow Black students to enroll in college but saddle them with disproportionate levels of debt (Houle and Addo 2018; Seamster and Charron-Chénier 2017). However, predatory inclusion along any marginalizing axis is possible (Charron-Chénier 2020).

Online higher education may meet Charron-Chénier's (2020) four components of predatory inclusion. First, predatory inclusion depends on "exclusionary practices" that have restricted access to a good or service (pg. 372)—conditions that have characterized four-year postsecondary education in the US (Wooten 2015). Second, an alternative provider enters the market and offers "a close substitute," framed as "expanding access to a valuable opportunity" (pg. 372). For-profit colleges qualify as alternative providers and have utilized this framing (Cottom 2017). The same is true of OPMs (Author 2022). Third, alternative providers target marginalized groups either directly or through de facto methods such as geographic targeting. Contracts between OPMs and public universities include evidence of both (Author 2022).

This article seeks, to the extent possible, to evaluate the fourth component of predatory inclusion: although some consumers may benefit from increased access, overall, it "carries significant costs and risks" that reduce benefits of inclusion (pg. 372). The theory posits that costs and risks are introduced because "the product offered by the alternative provider is of significantly lower quality than that offered by traditional providers" (pg. 372). Notably, there is longstanding debate about how to conceptualize and measure "quality" in higher education, both online and in-person (see Arum and Roksa 2011; Esfijani 2018), and we cannot directly compare the quality of online programming to in-person programming. However, we can use the best existing

information to assess whether similar students attending online in the non-profit and for-profit sectors face worse retention, graduation, and repayment outcomes than their peers attending in person.

Existing research does not offer a clear picture of *how* online students fare. Analyses often fail to disaggregate across sectors (e.g., Hoxby 2018) or do not disentangle the impact of being online from attending a for-profit. For instance, Deming et al. (2012) find that for-profit students (many of whom are online) end up with higher unemployment, lower earnings, and greater default rates, relative to comparable students attending other universities (also see Cottom 2017; Tucker 2021). Research in the non-profit sector is focused on community colleges: several studies utilizing data from individual community college systems find that students perform worse and have lower persistence rates in online courses (Johnson and Mejia 2014; Xu and Jaggars 2013). There may, however, be associate degree completion benefits from *partial* online course taking at community colleges, because online modality may help students access otherwise impacted classes (Johnson and Mejia 2014; Orgatus 2018; Shea and Bidjerano 2018).

Across sectors, researchers also focus on single course outcomes (see Jaggars 2011 and Orgatus 2018 for reviews). For instance, Bettinger et al. (2017) show that taking a course online rather than in-person at DeVry University, a large for-profit, is associated with lower grades and persistence. Figlio, Rush, and Yin (2013) find modest evidence that students who received in-person instruction in a microeconomics course at a large research university performed better. Course-specific student outcomes, however, can depend heavily on contextual factors.

More recently, research on the movement online during COVID-19 has documented struggles by students to stay engaged, learn material, earn strong grades, and persist in classes (Altindag, Feliz, Tekin 2021; Asgari et al. 2021). Notably, the latest data included in our study are from 2019—right before the pandemic began. Our findings, however, may have implications for how universities respond to the move online facilitated by the pandemic.

METHODS

Data

Our analyses triangulate findings from multiple levels of analysis. Institution-level data cover the bulk of U.S. four-year higher education institutions and include data on very recent college entry cohorts—as recent as 2019. Individual-level, longitudinal data allow us to relate individual student outcomes more precisely with student enrollment online and to carefully consider individual selection into online education.²

Our analysis yields sector-specific estimates (non-profit vs. for-profit) and estimates pooling sectors. In supplemental analyses using institutional-level data, we also assess heterogeneity between public and private universities within the non-profit sector. For the most part, findings closely match those for public non-profits and private non-profits together, but when this is not the case, we describe the deviation in the text.

Institution-level data. Our institution-level analyses rely on the Integrated Postsecondary Education Data System (IPEDS), which includes data on all postsecondary institutions that participate in federal student financial aid programs. We

analyze data on the 3,691 four-year institutions that IPEDS records between fall 2012 and fall 2019, totaling 25,372 institution-year observations. Because we use listwise deletion to handle missing data in IPEDS, sample sizes vary depending on variables included. When analyzing typical student loan progress outcomes, we merge IPEDS with College Scorecard data.

Online prevalence is operationalized as the percentage of undergraduate students at a given university each year who are enrolled exclusively in courses considered as distance education.³ We examine how online prevalence relates to several student outcomes: graduation rates, retention rates, loan progress outcomes, and the average amount of student loan debt. An Appendix table describes these variables, as well as a set of control variables, in more detail. The means and standard deviations of each can also be found in the Appendix.

Six-year graduation rates are useful because they do a good job capturing timely bachelor's degree attainment for those entering college in each cohort. However, with currently available IPEDS data, the fall 2014 entering cohort is the most recent cohort for whom six-year graduation rates are available. First-to-second year retention rates have the advantage of being available as recent as the fall 2019 cohort. However, retention rates have the disadvantage of capturing timely degree attainment less powerfully; note, though, that the universities that promote persistence for a given cohort tend to be the same universities that promote graduation within six years for that cohort (Mountjoy and Hickman 2020).

Two features of College Scorecard's operationalization of loan progress outcomes are useful to highlight. First, College Scorecard measures whether borrowers have a

given loan progress status at the *exact* moment two years after they enter repayment. Second, College Scorecard classifies borrowers as having exactly one loan progress status from a hierarchical list of eight: default, delinquency, forbearance, deferment, not making progress, making progress, paid in full, and discharge, in that order. For example, the delinquency rate is not the percentage of borrowers in a cohort who are delinquent on at least one loan; instead, the delinquency rate is the percentage who are delinquent on at least one loan and are not in default on any of their loans. As we elaborate later, this point-in-time and hierarchical approach has implications when comparing loan progress results across institution-level and individual-level data.

Individual-level data. We also analyze data from the restricted-use Beginning Postsecondary Students Longitudinal Study (BPS) 12-17. The BPS follows a cohort of first-time college students during the 2011-2012 academic year. We are interested in examining online vs. in-person education at four-year institutions only. Thus, we restrict the sample to those who began their degrees at four-year institutions.⁴

We use multiple imputation, drawing on rich information about individual students to produce solid predictions for missing values of control variables (the key independent variable, sector indicator, and outcome variables have entirely observed values). Multiple imputation is helpful to preserve cases, and its assumptions about the randomness of missing data are less strict than the assumptions of other approaches—especially in datasets with large amounts of observed information, like the BPS (van Ginkel et al. 2020).

Variables are detailed in the Appendix. The means and standard deviations for each can be found in the Appendix. Our key measures are the modality of the

institutional program and the sector of the institution. For both, we use data from the first and last institution attended, given that these are the institutions for which BPS data allow us to assess whether the degree programs were entirely online. Because we have information for up to two institutions attended for each respondent, we measure online attendance as enrolling in a four-year degree program entirely online at the first, last, or both the first and last institution. We use an analogous procedure to measure for-profit attendance. For brevity, we refer to those who ever attended for-profit institutions as *for-profit* and those who ever attend college entirely online as *online*.

Student outcome analyses also include a rich set of variables known to be associated with college but that occur prior to college, as well as basic institution-level features (see Appendix). We include sex, race, age, parents' education, Pell grant receipt, high school GPA, ACT score, the student's commuter status during their first year, hours worked during first year in college, HBCU status of first institution, highest degree offered at first institution, and whether the student ever attended a private institution. Together, these variables help us address selection into the online modality.

Our five outcome variables are from the 2017 year of the dataset, for students who began college in 2011-2012. This time frame is suitable for assessing outcomes such as obtaining a four-year degree by 2017 and cumulative loan debt by 2017. Analyses for loan repayment outcomes (e.g., default, delinquency, and forbearance) are restricted to borrowers. Within six years of individuals' initial enrollment, we observe reasonable frequencies of ever being delinquent or late on at least one loan payment and ever having a loan placed in forbearance or pause. However, this is a shorter time

frame to observe ever experiencing loan default, given that default requires a longer period of nonpayment.

Analytic Strategy

In institution-level analyses, we assess the relationship between online prevalence and typical student outcomes by estimating an OLS regression model of each outcome: graduation rate, retention rate, the rate of each loan progress outcome, and average loan amount—each of which is a continuous, institutional aggregate of outcomes rather than a binary indicator for each student. We estimate each model for three samples, based on sector, and include an array of control variables that adjust for systematic differences between institutions with larger vs. smaller shares of online students (see Appendix).

For individual-level analyses with BPS, we utilize the inverse probability-weighted regression adjustment (IPWRA) estimator, which involves a model of the selection process that influences treatment status (online status), as well as a model of the outcome. Notably, IPWRA combines the best of traditional propensity score methods with the best of traditional multiple regression. Like other propensity score methods, such as propensity score matching, IPWRA can yield valid estimates by balancing online and non-online students without assuming the functional form that relates control variables to the outcome variable, such as BA completion (Thoemmes and Ong 2016). Moreover, like traditional multiple regression, IPWRA can yield valid estimates if the outcome is properly modeled, even if online status is not—making it “doubly robust” (Wooldridge 2007). We use a rich array of variables to build our IPWRA models that tap

into central predictors of college success, including parental class resources, student motivation, and prior academic achievement (see Appendix).

As is the case for all observational studies, however, we cannot capture selection on unobserved characteristics. Sensitivity analyses assist us in addressing the role selection may play in our BA estimates (Frank et al. 2013). These analyses help answer the question: *How much* selection would need to be present for the results to be entirely a function of online students and in-person students having different baseline characteristics? Sensitivity analyses serve as a useful barometer for the plausibility of a statistically significant relationship between the treatment and the outcome, above and beyond selection into the treatment.

RESULTS

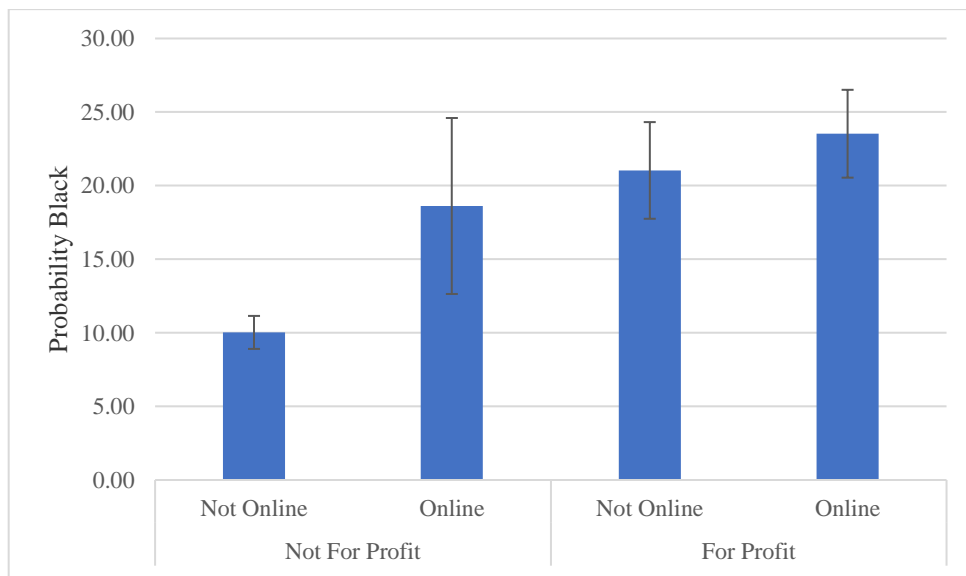
Who Attends Online?

Before turning to our primary analyses, we briefly address who attends online. Both arguments—that online education is promising or predatory—assume greater concentrations of marginalized student populations in online education. Others have shown with aggregate, pooled-sector data that Black and low-income students are disproportionately concentrated in online education (NCES 2019; Snyder, de Brey, and Dillow 2018), and we confirm this here with data broken down by sector.

In the non-profit sector, evidence is unambiguous that Black and low-income students disproportionately study online. Figure 2, based on individual-level data, shows that online students in the non-profit sector are more likely to be Black than their in-

person counterparts, and Figure 3 shows that these students are also more likely to be Pell grant recipients than their in-person counterparts. The first column of Table 1, based on institution-level data, shows that non-profit institutions with greater online prevalence have proportionally more Black students and proportionally more Pell grant recipients. Interestingly, supplemental analyses suggest that in the non-profit sector, the overrepresentation of Pell recipients (but not Black students) online appears to be driven by private non-profits.

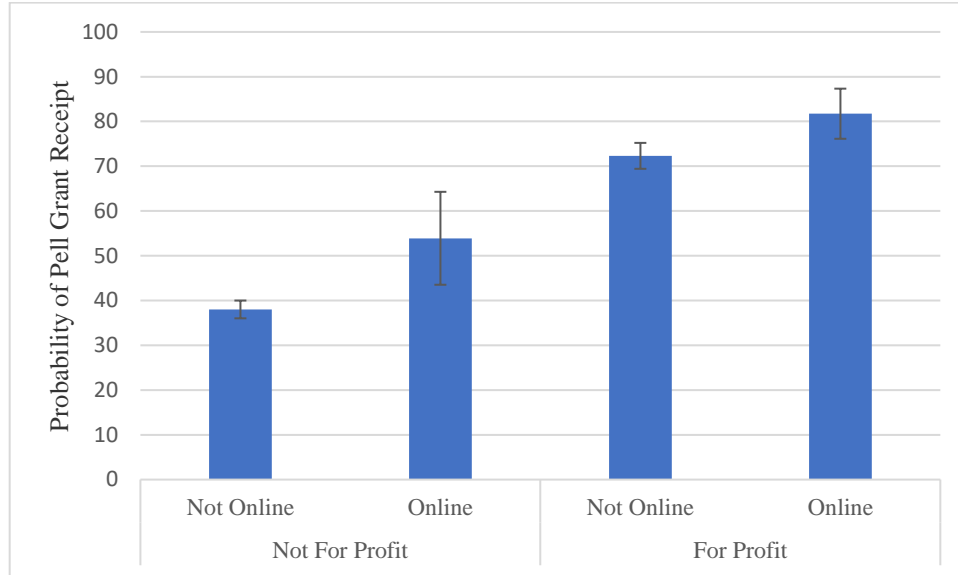
Figure 2. Predicted Probability of Being a Black Student by Sector and Online Status, BPS 12/17 Restricted Use Data.



Note: Error bars represent 95% confidence intervals.

Source: Data are from the Beginning Postsecondary Students Longitudinal Study 12/17 (BPS) Restricted Use Dataset.

Figure 3. Predicted Probability of Receiving Pell Grants by Sector and Online Status, BPS 12/17 Restricted Use Data.



Note: Error bars represent 95% confidence intervals.

Source: Data are from the Beginning Postsecondary Students Longitudinal Study 12/17 (BPS) Restricted Use Dataset.

Table 1. Point Estimates (with Standard Errors) of the Relationship between Online Prevalence and Student Demographics, IPEDS 12-19.

| | | % Black | % Pell |
|--------------|------------|-------------------|-----------------|
| Online Coef. | Non-Profit | 0.84*** (0.15) | 0.43* (0.21) |
| | For-Profit | 0.77*** (0.22) | 0.28 (0.23) |
| | All | 0.80*** (0.12) | 0.18 (0.16) |

Notes: *** p<.001, **p<.01, *p<.05 (two-tailed). Online prevalence is scaled so that a unit increase corresponds to a 10-percentage point increase in students enrolled exclusively in online education. Each model is estimated with an OLS regression model and each includes controls for HBCU status, institutional control, highest degree offered, locale type, region, and year. Standard errors are clustered by institution. Sample sizes are shown in the Appendix.

Source: Data are from the Integrated Postsecondary Education Data System.

In the for-profit sector, there also is evidence overall that Black and low-income students disproportionately study online. However, unlike in the non-profit sector, there are a couple of caveats. At the *individual level*, the association between being Black and

studying online at for-profits is not statistically significant (Figure 2), even though the corresponding association at the institution level is statistically significant (Table 1). It may be easier to see racial patterns with the institution-level data's greatly increased numbers of enrollments. The difference may also be because Black students at the time of individual-level data collection were heavily concentrated in for-profit education generally, even in-person for-profit education (Cottom 2017).

The second caveat is that at the *institution level*, the association between online prevalence and percent of Pell recipients is not statistically significant in the for-profit sector (Table 1), even though the corresponding association at the individual level is statistically significant (Figure 3). This difference may be due to online modality becoming much more common in the for-profit sector in the years between the collection of the individual-level data and the collection of the institution-level data; specifically, we suspect that as the for-profit sector shifted more heavily online (from 25% in 2012 to 40% in 2019), exclusively online for-profit students became a less negatively selected group of for-profit students with respect to economic advantage.

In the main analyses below, we first report results for retention and graduation outcomes, then we address student loan repayment outcomes. In all sections, we focus on sector-specific results for the sake of brevity, but we present pooled results for the interested reader.

Online Education is Related to Worse Retention and Graduation Outcomes

Institution-level results. The first two rows of Table 2 display estimates of the association between online prevalence and retention and graduation outcomes, net of student body and institutional characteristics. We begin with 6-year graduation rate

estimates, which refer to cohorts of students who began college in 2012, 2013, and 2014. These data are a lagging indicator of completion, as they capture students enrolled in early waves of exclusively online programs.

At for-profits, the relationship between online prevalence and graduation rates is not statistically significant. By comparison, at non-profits, the relationship is statistically significant and substantial in magnitude. In the non-profit sample, a 10-percentage point increase in online prevalence is conditionally associated with a 1.48 percentage point decrease in graduation rates. At non-profit institutions, there is much more room to fall, as in-person graduation rates tend to be higher than in the for-profit sector.

Table 2. Conditional Point Estimates (with Standard Errors) of the Relationship between Online Prevalence and Student Outcomes, IPEDS 12-19 merged with College Scorecard.

| | | Retention & Graduation | | | | | | | | | |
|--------------|------------|------------------------|--------------------|-------------------|--------------------|------------------|--------------------|--------------------|-------------------|------------------|--|
| | | Ret. Rate | Grad. Rate | | | | | | | | |
| Online Coef. | Non-Profit | -1.13*** (0.19) | -1.48*** (0.36) | | | | | | | | |
| | For-Profit | -0.68* (0.30) | 0.26 (0.45) | | | | | | | | |
| | All | -1.07*** (0.16) | -1.34*** (0.25) | | | | | | | | |
| | | Loan Progress & Debt | | | | | | | | | |
| | | Default | Delinq. | Forbearance | Deferment | No Progr. | Progr. | Paid in Full | Discharge | Avg. Debt | |
| Online Coef. | Non-Profit | 0.20*** (0.06) | 0.02 (0.03) | 0.87*** (0.09) | -0.16*** (0.05) | -0.04 (0.07) | -0.67*** (0.10) | -0.36*** (0.07) | 0.06*** (0.02) | -310*** (70) | |
| | For-Profit | -0.24** (0.08) | -0.11** (0.04) | 0.37** (0.13) | 0.07 (0.05) | 0.24** (0.08) | -0.41* (0.18) | -0.12 (0.08) | 0.05*** (0.01) | -426*** (123) | |
| | All | 0.11* (0.05) | -0.01 (0.02) | 0.74*** (0.07) | -0.02 (0.03) | 0.02 (0.05) | -0.64*** (0.08) | -0.27*** (0.05) | 0.06*** (0.01) | -370*** (60) | |

Notes: *** p<.001, **p<.01, *p<.05 (two-tailed). Online prevalence is scaled so that a unit increase corresponds to a 10-percentage point increase in students enrolled exclusively in online education. Graduation rates, retention rates, and rates of loan progress outcomes are measured on a 0-100 scale. Each model is estimated with an OLS regression model and each includes controls for HBCU status, institutional control, highest degree offered, locale type, region, year, total enrollment, percent Black, percent Hispanic, percent American Indian/Alaska Native, percent Asian, percent male, percent on Pell grants, and acceptance rate. Standard errors are clustered by institution. Sample sizes are shown in the Appendix.

Source: Data are from the Integrated Postsecondary Education Data System and the College Scorecard.

First-to-second year retention rate analyses, however, suggest that we may see future negative relationships between online prevalence and aggregate graduation rates at for-profits, in addition to non-profits. Retention data are drawn from a different, and

larger, sample of institutions and include cohorts that started college as recently as 2019. These analyses indicate that online prevalence is related to worse retention rates at *both* non-profits and for-profits. A 10-percentage point increase in online prevalence is conditionally associated with a 1.13 percentage point decrease in first-to-second year retention at non-profits, and a 0.68 decrease at for-profits. Issues with retention are often a leading indicator of future completion rate issues. Taken all together, the data suggest that increased online prevalence in non-profits, and potentially in for-profits, hinder student progress to the degree.

Are these findings in the non-profit sector driven by just public non-profits or private non-profits? Supplemental analyses indicate that conditional associations between online prevalence and graduation and retention rates are statistically significant and negative at *both* public non-profits and private non-profits. However, the magnitude of these associations is greater at public non-profits: For instance, vis-à-vis graduation rates, the online coefficient is -2.6 at public non-profits versus -1.0 at private non-profits.

Individual-level results. In the first column of Table 3, we present IPWRA estimates of how online status relates to BA completion. By these doubly-robust estimates, being online is related to a 16-percentage point reduction in the probability of BA completion in the non-profit sector and a 7-percentage point reduction in the for-profit sector. In addition to being sizeable in magnitude, estimates for both sectors are statistically significant.

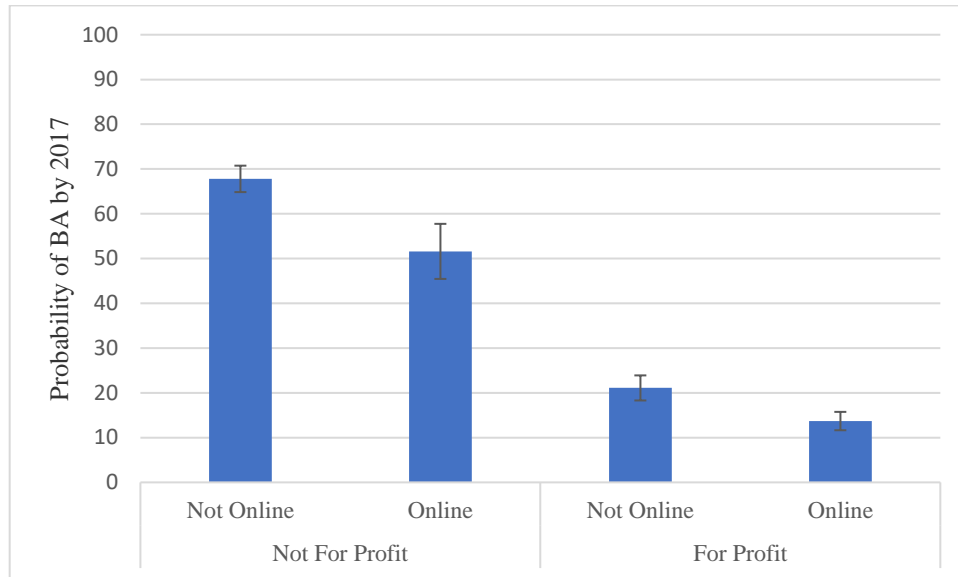
Table 3. Conditional Point Estimates (with Standard Errors) of the Relationship between Online Attendance and Student Outcomes, BPS 12/17 Restricted Use Data. Estimated Using Inverse Probability-Weighted Regression Adjustment.

| | | Graduation Outcome | | | |
|---------------|------------|-------------------------------|-------------------|-------------------|-------------------|
| | | BA by 2017 | | | |
| Online Estim. | Non-Profit | -0.16*** (0.03) | | | |
| | For-Profit | -0.07*** (0.01) | | | |
| | All | -0.16*** (0.02) | | | |
| | | Loan Progress & Debt Outcomes | | | |
| | | Default | Delinquency | Forbearance | Log (Loan Debt) |
| Online Estim. | Non-Profit | 0.02 (0.02) | 0.08* (0.04) | 0.12** (0.04) | -0.38 (0.28) |
| | For-Profit | 0.04* (0.02) | 0.01 (0.01) | -0.01 (0.02) | -0.39** (0.13) |
| | All | 0.05*** (0.01) | 0.09*** (0.02) | 0.08*** (0.02) | -0.11 (0.17) |

Notes: *** p<.001, **p<.01, *p<.05 (two-tailed). Covariates: sex, race, age, Pell grant receipt status, parents' highest level of education, ACT score, high school GPA, commuter status, hours student works while in college, HBCU status of first institution, doctoral degree-granting status of first institution, and whether the student ever attended a private institution (the for-profit analysis excludes this variable because all for-profit students have attended a private institution, by definition). Estimates in the first four rows are scaled in probability points (0.0-1.0 range) and estimates in the last row are measured in log-dollars. Standard errors are clustered by first institution attended and listed below coefficients. Sample sizes are shown in the Appendix. Source: Data are from the Beginning Postsecondary Students Longitudinal Study 12/17 (BPS) Restricted Use Dataset.

Figure 4 illustrates that, while predicted probabilities of BA completion are higher among non-profit students than for-profit students, within each sector, online students are less likely than other students to complete a degree. These results bolster the institution-level finding that non-profits with greater online prevalence have lower graduation rates and add further evidence toward a negative relationship between online modality and completion at for-profit institutions.

Figure 4. Predicted Probability of Completing BA by Sector and Online Status, BPS 12/17 Restricted Use Data.



Note: Error bars represent 95% confidence intervals.

Source: Data are from the Beginning Postsecondary Students Longitudinal Study 12/17 (BPS) Restricted Use Dataset.

How much selection into online education would need to be at play to explain the observed relationship between online status and BA completion? We answer this question using a sensitivity analysis developed by Frank and colleagues (2013). This analysis goes beyond the question of *whether* selection is present to the more useful question of *how much* selection would need to be present to explain the results. While selection into the treatment is a factor in all observational studies, a conditional association may be sizeable and precise enough that it would be unlikely for selection to be the sole explanation for the statistically significant relationship between the treatment and the outcome.

Applying Frank et al.'s (2013) method, we find that, for the pooled estimate to be statistically insignificant at the 0.05 level, 80% of the estimate would have to be due to selection. One interpretation of this calculation is that, for the estimate to just miss the

statistical significance threshold, 80% of the sample would need to be replaced with individuals for whom online status has absolutely no effect on BA completion. Among non-profit students only, the corresponding percentage is 65%, and among for-profit students only, the corresponding percentage is 62%. Each percentage is the necessary extent of selection *above and beyond* observed covariates. This fact is important because Pell grant receipt, ACT scores, commuter status, and other observed factors already account for much of the variation in unobserved factors. Accordingly, we regard each of the three percentages as high. Since a higher percentage implies it is less likely that selection fully explains the finding, these high percentages lend some credence to the notion that the finding is not solely due to selection.

To put the sensitivity analysis in further context, in our models, commuter status is the observed covariate that has the strongest relationship with BA completion, in harmony with theory and evidence on the benefits of campus residency (Schudde 2011). Including vs. omitting commuter status from the pooled IPWRA analysis leads to a 14% magnitude reduction in the estimated relationship between online status and BA completion. Since 80% is about six times greater than 14%, a statistically insignificant relationship would require that unobserved selection be about six times more influential than the selection accounted for by commuter status. Thus, we conclude that these findings provide evidence consistent with predatory inclusion: Online prevalence is conditionally associated with worse completion outcomes.

Online Education is Related to Worse Loan Repayment Outcomes

Institution-level results. Recall that institution-level data report borrowers as being in only one of eight hierarchical loan progress statuses: 1) default, 2) delinquent, 3)

forbearance, 4) deferment, 5) not making progress, 6) making progress, 7) paid in full, and 8) discharge. Thus, this variable does not capture multiple statuses that borrowers may have held during the two-year repayment period (and does not capture repayment statuses outside of the period). These differences in measurement matter for comparisons with individual-level data, which assess if a borrower has ever experienced a particular status.

Table 2 reports loan progress outcomes in the order they are assessed. In the non-profit sector, net of controls, default rates are significantly higher at more online-prevalent institutions. Note that supplemental analyses indicate that private rather than public non-profits drive this pattern. Unlike in the non-profit sector, online prevalence and defaults rates are negatively related in the for-profit sector. Potentially contextualizing this heterogeneity, though, is for-profit institutions' frequent manipulation of default rates (Institute for College Access & Success 2019; Student Borrower Protection Center 2020).

The U.S. Department of Education requires for-profit colleges to report default rates for three-year cohorts. Schools will lose Title IV eligibility if more than 30 percent of students in a cohort default within three years after leaving, or if more than 40 percent of students default in a given year. As a result, for-profits have hired firms that aggressively push borrowers into forbearance—a fact that is consistent with our forbearance results, as presented below. These students often end up defaulting outside of the three-year window considered by the Department of Education (Student Borrower Protection Center 2020). If for-profits with greater online prevalence are more

predatory than for-profits with lower online prevalence, we might expect these institutions to manipulate default rates more actively.

Institution-level delinquency results for the for-profit sector are similarly unreliable. Rather than allow students to move from delinquency to default, schools often engage in heavy levels of manipulation, as noted above. Our data show that for-profit institutions with greater online prevalence tend to have lower rates of delinquency. In contrast, in the non-profit sector, online prevalence is conditionally unassociated with delinquency rates.

The remainder of repayment outcomes suggest poor outcomes for schools with greater online prevalence across sectors. The relationship between online prevalence and forbearance rates is positive and significant at both non-profits and for-profits. Students in forbearance are typically experiencing financial or employment difficulties. Because forbearance is not considered by the Department of Education as a factor in determining for-profit access to Title IV loans, forbearance may capture students in the for-profit sector that would otherwise be delinquent or have defaulted on their loans.

Increasing online prevalence is conditionally associated with a reduction in deferment rates, but only in the non-profit sector. However, a reduction in deferment rates is not necessarily favorable because deferment usually captures life circumstances that are desirable. Although several conditions can trigger deferment, the most common is being back in school—e.g., to complete a graduate degree, complete a bachelor's degree after finishing an associate degree, or return to school after stopping out. Moreover, interest does not accrue on subsidized loans during deferment, unlike forbearance. Many loans in deferment will eventually move into and out of repayment

with little trouble (Miller 2015). Thus, the reduction in deferment rates associated with increased online prevalence does not reflect well on online-heavy institutions. Note that supplemental analyses indicate that, in the non-profit sector, private rather than public non-profits drive the deferment-online prevalence relationship.

Estimates for no progress on student loan repayment indicate that for-profits with greater online prevalence are significantly more likely to have students who are not making progress on their loans. For these students, the sum of all outstanding loan balances exceeds the sum of the original loan balances (but they are not currently in default, delinquency, forbearance, or deferment categories). In the non-profit sector, there is no significant relationship between online prevalence and no progress, which further points to manipulation of default and delinquency rates in the for-profit sector, specifically. There is, however, a negative and significant relationship across sectors between online prevalence and rates of making progress. Making progress requires borrowers to be making regular payments and to have outstanding loan balances that, combined, are less than the sum of original balances. For every 10-percentage point increase in online prevalence, the rates of making progress fall by 0.67 percentage points at non-profits, and 0.41 percentage points at for-profits.

Results for paid-in-full closely mirror results for making progress. Paid-in-full is the most desirable repayment outcome, as it suggests that borrowers were economically stable enough to pay off student debt. Among non-profits, as online prevalence increases, the percentage of borrowers who have paid in full decreases. Although the coefficient among for-profits is not statistically significant in these analyses, it is in the same direction as for the non-profit sector.⁵

Even though online education is related to worse loan repayment outcomes, it is related to less initial debt. The last row of Table 2 shows that a 10-percentage point increase in online prevalence is conditionally associated with an average loan amount that is hundreds of dollars less, regardless of sector. Note, however, that supplemental analyses indicate that tuition is only significantly lower at private (but not public) non-profits with higher online prevalence.

In some ways, lower debt among students enrolling online is not surprising; they may have lower living expenses than in-person students, who are more likely to live on or near campus. Online tuition may, in some cases, be less than in-person tuition at the institution (Deming et al. 2015). Additionally, as shown in this article, students who enroll online often experience lower retention and graduation rates. Thus, online students may accrue less debt because they may spend less time in school. Relatively lower debt is the only outcome in our analyses that reasonably fails to accord with the notion of predatory inclusion.

However, we argue that debt cannot be viewed in isolation from repayment outcomes. Indeed, it should raise a red flag that students in online programs may accrue less debt *but still struggle more than their in-person peers to pay it off*. Taken together, institution-level data suggest worse overall loan progress outcomes for more online-prevalent institutions.⁶

Individual-level results. Table 3 includes IPWRA estimates of how online status relates to loan repayment outcomes among borrowers who started at four-year institutions in 2011-2012. The conditional relationship between online status and ever experiencing loan default is statistically significant in the for-profit sector. Attending a

for-profit online versus in-person is conditionally associated with a 4-percentage point increase in the probability of ever being in default through 2017. This finding is consistent with the possibility that reduced rates of default in the institution-level data are related to online for-profit efforts to manipulate student repayment status reports.

Notably, differences in individual-level default rates do not reach statistical significance in the non-profit sector. It is possible that, with a greater time horizon, more non-profit students in this sample may end up foregoing payments long enough to default. Indeed, institution-level data on non-profit institutions suggests that online students will likely eventually experience default at higher rates than their in-person peers.

While rates of loan default in the BPS sample are low, rates of loan delinquency are higher. We thus have more power to detect modality differences in delinquency rates. As a reminder, our measure of loan delinquency is whether a respondent has ever been delinquent on a loan payment through 2017. As Table 3 indicates, attending online is associated with an 8-percentage point increase in the probability of experiencing delinquency in the non-profit sector. Divergence in how IPEDS and BPS measure the outcome—with BPS having the broader measure of having *ever been delinquent*—are likely driving differences between institution-level and individual-level analyses in the non-profit sector, such that we can observe higher rates of delinquency in the BPS non-profit sample only.

In contrast to institution-level data, we do not see significantly reduced rates of delinquency at online for-profits in Table 3. Again, this is potentially suggestive of efforts to manipulate institution-level data reporting at online for-profits, creating the impression

that rates of delinquency are lower at online for-profits relative to in-person for-profits. Individual-level BPS data can provide a useful corrective here.

Forbearance results for students at non-profits indicate that online status is associated with a statistically significant 12-percentage point increase in the probability of ever being in loan forbearance. There is no significant difference by modality in the for-profit sector. This comes in contrast to institutional-level analyses that suggest higher levels of forbearance among for-profits with greater online prevalence; the difference may be driven by the fact that IPEDS includes more recent data, potentially capturing current institutional efforts to move students into forbearance versus other, less favorable, repayment outcomes for the institution.

In Table 3, we also present results for the relationship between online status and cumulative undergraduate loan debt. Given a high level of skew in individual undergraduate loan debt, we log-transform these values, taking the natural log of debt plus \$1. Individual-level estimates are statistically significant only in the for-profit sector. The for-profit estimate, when converted, indicates that being online is associated with a 32 percentage-point decrease in cumulative student loan debt at for-profits. Evaluating this at the mean of \$18,757 suggests a reduction in cumulative student loan debt of around \$6,000 for those who attend online in the for-profit sector. Notably, in the non-profit sector, there is not a statistically significant estimate relating online status to debt.

Taken as a whole, individual-level results indicate that exclusively online students are more likely to struggle with completion than their in-person peers, in both non-profit and for-profit sectors. Relatedly, while online students in the for-profit sector may have less student debt than in-person students, overall online students experience worse loan

progress outcomes, such as greater likelihood of experiencing default, delinquency, and/or forbearance, depending on the sector. Looking at student debt experiences holistically, therefore, suggests that there are several elements of predatory inclusion at play in online education.

DISCUSSION

As our data demonstrate, higher concentrations of Black and low-income students sit alongside evidence of worse completion, relative to similar students in in-person programs. Table 4 briefly summarizes our findings. At the institution level, greater online prevalence is linked to lower retention and/or graduation rates. At the individual level, being online is associated with significantly lower probabilities of graduating—even in inverse probability-weighted regression adjustment analyses that account for observed selection into online education.

Table 4. Summary of Online Education Composition and Outcomes

| | Institution-Level IPEDS Data | | Individual-Level BPS Data | |
|---------------------------------|---|---|---|--|
| | <i>Non-Profit</i> | <i>For-Profit</i> | <i>Non-Profit</i> | <i>For-Profit</i> |
| Student Body Composition | Black and Pell students are concentrated online. | Black students are concentrated online. | Black and Pell students are more likely to be online. | Pell students are more likely to be online. |
| Retention and Graduation | Greater institutional online prevalence is associated with lower rates of retention and graduation. | Greater institutional online prevalence is associated with lower rates of retention. | Online students are less likely to graduate within six years. | Online students are less likely to graduate. |
| Loan Outcomes | Greater institutional online prevalence is associated with higher rates of default, forbearance, and lower rates of making progress and being paid in full. Loan debt is lower. | Greater institutional online prevalence is associated with lower rates of making progress and higher rates of forbearance and making no progress. Lower rates of default and delinquency are possibly due to data manipulation. Loan debt is lower. | Online students are more likely to be delinquent on loans and in forbearance. | Online students are more likely to default and have lower loan debt. |

Source: Data are from the Integrated Postsecondary Education Data System and the College Scorecard and the Beginning Postsecondary Students Longitudinal Study 12/17 (BPS) Restricted Use Dataset.

Repayment outcomes are similarly poor, in both sets of analyses, compared to similar students who attended in-person. As online prevalence increases at the institution level, we see slight reductions in student debt but higher rates of default (in non-profits only, plausibly due to data manipulation by for-profits concerned about losing Title IV funds) and forbearance. In addition, universities with greater online prevalence also have lower rates of making progress and/or being paid-in-full. At the student level, those who ever enroll in online programs have higher rates of default, delinquency and/or forbearance, depending on the sector, even though students who enroll online at for-profit schools accrue less debt.

These results are not unexpected in the for-profit sector, which has been described as predatory (Cottom 2017; Deming et al. 2012; Hoxby 2018). To the existing literature on for-profits, our analyses add evidence that for-profits with greater online prevalence may be *particularly* predatory. Both institution and individual analyses suggest these programs do a worse job of seeing students to completion. Online education in the for-profit sector also appears to produce some poor repayment outcomes. Our findings add to prior work highlighting variation in the degree to which for-profit colleges exploit their students (Author 2020).

The results for online education at non-profits are, however, even more consistent and robust than the for-profit results. Retention analyses (only available at the institution level) and graduation analyses at both levels suggest that non-profit students fare worse in online programs. Estimates corresponding to more repayment outcomes reach significance and are in the disadvantageous direction, including default, forbearance, making progress, and paid-in-full at the institution level, and delinquency and forbearance at the individual level. Results suggest that online programs at non-profits are less successful at graduating students and saddle students with debt that they cannot repay.

Overall, our findings provide novel evidence, using the best available data, that online programs meet the criteria for predatory inclusion. Predatory inclusion is not just confined to for-profit online education. Even non-profit four-year education—to which access is generally assumed to be a social good—displays strong indicators of online predation, as online students (disproportionately drawn from marginalized groups) fare worse than their comparable peers who attend in-person.

Does an unobserved factor, such as student focus or motivation, explain our findings? Our analyses utilized information about student past academic performance, test scores, parental social class, and financial barriers—as well as the doubly-robust IPWRA estimator—to counter concerns about selectivity. Furthermore, sensitivity analyses indicate it is highly unlikely that our results can be fully explained by selection. Regardless, it is concerning that exclusively online programs enroll students, collect tuition and fees, and fail to graduate these students at reasonable rates, while also producing poor repayment outcomes.

Our data show that predatory inclusion is visible both in the individual educational trajectories of students and in institutional data. Future research should examine what are likely to be multiple processes of predatory inclusion. For example, marginalized students may be sorted into institutions with large online programs that may demonstrate an institutional culture of predatory inclusion. At the same time, marginalized students may be internally tracked into online versus in-person programs within universities that are not broadly focused on online education. Both pathways into online education, however, may result in poor outcomes for students.

Online Predation

As Seamster and Charron-Chénier (2017:200) argue, “Processes of predatory inclusion are often presented as providing marginalized individuals with opportunities for social and economic progress.” Exclusively online education fits this mold. It has been touted as a silver bullet for access and inclusion. However, online providers democratize

access to educational services that, as our study suggests, do not produce the same benefits as those offered by traditional providers (Charron-Chénier 2020; Cottom 2020).

Predatory inclusion produces profit for dominant social actors acting as alternative providers (Charron-Chénier 2020; Cottom 2020; Taylor 2019). These actors include predatory lenders, real estate brokers, banks, corporations, and private equity firms, among others. In the case of higher education, exclusively online programs offer revenue extraction possibilities for for-profit providers, across *both* for-profit and non-profit postsecondary sectors.

In the for-profit sector, we can see the production of profit for alternative providers in the growth of private equity and publicly traded ownership (Author 2022). Over the last three decades, private equity buyouts have transformed the sector. Many private equity managers have then used IPOs (initial public offerings) to sell shares of stock to the public. These ownership structures create pressures for universities to maximize returns to wealthy investors (Author 2020; 2022; also see Fligstein 1993). Online education was the single largest driver of growth in the for-profit sector heading into its enrollment apex (Deming et al. 2012)—and more enrollments meant more revenue for for-profit colleges and their investors.

In the non-profit sector, heavy reliance on for-profit OPMs has directed an often-substantial share of online revenue to for-profit companies (Marcus 2021; Mattes 2017). OPMs, particularly former for-profit colleges and private equity backed firms, have unquestionably pursued profit via partnerships with non-profit universities. Non-profit schools have welcomed such partnerships, as they have turned to online education to boost revenue and compensate for declining state appropriations (Ortagus and Yang

2017). In the context of the high hopes for online education at the turn of the 21st century, it is easy to see how university administrators may have viewed these partnerships positively (for meeting both fiscal and inclusion goals), without full knowledge of the costs to students.

Pursuit of profit bounds the concept of predatory inclusion in higher education. Not all alternative providers offering access fit within this framework. For instance, Historically Black Colleges and Universities (HBCUs) were a response to Black student exclusion at predominately white institutions, but these schools have a rich mission of service to Black communities and have faced enormous fiscal challenges that threaten their very existence (Wooten 2015). Recent research using IPEDS data also suggests that HBCUs have a higher graduation rate for Black students than comparable institutional peers (Gordon et al. 2021). This example highlights the fact that alternative providers motivated by social equity are not equivalent to providers incentivized primarily by profit.

Indeed, a substantial body of scholarship explores the equity issues that arise when for-profit entities offer services once provided by the public for public good—such as health care, housing support, or education (Hacker 2002; Mettler 2014; Lin and Neely 2020; Young and Chen 2020). Researchers point out that the primary goal of for-profit providers is profit, not social equity; when the two conflict, profit-seeking wins (Hacker 2002).

Is online education as a modality inherently predatory? Our study cannot answer this question. Because the largest online programs in the US, even in non-profit universities, are run by for-profit OPMs, we cannot disentangle potential limitations of

the modality from limitations of for-profit provision. As Baum and McPherson (2019) point out, a lack of personal interaction between students and instructors, and students with other students, may be the downfall of fully online modalities in comparison to in-person or hybrid modalities. However, as the predatory inclusion framework suggests, negative student outcomes may be a function of outsourcing online education to for-profit providers. Scalable, high-quality online education may be possible. For instance, Chirikov et al. (2020) found that online and blended instruction produced similar outcomes as in-person learning in a large international online education platform established by eight leading Russian universities with governmental support.

In the US, higher education is often touted as the most direct, and seemingly fail-safe, avenue to social mobility (Cottom 2017). It is precisely this promise that fuels enrollment in exclusively online programs that target disadvantaged student populations. However, predatory inclusion in online education may mar this promise, and potentially even leave some students worse off than before they enrolled. Moving forward, research should attend not only to who attends online and how they fare—but also to the structure of provision itself.

NOTES

1. We use the terms college, university, and school interchangeably.
2. Sample sizes for both individual-level and institutional-level analyses are located in the Appendix.
3. IPEDS data do not allow for disaggregation by full-time or first-time status, but it is possible to disaggregate by degree-seeking status. Note the online prevalence measure used here is correlated at over .99 with an online prevalence measure only including

degree-seeking students. Point estimates and standard errors in our analyses using either measure hardly differ at all, and no estimates that are statistically significant at the .05 level using one measure change significance as a result of using the other measure.

4. BPS analyses are based on a sample of students who began at a four-year institution in 2011-2012 and therefore cannot be extrapolated to the full BPS population. However, analyses utilizing population weights designed by BPS produce similar results.

5. Discharge is the last loan repayment category; it occurs when the obligation to repay has been lifted, generally due to death, disability, bankruptcy, fraud, or identity theft. Discharge rates often reflect severe calamities that student borrowers would face regardless of where and how they attended college. Nonetheless, estimates indicate that universities with greater online prevalence, in both sectors, tend to have higher discharge rates. The magnitude of this relationship is, however, quite small.

6. Most institution-level outcome variables are rates bounded between 0% and 100%. Therefore, linear models of these outcomes may be misspecified in ways that threaten the validity of the results. We thus conduct robustness checks using the fractional logit model (Papke & Wooldridge 1996). Results from this model are very similar to those presented, in both direction and statistical significance (with alpha level 0.05). The only exception is the coefficient relating online prevalence to “paid in full” status at for-profits: this coefficient is not quite statistically significant with the OLS model but is narrowly statistically significant with the fractional logit model. We present the OLS results because they are simpler to interpret and do not substantively differ from the fractional logit results.

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APPENDIX

Table A.1. IPEDS and College Scorecard Variable Descriptions.

| Variable | Description |
|---------------------------|---|
| <i>Key variables</i> | |
| Online prevalence | The percentage of undergraduate students who are enrolled exclusively in courses that are considered distance education courses. |
| For-profit status | Binary measure with categories <i>for-profit</i> and <i>nonprofit</i> . The latter category collapses public and private nonprofit institutions. We use this measure as a moderator variable. However, as explained in the institutional control description below, many analyses include a finer-grained measure of institutional control as a control variable (rather than moderator variable). |
| <i>Outcomes</i> | |
| Graduation rate | The percentage of full-time, first-time, degree-seeking undergraduates who graduated within six years of entering. Online prevalence as measured in fall of year y is matched with the graduation rate of those who <i>entered</i> college for the first time in the fall of year y . This measure is only available for $y \in \{2012, 2013, 2014\}$. |
| Retention rate | The percentage of full-time, first-time, degree-seeking undergraduates who re-enrolled at the college the next year. Online prevalence as measured in fall of year y is matched with the retention rate of those who <i>entered</i> college for the first time in the fall of year y . |
| Default rate ¹ | An individual is classified as in default on their student loans if, for more than 360 days, they have failed to pay at least one of their federal student loans according to the terms agreed to in the promissory note. The <i>default rate</i> is the percentage of individuals in a given cohort who, two years after entering repayment, have this loan progress status. Note that College Scorecard does not include Perkins Loans in the rates of default or any loan progress outcomes listed below. (College Scorecard measure). |
| Delinquency rate | An individual is classified as in delinquency on their student loans if, for between 31 and 360 days, they have failed to pay at least one of their federal student loans according to the terms agreed to in the promissory note, and none of their federal loans are in |

¹ It is not straightforward to match available data on loan progress with available data on online prevalence. First, College Scorecard puts individuals into cohorts based on when they enter repayment, rather than when they enter or leave the institution. Thus, individuals in a given cohort were exposed to the institution at different times. Second, College Scorecard pools cohorts together; that is, it pools together all those who entered repayment between July 1st 2014 and June 30th 2017. We choose to match this pooled cohort with online prevalence as measured during fall 2013, because we suspect that the 2013-14 academic year was the year during which the greatest number of individuals in the pooled cohort were exposed to the institution. The logic of this conjecture is as follows. If the individuals entered repayment between July 1st 2014 and June 30th 2017, then those who entered repayment exactly six months after exiting the college—as most people do—exited the institution between January 1st 2014 and December 30th 2016. Most of the earliest *graduates* exiting in this period graduated in spring 2014, suggesting they were likely exposed to the institution in the 2013-14 academic year, which would not be true of an academic year any later than 2013-14. Moreover, most of the latest *graduates* exiting in this period graduated in winter 2016, suggested they were likely also exposed to the institution in the 2013-14 academic year. We use the same matching scheme for all loan progress outcomes, not just default rates.

| | |
|-----------------------|---|
| | default. The <i>delinquency rate</i> is the percentage of individuals in a given cohort who, two years after entering repayment, have this loan progress status. (College Scorecard measure). |
| Forbearance rate | Forbearance is a period of time when monthly loan payments are temporarily stopped or reduced, with interest continuing to accrue. An individual is classified as in forbearance on their student loans if at least one of their federal loans is in forbearance, and none of their federal loans are in default or delinquency. The <i>forbearance rate</i> is the percentage of individuals in a given cohort who, two years after entering repayment, have this loan progress status. (College Scorecard measure). |
| Deferment rate | Deferment is a temporary postponement of payment of a loan allowed under certain conditions—most commonly, enrollment in higher education (Miller 2015)—and during which interest generally does not accrue on subsidized loans. An individual is classified as in deferment on their student loans if at least one of their loans is in deferment, and none of their loans are in default, delinquency, or forbearance. The <i>deferment rate</i> is the percentage of individuals in a given cohort who, two years after entering repayment, have this loan progress status. (College Scorecard measure). |
| Not making prog. rate | An individual is classified as not making progress on their student loans if they are making regular payments, the sum of all outstanding federal loan balances exceeds the sum of the original federal loan balances, and none of the individual’s federal loans are in default, delinquency, forbearance, or deferment. The <i>not making progress rate</i> is the percentage of individuals in a given cohort who, two years after entering repayment, have this loan progress status. (College Scorecard measure). |
| Making progress rate | An individual is classified as “making progress” on their student loans if they are making regular payments, the sum of all outstanding federal loan balances is less than the sum of the original federal loan balances, and none of the loan progress statuses above apply to them. The <i>making progress rate</i> is the percentage of individuals in a given cohort who, two years after entering repayment, have this loan progress status. (College Scorecard measure). |
| Paid in full rate | An individual is classified as having paid their student loans in full if all the loans considered are paid in full. The <i>paid in full rate</i> is the percentage of individuals in a given cohort who, two years after entering repayment, have this loan progress status. (College Scorecard measure). |
| Discharge rate | Loan discharge occurs when the obligation to repay has been removed, typically due to death, disability, bankruptcy, fraud, or identity theft. The <i>discharge rate</i> is the percentage of individuals in a given cohort who, two years after entering repayment, have had their federal student loans discharged. (College Scorecard measure). |
| Average loan amount | The sum of two quantities: (1) the average amount of federal student loans taken out by full-time, first-time students at the institution over the whole year, and (2) the average amount of non-federal student loans taken out by full-time, first-time students at the institution over the whole year. |

Additional variables

| | |
|-----------------------|--|
| Percent Pell | The percentage of undergraduate students awarded Pell grants. |
| Percent Black | The percentage of undergraduate students who are Black. |
| Percent Hispanic | The percentage of undergraduate students who are Hispanic. |
| Percent AIAN | The percentage of undergraduate students who are American Indian/Alaska Native. |
| Percent Asian | The percentage of undergraduate students who are Asian. |
| Percent male | The percentage of undergraduate students who are male. |
| Total enrolment | The total number of undergraduate students enrolled (log-transformed). |
| Acceptance rate | The number of admissions as a percentage of the number of applications. |
| Institutional control | Categorical measure with categories <i>private for-profit</i> , <i>private nonprofit</i> , and <i>public nonprofit</i> . To control for variation in the type of institution, we include this measure as a control variable in many analyses of the pooled sample of institutions as well as the |

sample of nonprofit institutions. In analyses of for-profit institutions only, there is no variation in institutional control, so this measure is not in such models.

| | |
|----------------------|---|
| HBCU status | Binary indicator of whether the institution is a historically Black college or university. |
| Highest deg. offered | Categorical measure with categories “Doctor's degree - research/scholarship and professional practice,” “Doctor's degree - research/scholarship,” “Doctor's degree - professional practice,” “Doctor's degree - other,” “Master’s degree,” “Bachelor’s degree,” “Associate degree,” and “Non-degree granting.” ² |
| Locale type | Categorical measure with categories “City: Large,” “City: Midsize,” “City: Small,” “Suburb: Large,” “Suburb: Midsize,” “Suburb: Small,” “Town: Fringe,” “Town: Distant,” “Town: Remote,” “Rural: Fringe,” “Rural: Distant,” and “Rural: Remote.” |
| Region | Categorical measure with categories “New England (CT, ME, MA, NH, RI, VT),” “Mid East (DE, DC, MD, NJ, NY, PA),” “Great Lakes (IL, IN, MI, OH, WI),” “Plains (IA, KS, MN, MO, NE, ND, SD),” “Southeast (AL, AR, FL, GA, KY, LA, MS, NC, SC, TN, VA, WV),” “Southwest (AZ, NM, OK, TX),” “Rocky Mountains (CO, ID, MT, UT, WY),” “Far West (AK, CA, HI, NV, OR, WA),” and “Other U.S. jurisdictions (AS, FM, GU, MH, MP, PR, PW, VI),” and “U.S. Service schools.” |
| Year | Categorical measure with a category for each possible year of observation (the 2012-2013 academic year through the 2019-2020 academic year). |

Source: Data are from the Integrated Postsecondary Education Data System and the College Scorecard.

² Together, the last two categories still make up 0.4% of the sample after restricting to institutions that are coded as “Four or more years” on the IPEDS variable for level of institution. This is likely due to inconsistent coding by IPEDS on different types of variables.

Table A.2. BPS 12-17 Variable Descriptions.

| Variable | Description |
|-----------------------------|--|
| <i>Key variables</i> | |
| Ever attended online | A dichotomous measure of whether respondent ever attended a four-year institution and their entire certificate or degree program at that institution was online. This is measured for the first institution attended and the most recent institution attended as of 2017. The respondent is measured as online if either the first, last institution, or both first and last institution attended was a four-year online program. |
| Ever attended for-profit | A dichotomous measure of whether respondent ever attended a four-year for-profit institution. This is measured for the first institution attended and the most recent institution attended as of 2017. The respondent is measured as ever for-profit if either the first, last, or both first and last institution attended was a four-year for-profit institution. |
| <i>Outcomes</i> | |
| BA by 2017 | A dichotomous measure of whether or not the respondent obtained a bachelor's degree anywhere by June 2017. |
| Ever defaulted | Indicates whether the respondent ever defaulted on a direct subsidized or unsubsidized loan (also known as subsidized and unsubsidized Stafford loans), or Perkins loan through 2017. Applies to respondents who took out federal loans for their undergraduate education through 2017 (excludes Parent PLUS). |
| Ever delinquent | A dichotomous measure of whether the respondent was ever delinquent on a direct subsidized or unsubsidized loan (also known as subsidized and unsubsidized Stafford loans), or Perkins loan. Applies to respondents who took out federal loans for their undergraduate education through 2017 (excludes Parent PLUS) through 2017. |
| Ever in forbearance | A dichotomous measures of whether the respondent ever experienced forbearance on a direct subsidized or unsubsidized loan (also known as subsidized and unsubsidized Stafford Loans) or Perkins loan through 2017. Applies to respondents who took out federal loans for their undergraduate education through 2017 (excludes Parent PLUS). |
| Cumulative loan debt | A continuous measure of the cumulative direct subsidized and unsubsidized loan amount (also known as subsidized and unsubsidized Stafford loans) the respondent borrowed for undergraduate education through 2017. |
| <i>Additional variables</i> | |
| Female | A dichotomous measure of whether respondent is female. |
| Race | A categorical measure of race/ethnicity: Black, Hispanic any race, Asian, American Indian or Pacific Islander, and multiracial, with white as the reference category. A dichotomous measure of Black/non-Black is used in student demographics analyses. |
| Age | A continuous measure of a respondent's age at the base year of the survey. |
| Pell grant receipt | A dichotomous measure of whether respondent received any amount of a Pell Grant in the base year of the survey 2011-2012. Taken from the total amount of federal Pell grants received at all institutions attended in 2011-12. Applies to all respondents. |
| Parent education | A continuous measure of the highest level of education achieved by either parent of the student as of 2011-12. The measure is transformed from categorical to continuous as follows: did not complete high school=10; high school or equivalent=12; vocational or technical training=13; associate's degree=14; some college but no degree=14; bachelor's degree=16; master's degree or equivalent=18; doctoral professional or doctoral research degree=21. |
| High School GPA | A continuous measure of student's high school grade point average (GPA), according to self-report on test questionnaire. The measure is transformed as follows; 0.5-0.9=0.75; 1.0-1.4=1.25; 1.5-1.9=1.75; 2.0-2.4=2.25; 2.5-2.9=2.75; 3.0-3.4=3.25; 3.5- |

| | |
|------------------------|--|
| | 4.0=3.75. BPS only gathered GPA data from respondents under age 30, but we multiply impute GPA for all respondents with missing GPAs. |
| ACT score | A continuous measure of ACT composite score, derived from either a reported ACT score or the SAT I combined score converted to an estimated ACT composite score. BPS only gathered ACT/SAT data from respondents under age 30 who took one of the exams, but we multiply impute ACT for all respondents with missing scores. |
| Student commutes | A categorical measure of Student’s housing status in 2011-2012, with categories “lives on campus,” “lives off campus,” and “lives with parents.” |
| Student works | A continuous measure of the average hours the respondent worked per week in all paid jobs while enrolled in 2011-12. This ranges from 0-120 hours worked per week. |
| HBCU status | A dichotomous measure of whether the NPSAS sample institution, the first institution attended in 2011-2012, is designated as a Historically Black College or University. |
| Highest degree offered | A dichotomous measure of whether the first four-year institution attended was a doctorate-granting institution or not. |
| Private institution | A dichotomous measure of whether respondent ever attended a private four-year institution for their first, last, or both first and last institution attended. |

Source: Data are from the Beginning Postsecondary Students Longitudinal Study 12/17 (BPS) Restricted Use Dataset.

Table A.3. Descriptive statistics for institution-level variables measured in IPEDS and College Scorecard.

| | Non-Profit | | For-Profit | | All | |
|--|------------|-----------|------------|-----------|----------|-----------|
| | Mean | Std. Dev. | Mean | Std. Dev. | Mean | Std. Dev. |
| Online Prevalence | 11.02 | 19.16 | 30.54 | 35.12 | 14.79 | 24.36 |
| For-Profit Status | 0.00 | | 1.00 | | 0.21 | |
| Graduation rate | 54.25 | 19.86 | 41.05 | 22.04 | 52.88 | 20.50 |
| Retention rate | 74.24 | 14.93 | 55.70 | 28.00 | 71.75 | 18.39 |
| Default rate | 7.16 | 4.30 | 11.72 | 4.81 | 7.83 | 4.67 |
| Delinquency rate | 4.40 | 2.09 | 6.67 | 1.97 | 4.82 | 2.25 |
| Forbearance rate | 15.60 | 7.39 | 28.35 | 6.56 | 17.26 | 8.46 |
| Deferment rate | 14.10 | 3.31 | 10.97 | 2.48 | 13.71 | 3.38 |
| Not making prog. rate | 24.54 | 5.22 | 26.25 | 4.22 | 24.76 | 5.13 |
| Making progress rate | 26.32 | 9.56 | 13.76 | 10.02 | 24.68 | 10.51 |
| Paid in full rate | 11.26 | 6.78 | 3.27 | 3.21 | 10.31 | 6.96 |
| Discharge rate | 0.69 | 0.52 | 1.25 | 0.59 | 0.82 | 0.59 |
| Average loan amount | \$17.42k | \$5.23k | \$17.17k | \$7.18k | \$17.40k | \$5.43k |
| Percent Pell | 38.82 | 18.72 | 60.85 | 19.74 | 43.04 | 20.81 |
| Percent Black | 13.06 | 19.07 | 24.33 | 20.83 | 15.38 | 19.97 |
| Percent Hispanic | 12.52 | 18.45 | 16.85 | 20.43 | 13.41 | 18.96 |
| Percent AIAN | 1.23 | 7.35 | 1.02 | 2.15 | 1.19 | 6.63 |
| Percent Asian | 4.16 | 6.70 | 3.56 | 6.87 | 4.04 | 6.74 |
| Percent male | 44.49 | 17.46 | 38.92 | 21.88 | 43.34 | 18.59 |
| Total enrollment (logged) | 7.43 | 1.63 | 6.04 | 1.42 | 7.14 | 1.69 |
| Acceptance rate | 77.34 | 23.15 | 94.21 | 13.86 | 80.95 | 22.59 |
| Control: Public non-profit | 0.32 | | 0.00 | | 0.25 | |
| Control: Private non-profit | 0.68 | | 0.00 | | 0.53 | |
| Control: For-profit | 0.00 | | 1.00 | | 0.21 | |
| HBCU status | 0.04 | | 0.00 | | 0.03 | |
| High deg.: Dr. - rsrch./sch. & prof. prac. | 0.18 | | 0.03 | | 0.15 | |
| High deg.: Dr. - rsrch./sch. | 0.12 | | 0.04 | | 0.11 | |
| High deg.: Dr. - prof. prac. | 0.11 | | 0.05 | | 0.10 | |
| High deg.: Dr. - other | 0.03 | | 0.01 | | 0.03 | |
| High deg.: Master's degree | 0.32 | | 0.30 | | 0.32 | |
| High deg.: Bachelor's degree | 0.23 | | 0.57 | | 0.30 | |
| High deg.: Associate degree | < 0.01 | | < 0.01 | | < 0.01 | |
| High deg.: Non-degree granting | < 0.01 | | 0.0 | | < 0.01 | |
| Locale: City: Large | 0.25 | | 0.36 | | 0.27 | |
| Locale: City: Midsize | 0.12 | | 0.15 | | 0.13 | |
| Locale: City: Small | 0.14 | | 0.11 | | 0.13 | |
| Locale: Suburb: Large | 0.21 | | 0.32 | | 0.23 | |
| Locale: Suburb: Midsize | 0.03 | | 0.02 | | 0.03 | |
| Locale: Suburb: Small | 0.02 | | < 0.01 | | 0.02 | |
| Locale: Town: Fringe | 0.03 | | < 0.01 | | 0.02 | |
| Locale: Town: Distant | 0.08 | | < 0.01 | | 0.07 | |
| Locale: Town: Remote | 0.05 | | 0.01 | | 0.04 | |
| Locale: Rural: Fringe | 0.04 | | 0.01 | | 0.04 | |
| Locale: Rural: Distant | 0.02 | | < 0.01 | | 0.01 | |
| Locale: Rural: Remote | 0.01 | | 0.00 | | 0.01 | |
| Region: U.S. Service Schools | < 0.01 | | 0.00 | | < 0.01 | |
| Region: New England | 0.08 | | 0.02 | | 0.07 | |
| Region: Mid East | 0.19 | | 0.07 | | 0.17 | |
| Region: Great Lakes | 0.15 | | 0.14 | | 0.15 | |
| Region: Plains | 0.10 | | 0.11 | | 0.10 | |
| Region: Southeast | 0.22 | | 0.27 | | 0.23 | |
| Region: Southwest | 0.07 | | 0.13 | | 0.09 | |
| Region: Rocky Mountains | 0.03 | | 0.06 | | 0.04 | |
| Region: Far West | 0.13 | | 0.17 | | 0.14 | |
| Region: Other U.S. jurisdictions | 0.03 | | 0.02 | | 0.03 | |
| Year: 2012 | 0.12 | | 0.15 | | 0.13 | |
| Year: 2013 | 0.12 | | 0.15 | | 0.13 | |

| | | | |
|------------|------|------|------|
| Year: 2014 | 0.12 | 0.15 | 0.13 |
| Year: 2015 | 0.13 | 0.14 | 0.13 |
| Year: 2016 | 0.13 | 0.13 | 0.13 |
| Year: 2017 | 0.13 | 0.12 | 0.13 |
| Year: 2018 | 0.13 | 0.09 | 0.12 |
| Year: 2019 | 0.13 | 0.07 | 0.12 |

Note: For binary variables, each mean represents the proportion of institutions with the corresponding status. Source: Data are from the Integrated Postsecondary Education Data System and the College Scorecard.

Table A.4. Descriptive Statistics for individual-level variables measured from BPS 12/17 Restricted Use Data.

| | Non-Profit | | For Profit | | All | |
|--|------------|-----------|------------|-----------|---------|-----------|
| | Mean | Std. Dev. | Mean | Std. Dev. | Mean | Std. Dev. |
| Student Characteristics | | | | | | |
| Female | 0.59 | | 0.55 | | 0.57 | |
| Race | | | | | | |
| <i>White</i> | 0.63 | | 0.46 | | 0.57 | |
| <i>Black</i> | 0.12 | | 0.22 | | 0.15 | |
| <i>Hispanic</i> | 0.13 | | 0.23 | | 0.17 | |
| <i>Asian</i> | 0.07 | | 0.02 | | 0.05 | |
| <i>American Indian/Hawaiian</i> | 0.01 | | 0.02 | | 0.01 | |
| <i>Multiracial</i> | 0.04 | | 0.04 | | 0.04 | |
| Age | 18.95 | | 23.63 | | 20.73 | |
| Family Background Factors | | | | | | |
| Parents' Highest Level of Education | 15.51 | 2.87 | 13.32 | 2.36 | 14.7 | 2.89 |
| Received Pell Grant | 0.39 | | 0.76 | | 0.53 | |
| Student Prior Achievement | | | | | | |
| ACT score | 23.27 | 5.01 | 19.42 | 4.61 | 22.27 | 5.19 |
| High School GPA | 3.24 | 0.52 | 2.86 | 0.66 | 3.11 | 0.6 |
| Student Competing Demands | | | | | | |
| Hours Worked | 7.6 | 12.42 | 12.87 | 18.54 | 9.55 | 15.18 |
| Student Commuter Status | | | | | | |
| Lives on Campus | 0.67 | | 0.13 | | 0.46 | |
| Lives off Campus | 0.17 | | 0.53 | | 0.31 | |
| Lives with Parents | 0.16 | | 0.34 | | 0.23 | |
| Institution Level Variables | | | | | | |
| Ever Attended Online | 0.05 | | 0.34 | | 0.16 | |
| Ever Attended a For Profit University | 0 | | 1 | | 0.38 | |
| Ever Attended a Private University | 0.51 | | 1 | | 0.7 | |
| First Institution HBCU | 0.03 | | 0 | | 0.02 | |
| First Institution Highest Degree Offered doctorate | 0.6 | | 0.15 | | 0.43 | |
| Outcome Variables | | | | | | |
| Student Earned a BA by 2017 | 0.67 | | 0.19 | | 0.49 | |
| Subsidized and Unsubsidized Loan Debt | 13937.6 | 13537.5 | 18757.5 | 16163.4 | 15770.4 | 14777.6 |
| Ever Defaulted on Loan through 2017 | 0.08 | | 0.24 | | 0.15 | |
| Ever Delinquent on Loan Payment through 2017 | 0.51 | | 0.83 | | 0.65 | |
| Ever in Forbearance | 0.43 | | 0.75 | | 0.58 | |

Notes: All calculations are restricted to those who attended four-year institutions. For binary variables, each mean represents the proportion of individuals with the corresponding status. Source: Data are from the Beginning Postsecondary Students Longitudinal Study 12/17 (BPS) Restricted Use Dataset.

Table A.5. Sample Sizes for Institution-Level Analyses,
IPEDS 12-19 Merged with College Scorecard.

| | Non-profit | For-Profit | All |
|-----------------------------|------------|------------|--------|
| <i>Table 3 Sample Sizes</i> | | | |
| % Black | 13,254 | 3,167 | 16,421 |
| % Pell | 13,097 | 2,895 | 15,992 |
| <i>Table 4 Sample Sizes</i> | | | |
| Retention Rate | 11,667 | 1,911 | 13,578 |
| Graduation Rate | 4,134 | 519 | 4,653 |
| Default | 1,200 | 219 | 1,419 |
| Delinquency | 856 | 212 | 1,068 |
| Forbearance | 1,414 | 231 | 1,645 |
| Deferment | 1,405 | 225 | 1,630 |
| No Progress | 1,420 | 231 | 1,651 |
| Making Progress | 1,403 | 230 | 1,633 |
| Paid in Full | 1,256 | 196 | 1,452 |
| Discharge | 597 | 177 | 774 |
| Avg. Loan Amt. | 10,515 | 1,021 | 11,536 |

Source: Data are from the Integrated Postsecondary Education Data System and the College Scorecard.

Table A.6. Sample Sizes for Individual-level Analyses, BPS 12/17 Restricted Use Data.

| | Non-Profit | For-Profit | All |
|---------------------------------|------------|------------|--------|
| <i>Figures 2-3 Sample Sizes</i> | | | |
| Online Attendance | 8,150 | 5,000 | 13,150 |
| <i>Table 5 Sample Sizes</i> | | | |
| BA by 2017 | 8,150 | 5,000 | 13,150 |
| Default | 5,430 | 4,440 | 9,880 |
| Delinquency | 5,590 | 4,450 | 10,040 |
| Forbearance | 5,590 | 4,450 | 10,040 |
| Log(Loan Debt) | 8,150 | 5,000 | 13,150 |

Notes: Sample sizes are rounded to the nearest 10 in accordance with NCES restricted data use policies. Source: Data are from the Beginning Postsecondary Students Longitudinal Study 12/17 (BPS) Restricted Use Dataset.

Promising or Predatory?: Supplement

Table S.1. Point Estimates (with Standard Errors) of the Relationship between Online Prevalence and Student Demographics, Estimated with Fractional Logit Models, IPEDS 12-19.

| | | % Black | % Pell |
|--------------|------------|-------------------|-----------------|
| Online Coef. | Non-Profit | 0.08*** (0.01) | 0.02* (0.01) |
| | For-Profit | 0.04*** (0.01) | 0.01 (0.01) |
| | All | 0.06*** (0.01) | 0.01 (0.01) |

Notes: *** p<.001, **p<.01, *p<.05 (two-tailed). Online prevalence is scaled so that a unit increase corresponds to a 10-percentage point increase in students enrolled exclusively in online education. Standard errors are clustered by institution. Sample sizes are shown in the Appendix.

Source: Data are from the Integrated Postsecondary Education Data System.

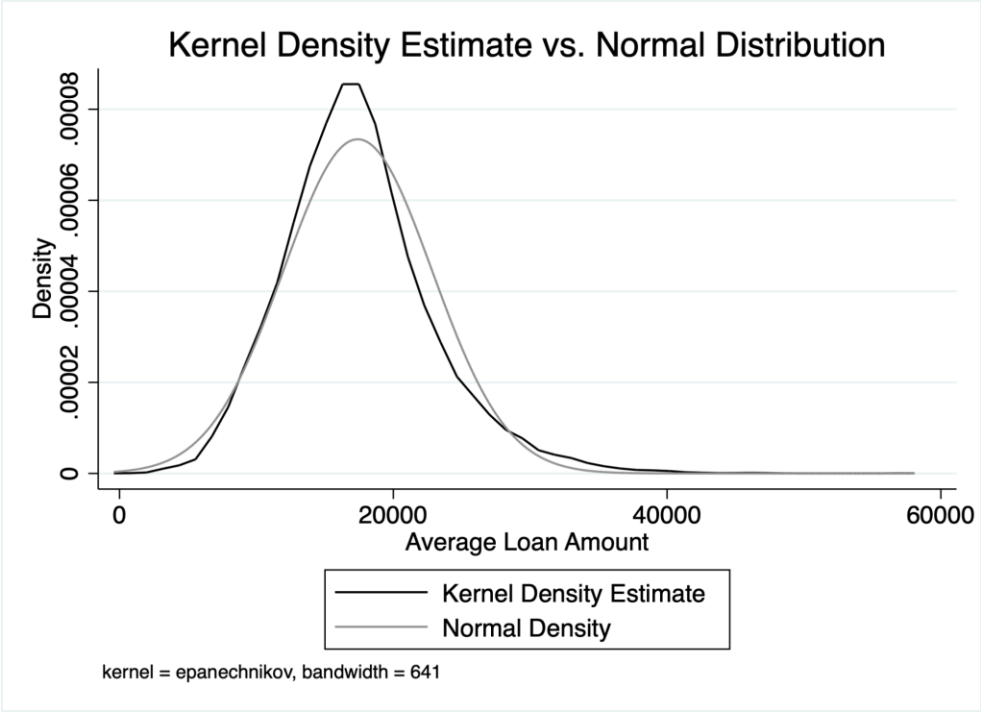
Table S.2. Conditional Point Estimates (with Standard Errors) of the Relationship between Online Prevalence and Student Outcomes, Estimated with Fractional Logit Models, IPEDS 12-19 merged with College Scorecard.

| | | Retention & Graduation | | Loan Progress & Debt | | | | | | | |
|--------------|------------|------------------------|--------------------|----------------------|-------------------|-------------------|--------------------|------------------|--------------------|--------------------|-------------------|
| | | Ret. Rate | Grad. Rate | Default | Delinq. | Forbearance | Deferment | No Progr. | Progr. | Paid in Full | Discharge |
| Online Coef. | Non-Profit | -0.05*** (0.01) | -0.06*** (0.02) | 0.03*** (0.01) | 0.01 (0.01) | 0.06*** (0.01) | -0.01*** (0.00) | -0.00 (0.00) | -0.04*** (0.01) | -0.05*** (0.01) | 0.06*** (0.01) |
| | For-Profit | -0.03* (0.01) | 0.01 (0.02) | -0.02** (0.01) | -0.02** (0.01) | 0.02** (0.01) | 0.01 (0.00) | 0.01** (0.00) | -0.04** (0.01) | -0.05* (0.02) | 0.04*** (0.01) |
| | All | -0.05*** (0.01) | -0.06*** (0.01) | 0.02** (0.01) | 0.00 (0.00) | 0.05*** (0.00) | -0.00 (0.00) | 0.00 (0.00) | -0.04*** (0.01) | -0.05*** (0.01) | 0.05*** (0.01) |

Notes: *** p<.001, **p<.01, *p<.05 (two-tailed). Online prevalence is scaled so that a unit increase corresponds to a 10-percentage point increase in students enrolled exclusively in online education. Graduation rates, retention rates, and rates of loan progress outcomes are measured on a 0-100 scale. Each model is estimated with an OLS regression model and each includes controls for HBCU status, institutional control, highest degree offered, locale type, region, year, total enrollment, percent Black, percent Hispanic, percent American Indian/Alaska Native, percent Asian, percent male, percent on Pell grants, and acceptance rate. Standard errors are clustered by institution. Sample sizes are shown in the Appendix.

Source: Data are from the Integrated Postsecondary Education Data System and the College Scorecard.

Figure S.1. Distribution of average loan amount (black) vs. theoretical normal distribution (gray).



Source: Data are from the Integrated Postsecondary Education Data System.

DATA AVAILABILITY STATEMENT

The institution-level data underlying this article are available in a repository within <https://highereddatahub.org/>.

The individual-level data underlying this article are restricted-use data that can only be accessed by authorized users. The data cannot be shared publicly due to privacy concerns and license restrictions set by the Institute of Education Sciences / National Center for Education Statistics (IES/ NCES), the entities that provide the authors the data. To gain authorization, apply for a restricted data license and data access authorization through IES/NCES.