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# Return on Investment or Ripoff? Examining the Returns to New Master's Degree Programs

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**Abstract:** Universities have created more than 14,000 new master's degree programs in the last two decades, and much of this is likely driven by an effort to increase institutional revenues during challenging financial times. But this expansion in graduate education creates a risk that these new programs fail to generate a return on investment to students or taxpayers. We examined student debt and debt-to-earnings outcomes for students attending newer versus longstanding master's programs and found that new programs at private universities tend to graduate students with less debt than their more established counterparts. This is concentrated among programs with more Black and Hispanic graduates. There were no consistent relationships between program establishment and debt outcomes at public universities.

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There have been growing concerns about declines in undergraduate student enrollment since the Great Recession, driven by declining numbers of high school graduates in much of the country and a drop in the enrollment of older students driven by a stronger labor market (Bransberger et al., 2020; Grawe, 2018). The number of undergraduates enrolled in degree-granting institutions fell by fifteen percent between 2010 and fall 2021 (National Center for Education Statistics, 2023), with a decline in undergraduate enrollment of ten percent between the first full semester of the coronavirus pandemic in fall 2020 and spring 2022 (authors' calculations using National Student Clearinghouse data). As of fall 2023, undergraduate enrollment grew for the first time since the beginning of the pandemic (National Student Clearinghouse, 2023), but remains well below pre-pandemic levels.

While undergraduate enrollment has declined for more than a decade, graduate enrollment has increased. Graduate enrollment rose by nine percent between 2010 and 2021 (National Center for Education Statistics, 2023) and held steady throughout the pandemic (authors' calculations using National Student Clearinghouse data). Much of the increase in graduate enrollment is at the master's degree level due to strong student demand for these credentials. The number of master's degrees conferred increased by 19% during the 2010s and make up more than eight in ten graduate degrees awarded (National Center for Education Statistics, 2023), representing the largest area of growth in higher education (Hunkerstorm & Prescott, 2024).

Much of the increase in enrollment at the master's degree level has been through colleges expanding their existing graduate offerings or beginning to offer graduate degrees for the first time. More than 14,000 new master's programs were created and graduated students between the 2004-05 and 2022-23 academic years (authors' calculations using Integrated Postsecondary

Education Data System data). Thirty percent of institutions classified as baccalaureate institutions in the 2005 Carnegie classifications moved to the master's colleges and universities category by 2021 (authors' calculations using Carnegie classifications data), and research by Acton (2022) shows that nearly one-fourth of the institutions called "colleges" in 2001 changed their name to "universities" by 2016 as they added graduate programs.

This growth in master's programs has been a boon for universities trying to balance their budgets in difficult financial times. However, this growth has come with criticism about the value of the programs, driven by a *Wall Street Journal* series that highlighted programs with extremely high debt burdens and low earnings after graduation (Korn & Fuller, 2021). This is especially true at private nonprofit institutions, which make up 75% of the high debt-to-earning programs (Delisle & Cohn, 2022). Net prices have risen more for master's degrees than for bachelor's degrees (Blagg, 2018), raising concerns about affordability. In the 2019-20 academic year, 57% of master's degree recipients had taken out student loan debt, with nearly one-fourth of all borrowers owing more than \$100,000 (Ma & Pender, 2023).

The proliferation of master's degree programs has the potential to be problematic for students and taxpayers alike if the new programs are of low value. From a student perspective, there are particular concerns regarding racial equity. Black and Hispanic students are particularly likely to borrow for graduate school (Pyne & Grodsky, 2020), and these students need a master's degree to surpass the typical earnings of White students with a bachelor's degree (Miller, 2020). Even upon achieving a graduate degree, there is still evidence of racial discrimination in the labor market (Bennett et al., 2023; Minaya et al., 2024; Pyne & Grodsky, 2020). Additionally, programs with larger shares of Black students are more likely to generate low returns on investment for students (Christensen, 2024).

Income-driven repayment plans on federal student loans provide borrowers with some protections if they fail to see a return on their substantial investment, but then those costs are shifted onto taxpayers. Unlike undergraduate students, graduate students can borrow up to the full cost of attendance in federal student loans. Graduate students are responsible for 40% of new federal student loans issued in spite of being 15% of all borrowers (Pyne & Grodsky, 2020). Lending to graduate students used to be profitable to taxpayers, but the Congressional Budget Office now estimates that these loans are subsidized at a rate of at least 20% (Kiska, 2023). As a result, policymakers and the general public now have a strong interest in making sure that newly-established programs generate a sufficient return to students. This is evident in the Biden administration's gainful employment regulations, which would label graduate programs with poor debt-to-earnings ratios with a marker of low financial value that would be visible to prospective students (Knott, 2023).

In this paper, we present the first analysis of the demographics and outcomes of newly established master's degree programs. This allows crucial questions about the value of these credentials to students and taxpayers to be explored, alongside a look at whether these programs enroll more racially diverse student groups than more established programs. If programs have low debt, high earnings, and high diversity, then they are likely contributing to social mobility. But if the programs are diverse with high debt and low earnings, then there are concerns about the value of these programs to students who are often marginalized in the labor market as well as to taxpayers.

Our research questions are the following:

- (1) Do the returns to master's degrees vary between new and established programs?

(2) Do these returns vary based on the racial/ethnic diversity of the programs or the fields of study offered?

### **Theoretical Framework and Literature Review**

The theoretical framework for this work is based on resource dependence theory (Pfeffer & Salancik, 1978) and academic capitalism (Slaughter & Leslie, 1997). Under resource dependence theory, organizations seek to acquire resources that are necessary for operation while also trying to diversify their revenues to reduce their reliance on any single source. Many private nonprofit colleges have historically been reliant on tuition and room/board revenue from undergraduate students as their primary revenue source and have actively sought to increase graduate enrollment (Jaquette, 2013). Tuition revenue from graduate students can offer an important additional source of funds from a market that often increases when undergraduate enrollment decreases.

In public higher education, state appropriations have served as an important revenue source that has helped to reduce reliance on undergraduate tuition. State governments provided \$108.1 billion to support public colleges and universities in Fiscal Year 2022 (State Higher Education Finance, 2023). Yet institutions have become more reliant on tuition revenue over time to fund operations as operating expenses rose faster than state funding. As a result, the share of educational revenue coming from tuition doubled from about 20% in 1980 to 43.7% in 2022 (State Higher Education Finance, 2023).

A key concern with state funding for public higher education is its volatility due to its role as a balancing wheel in state budgets (Delaney & Doyle, 2018). State funding cuts are concentrated during recessions, but only some states made an effort to increase per-student

funding following recent recessions (Rosinger et al., 2022). Conceptually, this could lead entrepreneurial colleges to expand graduate degree offerings to make up for lost state funding. Jaquette (2019) examined this question and found a positive correlation between state funding and graduate enrollment in the 1990s and early 2000s, but no relationship during most of the 2000s and early 2010s. As graduate enrollment continued to grow in the 2010s in large part due to the rise of online programs and the tendency of more students to enroll during economic downturns (e.g., Bedard & Herman, 2008), it is unclear what the relationship was during that period.

The second theory is academic capitalism, under which institutions seek to become entrepreneurial to gain status, prestige, and additional resources. Academic capitalism treats students as customers and potential revenue sources (Slaughter & Rhoades, 2004), and leaders of colleges and departments and individual faculty members are expected to generate revenue (McClure, 2016; Vican et al., 2020). Starting new programs, especially at the graduate level, is viewed as a measure of prestige that influences who colleges consider to be their peers and their eventual Carnegie classification (Miller, 2019). It is also consistent with the concept of academic drift, in which less prestigious universities mimic the behavior of their better-known counterparts (Eckel, 2008). This drift is driven by prestige-seeking faculty and administrators alike (e.g., Gonzales, 2014; Morpew, 2000). Some institutions, especially regionally-focused public universities, may start new academic programs to both meet projected workforce needs and to help garner additional revenue instead of for prestige reasons (Kinne-Clawson, 2017; Sutton, 2016).

These two theories also align with the increased prevalence of responsibility center management (RCM) budget models that provide financial incentives for individual units to

generate additional revenue by starting new programs (Curry et al., 2013; Kosten, 2016). Jaquette et al. (2018) provided evidence that RCM models resulted in increases in net tuition revenue at three of four public universities that adopted RCM during the Great Recession, while Rutherford and Rabovsky (2018) found that RCM adoption was associated with more bachelor's degrees produced in STEM fields. It is possible that RCM has similar implications for starting new master's degree programs, especially as units can shift some of the risks of starting programs onto the central administration (Deering & Lang, 2017).

Another increasingly important factor for public and private nonprofit universities to consider when launching new programs is whether students will generate a sufficient return on their investment in order to avoid negative public perceptions. While for-profit colleges are subject to federal gainful employment regulations that require nearly all programs to meet debt-to-earnings metrics in order to receive federal financial aid, programs at not-for-profit institutions are only subject to their outcomes being publicly disclosed (Office of Postsecondary Education, 2023). Research has found that for-profit colleges responded to the Obama-era gainful employment data release by closing low-performing programs, even though sanctions were unlikely to occur (Kelchen & Liu, 2022). There is also research showing that more advantaged students respond to new information about earnings outcomes by choosing higher-performing institutions (Steffel et al., 2020), highlighting the growing importance of strong earnings outcomes for institutions.

While there is theoretical and empirical research on the reasons for adding new academic programs, there is no research that we are aware of that examines the implications of adding new programs on student outcomes. That is the focus of our analyses in the remainder of this manuscript.



## Sample, Data, and Methods

To conduct this analysis, we compiled a dataset of program-level and institution-level data on master's degree enrollment and outcomes along with institutional characteristics. Details about the sample, data, and methods can be found in the following section.

### Sample

The sample for our analysis consisted of public and private nonprofit institutions that had a Carnegie basic classification of between 15 and 22 (four-year institutions that were not special-focus universities) in the 2005, 2010, or 2015 classifications. We excluded for-profit colleges because of the extreme volatility in the sector during this period and the relatively small number of for-profit colleges that offered graduate credentials. We also excluded institutions that did not grant at least one master's degree between the 2004-05 and 2021-22 academic years. This resulted in 1,274 institutions (495 public and 779 private nonprofit) being represented in the data.

The unit of analysis in our study was the program level, defined by the 4-digit 2010 Classification of Instructional Programs (CIP) code. The 4-digit CIP code matches how debt and earnings data are reported in the College Scorecard, but required us to roll up data on completions (both overall and by race/ethnicity) that are reported at the more nuanced 6-digit CIP code level in the Integrated Postsecondary Education Data System (IPEDS). During the 2010s, just over 15% of all 4-digit CIP codes contained multiple 6-digit CIP codes, and that share has been slowly rising over time (Blagg et al., 2021).<sup>2</sup>

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<sup>2</sup> Prior to the 2009-10 academic year, colleges reported using the 2000 CIP code; the 2020 CIP code was first used in 2020-21. We crosswalked CIP codes into their 2010 equivalent at the 6-digit CIP code level before aggregating to the 4-digit CIP code. There were three instances in the 2020 classification (viticulture and enology, Talmudic studies, and nursing education) where 6-digit CIP codes moved to new 4-digit CIP codes that had existing CIP codes

The choice of a 4-digit CIP code over a 6-digit CIP code is also appropriate because 6-digit CIP codes are often specialties within a broader program of study that can be taught using existing faculty and resources. For example, 52.08 is the 4-digit CIP code for finance and financial management services. This has eight 6-digit CIP codes underneath it, including financial planning, investments and securities, and public finance. A 4-digit CIP code often requires new faculty, meaning that the investment made by the institution is more substantial. Other 4-digit CIP codes within business include accounting (52.02), hospitality management (52.09), and marketing (52.14). Overall, there were 359 unique 4-digit CIP codes with at least one student graduating during this period of study.

## **Data**

Our outcomes of interest are overall debt and debt-to-earnings metrics of students who graduated from master's degree programs (conditional on having received federal financial aid for their education). Data came from the U.S. Department of Education's College Scorecard, which began releasing data on debt and earnings at the program (4-digit CIP) level in 2017. The first cohort with data on debt and earnings graduated in the 2014-15 and 2015-16 academic years, with each year of data combining two cohorts of graduates to increase the number of programs that meet reporting thresholds. Data are available through the 2018-19/2019-20 cohorts, making a total of five cohorts available.

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in 2010. In those cases, we dropped 2020-21 and 2021-22 data on those programs for both the old and new CIP because we could not disaggregate new programs due to the coding change. This affected 67,918 graduates in 2020-21, with nearly 56,000 of those graduates being in nursing education.

We created two debt-to-earnings metrics for each of these cohorts, with debt measured at completion and earnings measured approximately one year after completion.<sup>3</sup> The first was the debt-to-earnings ratio, which we calculated by dividing the debt and earnings metrics. A higher debt-to-earnings ratio reflects higher debt and/or lower earnings and is a worse outcome for students. For the second metric, we used whether the program would have passed the debt-to-earnings component of Federal Student Aid's current gainful employment regulations (Office of Postsecondary Education, 2023). These regulations require programs to either have annual debt payments of less than 8% of total income or less than 20% of discretionary income (excluding income below 150% of the federal poverty line) in order to pass three years after graduation.<sup>4</sup>

We calculated debt payments using the same ratio of annual payments (amortized over 15 years) to total debt that Federal Student Aid used in the gainful employment calculations. As a result, annual debt payments were estimated to be 10.01% of the total debt burden at graduation. We also used Federal Student Aid's discretionary income threshold of \$18,735, which was 150% of the federal poverty line in calendar year 2019. While a substantial share of programs that failed the total (annual) income metric passed the discretionary income metric, the opposite was rarely the case. As a result, the discretionary income metric is driving the estimated share of programs that would pass gainful employment.

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<sup>3</sup> There is a slight change in the earnings metric over time. For the 2014-15/2015-16 through 2016-17/2017-18 cohorts, earnings are available for median earnings of graduates working and not enrolled one year after earning their highest credential. Data for the 2017-18/2018-19 cohort removes the highest credential from the sample restriction and instead conditions on post-completion earnings. This definitional change likely does little to affect reported earnings and can be accounted for using year fixed effects.

<sup>4</sup> Earnings are available three years after completion for only one cohort (2014-15/2015-16 graduates), and as a result there are insufficient observations for analysis. However, the debt-to-earnings ratios at one year and three years after completion are correlated at 0.973 and program pass rates are correlated at 0.720, suggesting a high level of stability in the metrics over time.

There are two pieces of data available from the U.S. Department of Education's Integrated Postsecondary Education Data System (IPEDS) on the characteristics of master's degree graduates by program. The first is the demographics of graduates (regardless of whether or not they received federal financial aid) by gender and race/ethnicity. We focused on the percentage of female graduates and the percentage of Black and Hispanic graduates due to longstanding wage gaps and labor market discrimination by race and gender even after controlling for educational attainment and field of study (e.g., Blau & Kahn, 2017; Gaddis, 2015; Michels & Sessler, 2016).

We placed special focus on programs that enrolled large shares of Black and Hispanic students due to concerns that colleges may be starting programs that serve students from historically underrepresented racial/ethnic groups but generate poor labor market outcomes. We divided programs into three groups: less than 5% Black and Hispanic, 5%-20% Black and Hispanic, and more than 20% Black and Hispanic. Since the College Scorecard currently does not provide earnings data by race due to students historically not being asked about their racial identity on the Free Application for Federal Student Aid, this measure serves as a proxy for the diversity of graduates.

The second data element is the field of study in which students are graduating. We classified CIP codes into broad disciplinary groupings to show trends in master's degree program growth by discipline and to conduct analyses within individual disciplines to see if relationships differed. This is important because there are significant cost differences in operating programs and post-degree student earnings across fields of study (Hemelt et al., 2021; Minaya et al., 2024). The disciplines were STEM (two-digit CIP codes of 1, 3, 11, 14, 15, 26, 27, 40, and 41),

education (13), business (52), health (51), social sciences (42, 44, and 45), liberal arts (5, 9, 16, 23, 24, 30, 38, 50, and 54), and other (all else).

The key measure in our analysis is when a program of study (at the 4-digit CIP code level) first appeared in IPEDS completion data. We used this as a proxy for when a program began operating because no data are available on when programs first enrolled students. Since most master's programs are between 30 and 45 credit hours in duration, students likely began enrolling in the academic year prior to when they graduated. We then created a measure of the number of years in operation by subtracting when the program first appeared in IPEDS from the current year.<sup>5</sup> With 2004-05 being the first year of our dataset, any program that existed in that year is coded as having started in that year. With the first year of debt and earnings data being for graduates in 2014-15, programs that began in 2004-05 should be as well established as programs that started in earlier years.

The two panels of Figure 1 show the growth in the number of master's degree programs by discipline and institutional control between the 2004-05 and 2022-23 academic years. Health programs demonstrated the most significant growth among public universities (Figure 1a), nearly doubling by 2022-23, followed by business programs, which rose by 71.4%. Each field has a consistent growth over time with education seeing the smallest increase (34.8%). These trends in master's programs by field of study and institutional control within public universities reflect the market demands and expansion of new programs within institutions. The growth across all fields

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<sup>5</sup> A concern with IPEDS completions data is that some programs are observed as starting twice because they did not report data for one or more years in between two periods of reporting graduates. We checked a subset of institutional websites and confirmed that these programs likely existed and the period of missing data was a data reporting error. As a result, we considered those programs to have continued existing (with zero completions) instead of being discontinued and then resumed.

suggests that public universities are aligning their programs with workforce trends to ensure students' degrees remain relevant and competitive.

Similar to public universities, private nonprofit universities also experienced a substantial increase in programs during this period (Figure 1b). Health, business, and other programs all exceeded an increase of over 100% in the number of new programs, with health programs surging 183.2%. This reflects a strong demand for the healthcare sector and public health needs. While STEM programs had the lowest increase in the number of new programs with a 60.5% increase, this was still almost 20% higher than the number of new programs for public universities.

[Insert Figure 1 here]

We also considered a number of institutional factors that may influence a university's financial resources and the success of their graduates, with all measures coming from IPEDS. These include total FTE enrollment and the percentage of enrollment that is undergraduate students as measures of size and historical reliance on undergraduate enrollment. We captured undergraduate student demographics using enrollment shares by gender and race/ethnicity and the percentage of students receiving Pell Grants. To consider institutional finances and reliance on revenue sources, we used tuition reliance (tuition as a share of total revenue), per-FTE revenue, and per-FTE state appropriations (public universities only). We also included data that we collected on whether an institution was operating under a responsibility center management budget model, so we could capture another potential reason why institutions might have been incentivized to start new programs. All financial values were adjusted for inflation into 2022 dollars using the Consumer Price Index.

Table 1 shows summary statistics of the dataset, broken down by institutional control (public versus private nonprofit) and whether the program was in existence in 2004-05 or first reported graduates in IPEDS in subsequent years. In general, programs that were established prior to 2004-05 (labeled as “existing programs”) look broadly similar on debt and earnings metrics to programs established after 2004-05 (“new programs”). New programs at public universities have slightly more debt than established programs, but the opposite is true at private universities. In both sectors, new programs are disproportionately in health sciences fields and serve somewhat larger shares of Black and Hispanic students.

[Insert Table 1 here]

## **Methods**

We used panel regressions with two-way fixed effects (institution and year) to examine the relationship between the length of time for which a master’s program has been operating and student outcomes, analyzing public and private nonprofit institutions separately. We began with a binary measure of whether a program was new, using the 2004-05, 2007-08, and 2010-11 academic years as cutoffs to compare newer and longstanding programs. We also used a measure of the number of years that a program had been in operation since 2004-05, 2007-08, and 2010-11 to capture whether the length of time that a program had been in operation was associated with student outcomes. We then ran regressions separately by the diversity of students within the program and field of study.

In each of the regressions, the covariates are aligned with the approximate year in which students started the program. For example, students who started in 2013-14 likely graduated in 2014-15 or 2015-16 (reflecting a pooled cohort in the College Scorecard debt data). Earnings are

then captured for the same cohort of students. We ran two separate regression specifications, with one including institution-level covariates only and one also including program-level covariates (both from Table 1). When examining outcomes by field of study or race/ethnicity, we excluded those variables from the program-level covariates. Standard errors are clustered at the OPEID level to account for a small number of systems having the same CIP code at multiple campuses that operate under the same program participation agreement for federal financial aid (Kelchen, 2019).

### **Limitations**

A key limitation of this study is that we are only able to include the outcomes of students who completed their program because federal data sources only provide information on graduates, and a surprisingly high share of graduate students do not complete their credentials. While the federal government does not track completion rates for graduate students, Denning and Turner (2024) used student-level data from Texas to show that roughly one-third of students who started graduate school in the 2000s and early 2010s did not finish their program of study within six years. Excluding noncompleters likely biases earnings upward, making programs look more financially valuable than they are to the typical student. However, since there are no data on completion rates by when individual programs are established, it is difficult to say how our estimates are affected by this potential issue.

Another notable limitation is that College Scorecard data on debt and earnings only include the approximately 57% of graduates who received federal student loans to pay for their education (Ma & Pender, 2023). The good news about this sample restriction is that debt and earnings are calculated using the same group of students, but it also means that we are unable to



track the earnings of students who paid out of pocket and are still seeking value from their credential. Private loans are also excluded, but the amount of private loans issued to graduate students fell by about three-fourths following the creation of Grad PLUS loans in the mid-2000s (Ma & Pender, 2023).

At this point, the College Scorecard only includes program-level earnings beyond one year post-completion for just one cohort of students. As a result, we used a one-year debt-to-earnings ratio instead of the three-year ratio used under gainful employment. Finally, we are unable to separate programs that truly opened from those that changed CIP codes (for example, to be classified as STEM so graduates can stay in the United States to work for a period under the Optional Practical Training program). This likely affects a small number of programs, but we cannot pinpoint the magnitude of this issue.

## **Results**

We began by examining the results of regressions that examined student debt and debt-to-earnings outcomes based on whether a master's degree program was new versus established. As shown in Table 2, increases in debt for graduates of new programs at public universities found in Model 1 with institutional controls only fade away in Model 2 after program-level demographics are also included. However, new programs are slightly more likely to pass a gainful employment threshold than existing programs. Among private universities, there is a clear pattern of reduced student debt at graduation, lower debt-to-earnings ratios, and a larger share of programs passing gainful employment metrics among new programs. These results are stronger when program-level covariates are included and are robust to different choices of the new/established program cutoff.

[INSERT TABLE 2 HERE]

In Table 3, we used a continuous variable of the number of years that a program had been in operation since the threshold year. The results are somewhat different than using a binary measure, with all findings being statistically insignificant for programs at public universities. At private universities, there was not a significant relationship between the length of operation and debt/debt-to-earnings outcomes when only controlling for institutional characteristics (Model 1). However, when also controlling for programmatic characteristics that take into account fields of study and student demographics, programs that have been around longer resulted in more student debt and a lower likelihood of passing gainful employment than newer programs. These findings are broadly consistent with the dichotomous measure described in Table 2.

[INSERT TABLE 3 HERE]

Next, we considered whether the relationships between whether the program was new versus established varied by the share of Black and Hispanic students. As shown in Table 4, there are few differences at public universities across programs with different levels of racial/ethnic diversity. At private universities, however, newly established programs with more Black and Hispanic students had reductions in student loan debt of between five and ten percent compared to longstanding programs with the same levels of diversity. Across each level of diversity, new programs were more likely to meet the gainful employment threshold in regressions that also controlled for field of study. We also examined the relationship with Black and Hispanic enrollment using the number of years that a program was open instead of a binary indicator of whether a program was in operation in 2004-05; the results are similar (Appendix 1).

[INSERT TABLE 4 HERE]

Our final set of regressions compared the outcomes of newer versus more established programs by field of study (Table 5). These findings differ in important ways by both field of study and institutional type. Newly established programs in the social sciences, liberal arts, and education tended to have better debt and debt-to-earnings outcomes than existing programs across both public and private universities. This is a notable finding because these fields tend to have more modest earnings than other professions and are also often facing scrutiny for the employability of graduates. On the other hand, new STEM programs are associated with higher levels of student debt, suggesting that these students may be asked to pay a higher share of operating costs in fields that are typically more expensive to operate. However, there were no significant differences in debt-to-earnings ratios or the share of programs that would pass a gainful employment metric. This same pattern of results generally held using the number of years that a program was in operation (Appendix 2).

[INSERT TABLE 5 HERE]

### **Discussion**

Many universities have launched new master's programs over the last two decades in an effort to generate additional revenue and to potentially meet labor market needs. But amid concerns about mounting graduate student debt and debates regarding student loan forgiveness, the return on investment to these new programs is in the spotlight. In this research, we examined the extent to which student debt burdens and debt-to-earnings metrics differ between newer and more established master's degree programs by institutional type, field of study, and share of Black and Hispanic graduates.

Our findings suggest that while universities may be launching new master's degree programs for revenue generation reasons, the financial outcomes for graduates of these new programs are generally similar to longstanding programs at public universities and are more favorable than existing programs at private universities. Additionally, new programs serving larger numbers of Black and Hispanic students at private universities and in lower-paid social sciences and humanities fields tend to have less student debt than their more established counterparts. This does not necessarily mean that all master's degree programs are financially valuable to students or taxpayers, but it does provide evidence that new offerings at public and private nonprofit institutions are not ripping off students.

These findings raise a number of interesting questions for future research, practice, and policy. One immediate question is whether student outcomes differ between fully online and in-person/hybrid programs, especially as many online programs have faced scrutiny from policymakers due to their affiliations with online program management (OPM) companies (e.g., Swaak, 2022). It is often impossible to separate the outcomes of online versus in-person students due to how debt and earnings data are reported in the College Scorecard (Kelchen, 2022), let alone divide outcomes between institutionally-managed and OPM-managed programs. Nevertheless, these are key questions for the field to consider.

Another important question is exploring the factors which lead universities to launch new graduate programs and whether programs started for various reasons generate a sufficient return on investment. Based on theory and prior research, some possible factors include changes in institutional leadership, local labor market needs, moving to a RCM budget model, undergraduate enrollment pressures, and changes in state funding levels or models. Other than research by Jaquette (2019) examining the relationship between state funding levels and overall

graduate enrollment (not the number of new programs created), these topics have yet to be examined.

Finally, there is a growing focus on discontinuing academic programs in an effort to avoid a predicted increase in college closures (Ambrose & Nietzel, 2023; Kelchen et al., 2024). While there is a history of institutions eliminating unprofitable programs due to financial stresses (Fusilier & Short, 2011; Olswang et al., 1982), these conversations have only intensified in recent years. Learning more about when and how universities eliminate programs and the implications for student outcomes is increasingly important as program eliminations are set to increase in the coming years.

## References

- Acton, R. K. (2022). Is a name change a game change? The impact of college-to-university conversion. *Economics of Education Review*, 88, Article 102240. <https://doi.org/10.1016/j.econedurev.2022.102240>.
- Ambrose, C. M., & Nietzel, M. T. (2023). *Colleges on the brink: The case for financial exigency*. Rowman & Littlefield.
- Bedard, K., & Herman, D. A. (2008). Who goes to graduate/professional school? The importance of economic fluctuations, undergraduate field, and ability. *Economics of Education Review*, 27(2), 197-210. <https://doi.org/10.1016/j.econedurev.2006.09.007>.
- Bennett, C. T. (2023). Labor market returns to MBAs from less-selective universities: Evidence from a field experiment during COVID-19. *Journal of Policy Analysis and Management*. <https://doi.org/10.1002/pam.22448>.
- Blagg, K. (2018). *The rise of master's degrees*. Urban Institute.
- Blagg, K., Blom, E., Kelchen, R., & Chen, C. (2021). *The feasibility of program-level accountability in higher education*. Urban Institute.
- Blau, F. D., & Kahn, L. M. (2017). The gender wage gap: Extent, trends, and explanations. *Journal of Economic Literature*, 55(3), 789-865. <https://doi.org/10.1257/jel.20160995>.
- Bransberger, P., Galkenstern, C., & Lane, P. (2020). *Knocking at the college door: Projections of high school graduates*. Western Interstate Commission for Higher Education.
- Christensen, C. (2024). *Unintended consequences of an earnings-based accountability test for master's degree programs*. Urban Institute.
- Curry, J. R., Strauss, J. C., & Laws, A. L. (2013). *Responsibility center management: A guide to balancing academic entrepreneurship with fiscal responsibility*. National Association of College and University Budget Officers.
- Deering, D., & Lang, D. W. (2017). Responsibility center budgeting and management “lite” in university finance: Why is RCB/RCM never fully deployed? *Planning for Higher Education* 45(3), 94-109.
- Delaney, J. A., & Doyle, W. R. (2018). Patterns and volatility in state funding for higher education: 1951-2006. *Teachers College Record*, 120(6), 1-42. <https://doi.org/10.1177%2F016146811812000605>.

- Delisle, J., & Cohn, J. (2022). *High-debt, low-earning master's degrees are widespread at private nonprofit universities*. Urban Institute.
- Denning, J. T., & Turner, L. J. (2024). *The graduation part II: Graduate school graduation rates*. National Bureau of Economic Research Working Paper 32749.
- Eckel, P. (2008). Mission diversity and the tension between prestige and effectiveness: An overview of US higher education. *High Educ Policy* 21, 175-192.  
<https://doi.org/10.1057/hep.2008.2>.
- Fusilier, M., & Short, L. (2011). Influences on Academic Program Elimination. *Journal of Academic Administration in Higher Education*.
- Gaddis, S. M. (2015). Discrimination in the credential society: An audit study of race and college selectivity in the labor market. *Social Forces*, 93(4), 1451-1479.  
<https://doi.org/10.1093/sf/sou111>.
- Gonzales, L. D. (2014). Framing faculty agency inside striving universities: An application of Bourdieu's theory of practice. *The Journal of Higher Education*, 85(2), 193-218.  
<https://doi.org/10.1080/00221546.2014.11777324>.
- Grawe, N. D. (2018). *Demographics and the demand for higher education*. Johns Hopkins University Press.
- Hemelt, S., Stange, K. M., Furquim, F., Simon, A., & Sawyer, J. E. (2021). Why is math cheaper than English? Understanding cost differences in higher education. *Journal of Labor Economics*, 39(2), 397-435. <https://doi.org/10.1086/709535>.
- Hunkerstorm, L., & Prescott, B. (2024). Recent evolution in higher education program offerings. *Change: The Magazine of Higher Learning*, 56(1), 38-46.  
<https://doi.org/10.1080/00091383.2024.2297632>.
- Jaquette, O. (2013). Why do colleges become universities? Mission drift and the enrollment economy. *Research in Higher Education*, 54, 514-543. <https://doi.org/10.1007/s11162-013-9283-x>.
- Jaquette, O. (2019). Do public universities replace state appropriations with master's students? *The Review of Higher Education*, 42(3), 1101-1144.  
<https://doi.org/10.1353/rhe.2019.0031>.
- Jaquette, O., Kramer II, D. A., & Curs, B. R. (2018). Growing the pie? The effect of responsibility center management on tuition revenue. *The Journal of Higher Education*, 89(5), 637-676. <https://doi.org/10.1080/00221546.2018.1434276>.

- Kelchen, R. (2019). Merging data to facilitate analyses. *New Directions for Institutional Research*, 181, 59-72. <https://doi.org/10.1002/ir.20298>.
- Kelchen, R. (2022, March 28). Improving outcomes data for online programs. *Inside Higher Ed*. <https://www.insidehighered.com/views/2022/03/29/how-improve-outcomes-data-online-programs-opinion>.
- Kelchen, R., & Liu, Z. (2022). Did gainful employment regulations result in college and program closures? *Education Finance and Policy*, 17(3), 454-478. [https://doi.org/10.1162/edfp\\_a\\_00340](https://doi.org/10.1162/edfp_a_00340).
- Kelchen, R., Ritter, D., & Webber, D. A. (2024). *Predicting college closures and financial distress*. National Bureau of Economic Research Working Paper 33216.
- Kinne-Clawson, A. (2017). *Service and reputation: An examination of the growth in graduate education at public master's universities*. Doctoral dissertation, University of Washington.
- Kiska, W. (2023). *Estimates of the costs of federal credit programs in 2024*. Congressional Budget Office.
- Knott, K. (2023, September 27). Game on, again, for gainful employment. *Inside Higher Ed*. <https://www.insidehighered.com/news/government/student-aid-policy/2023/09/27/education-department-finalizes-gainful-employment>.
- Korn, M., & Fuller, A. (2021, July 8). 'Financially hobbled for life': The elite master's degrees that don't pay off. *The Wall Street Journal*. <https://www.wsj.com/articles/financially-hobbled-for-life-the-elite-masters-degrees-that-dont-pay-off-11625752773>.
- Kosten, L. (2016). *Outcomes-based funding and responsibility center management: Combining the best of state and institutional budget models to achieve shared goals*. Lumina Foundation. <https://files.eric.ed.gov/fulltext/ED587419.pdf>.
- Laderman, S., & Kunkle, K. (2022). *State higher education finance: Fiscal year 2021*. State Higher Education Executive Officers Association.
- Ma, J., & Pender, M. (2023). *Trends in college pricing and student aid 2023*. The College Board.
- McClure, K. (2016). Building the innovative and entrepreneurial university: An institutional case study of administrative academic capitalism, *The Journal of Higher Education*, 87(4), 516-543. <https://doi/abs/10.1080/00221546.2016.11777412>.



- Michelmore, K., & Sassler, S. (2016). Explaining the gender wage gap in STEM: Does field sex composition matters? *RSF: The Russell Sage Foundation Journal of the Social Sciences*, 2(4), 194-215. <https://doi.org/10.7758/RSF.2016.2.4.07>.
- Miller, B. (2020, January 13). *Graduate school debt*. Center for American Progress. <https://www.americanprogress.org/article/graduate-school-debt/>.
- Miller, G. N. S. (2019). Choose your friends wisely: How organizational identity influences behavior at U.S. colleges and universities. *The Review of Higher Education*, 42(3), 1185-1206. <https://doi.org/10.1353/rhe.2019.0033>.
- Minaya, V., Scott-Clayton, J., & Zhou, R. Y. (2024). Heterogeneity in labor market returns to master's degrees: Evidence from Ohio. *Research in Higher Education*. <https://doi.org/10.1007/s11162-024-09777-8>.
- Morphew, C. (2000). Institutional diversity, program acquisition and faculty members: examining academic drift at a new level. *Higher Education Policy*, 13(1), 55-77. [https://doi.org/10.1016/S0952-8733\(99\)00028-8](https://doi.org/10.1016/S0952-8733(99)00028-8).
- National Center for Education Statistics (2023). *Condition of education*. U.S. Department of Education.
- Office of Postsecondary Education (2023, October 10). Financial value transparency and gainful employment, 88(194), 70004-70193.
- Olswang, S., Cole, E., & Wilson, J. (1982). Program Elimination, Financial Emergency, and Student Rights. *Journal of College and University Law*.
- Pfeffer, J., & Salancik, G. R. (1978). *The external control of organizations: A resource dependence perspective*. Harper & Row.
- Pyne, J., & Grodsky, E. (2020). Inequality and opportunity in a perfect storm of graduate student debt. *Sociology of Education*, 93(1), 20-39. <https://doi.org/10.1177%2F0038040719876245>.
- Rosinger, K., Kelchen, R., Baker, D. J., Ortagus, J., & Lingo, M. D. (2022). State higher education funding during COVID-19: Lessons from prior recessions and implications for equity. *AERA Open*, 8. <https://doi.org/10.1177%2F23328584221091277>.
- Rutherford, A., & Rabovsky, T. (2017). Does the motivation for market-based reform matter? The case of responsibility-centered management. *Public Administration Review*, 78(4), 626-639. <https://doi.org/10.1111/puar.12884>.

- Slaughter, S., & Leslie, L. (1997). *Academic capitalism: Politics, policies, and the entrepreneurial university*. Johns Hopkins University Press.
- Slaughter, S., & Rhoades, G. (2004). *Academic capitalism and the new economy: Markets, state, and higher education*. Johns Hopkins University Press.
- State Higher Education Finance: FY 2022 (2023). *State Higher Education Executive Officers Association*.
- Steffel, M., Kramer, D. A., McHugh, W., & Ducoff, N. (2020). *Information disclosure and college choice*. Brookings Institution.
- Sutton, H. (2016). Increase services, program offerings to boost enrollment, find new students. *Recruiting & Retaining Adult Learners*, 18(10), 1-5. <https://doi.org/10.1002/nsr.30162>.
- Swaak, T. (2022, May 5). Ed. dept. Should keep closer tabs on deals with online-program managers, watchdog says. *The Chronicle of Higher Education*. <https://www.chronicle.com/article/ed-dept-should-keep-closer-tabs-on-deals-with-online-program-managers-watchdog-says>.
- Vican, S., Friedman, A., & Andreasen, R. (2020). Metrics, money, and managerialism: Faculty experiences of competing logics in higher education. *The Journal of Higher Education*, 91(1), 139-164. <https://doi.org/10.1080/00221546.2019.1615332>.

Figure 1a: Growth in public university master's programs by field of study

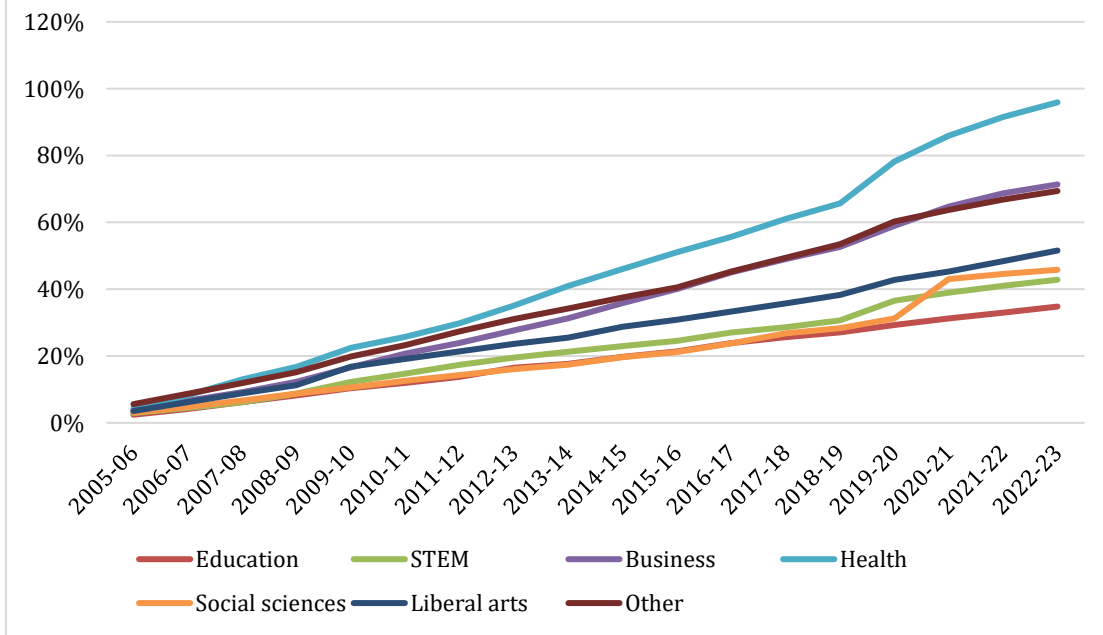
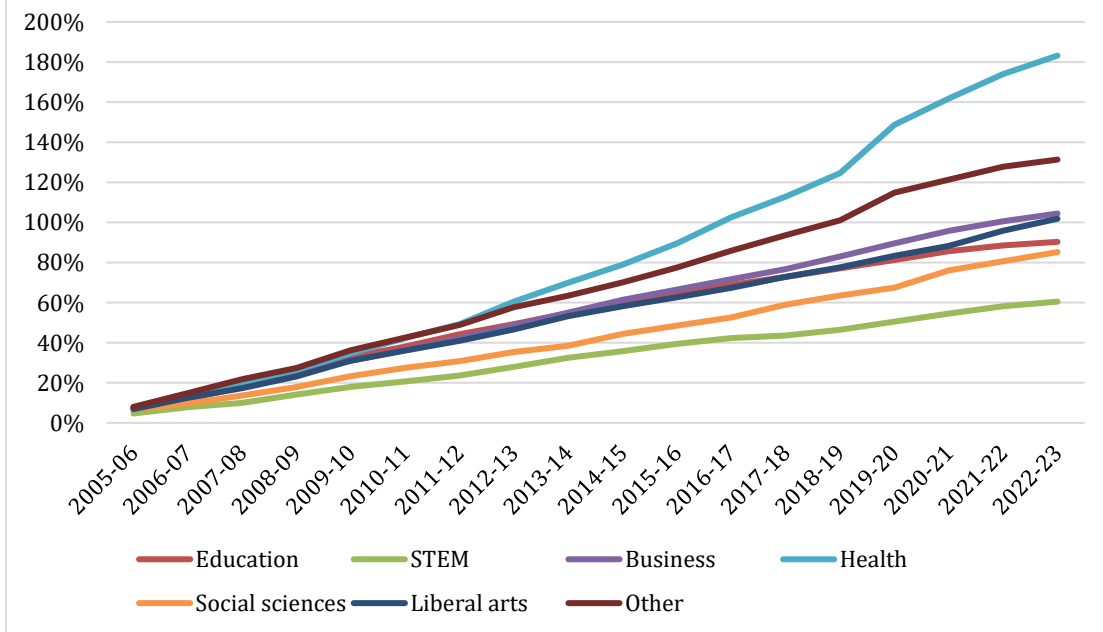


Figure 1b: Growth in private university master's programs by field of study



**Table 1: Summary statistics of the dataset, 2004-05 through 2022-23.**

Characteristic	Public				Private nonprofit			
	Existing program		New program		Existing program		New program	
	Mean	(SD)	Mean	(SD)	Mean	(SD)	Mean	(SD)
<u>Outcomes</u>								
Debt at graduation (\$)	43,397	(16,333)	45,119	(19,720)	59,917	(27,469)	56,447	(30,481)
1-year debt-to-earnings (pct)	71.4	(34.5)	70.0	(33.0)	94.0	(63.3)	89.5	(54.9)
Passed GE metrics (pct)	91.3	(28.2)	93.7	(24.3)	79.9	(40.1)	82.0	(38.4)
<u>MA programs/demographics</u>								
Female (pct)	57.4	(28.3)	57.9	(30.4)	60.2	(28.3)	62.7	(29.9)
White (pct)	57.8	(30.9)	54.9	(32.8)	52.3	(31.0)	53.3	(33.1)
Asian (pct)	4.1	(9.5)	4.7	(11.2)	4.7	(10.5)	4.2	(10.5)
Black (pct)	7.2	(16.1)	8.4	(17.6)	7.5	(15.1)	9.5	(17.4)
Hispanic (pct)	7.0	(14.9)	8.3	(16.6)	8.1	(17.9)	10.2	(21.6)
CIP: education (pct)	15.8	(36.5)	10.8	(31.0)	21.3	(41.0)	18.9	(39.1)
CIP: STEM (pct)	18.6	(38.9)	15.0	(35.7)	10.9	(31.2)	6.1	(24.0)
CIP: business (pct)	7.2	(25.9)	10.0	(30.0)	15.2	(35.9)	15.7	(36.4)
CIP: health (pct)	7.4	(26.1)	13.9	(34.6)	8.6	(28.0)	15.5	(36.2)
CIP: social sciences (pct)	13.3	(33.9)	9.2	(28.9)	10.9	(31.2)	8.6	(28.0)
CIP: liberal arts (pct)	19.7	(39.8)	17.5	(38.0)	16.4	(37.0)	14.7	(35.4)
CIP: other (pct)	18.0	(38.4)	23.6	(42.5)	16.6	(37.2)	20.4	(40.3)
<u>Institutional characteristics</u>								
Total FTE enrollment	20,249	(12,533)	18,056	(13,088)	9,024	(9,312)	6,808	(9,344)
Percent undergraduate	83.2	(8.0)	84.0	(10.5)	69.3	(18.0)	73.9	(18.0)
Undergrad female (pct)	54.1	(6.8)	54.5	(7.2)	57.2	(11.3)	58.7	(11.6)
Undergrad white (pct)	61.5	(23.5)	61.9	(23.8)	59.2	(21.4)	62.2	22.3
Undergrad Asian (pct)	7.3	(9.3)	7.0	(9.1)	8.2	(7.8)	5.8	(6.6)
Undergrad Black (pct)	11.5	(16.2)	11.7	(16.3)	10.0	(12.7)	11.1	(12.9)
Undergrad Hispanic (pct)	12.6	(16.0)	12.5	(15.3)	13.3	(16.6)	13.3	(18.4)
Pell enrollment (pct)	32.7	(12.3)	33.5	(11.9)	27.3	(15.2)	32.0	(16.3)
Tuition reliance (pct)	26.2	(10.6)	27.4	(11.1)	52.5	(24.1)	58.4	(21.0)
Per-FTE revenue (\$)	51,695	(39,612)	47,762	(37,618)	98,053	(159,480)	63,635	(128,072)
Per-FTE state approps (\$)	10,201	(5,477)	10,029	(7,629)	--	--	--	--
RCM budget model (pct)	14.4	(35.1)	12.3	(32.9)	--	--	--	--
Max number of programs	12,279		6,417		7,139		7,437	
Max number of institutions	462		492		633		759	

Sources: College Scorecard (debt and earnings data), authors' data collection (RCM), Integrated Postsecondary Education Data System (all others).

Notes:

(1) The dataset is at the program (4-digit CIP) level.

(2) All financial values are adjusted for inflation in 2022 dollars using the Consumer Price Index.

(3) Existing programs reported graduates in 2004-05, while new programs first reported graduates in 2005-06 or later.

**Table 2: Regressions examining student outcomes by whether a master's program is new (versus established).**

**Panel A: Public universities.**

Outcome	2004-05 cutoff		2007-08 cutoff		2010-11 cutoff	
	(1)	(2)	(1)	(2)	(1)	(2)
Debt (log)	0.025** (0.009)	-0.002 (0.009)	0.020* (0.009)	-0.001 (0.009)	0.027* (0.012)	0.007 (0.011)
Debt-to-earnings (pct)	-0.002 (0.011)	-0.012 (0.012)	-0.012 (0.012)	-0.025 (0.013)	-0.011 (0.014)	-0.025 (0.015)
Would pass GE (pct)	0.019* (0.008)	0.019* (0.009)	0.020* (0.009)	0.022* (0.010)	0.018 (0.011)	0.015 (0.013)
Max number of programs	7,012		7,012		7,012	
Max number of universities	464		464		464	

**Panel B: Private universities.**

Outcome	2004-05 cutoff		2007-08 cutoff		2010-11 cutoff	
	(1)	(2)	(1)	(2)	(1)	(2)
Debt (log)	-0.032* (0.013)	-0.062*** (0.012)	-0.028* (0.013)	-0.062*** (0.013)	-0.016 (0.014)	-0.059*** (0.013)
Debt-to-earnings (pct)	-0.012 (0.022)	-0.055** (0.020)	-0.017 (0.022)	-0.065** (0.021)	-0.025 (0.023)	-0.067** (0.022)
Would pass GE (pct)	0.014 (0.013)	0.038** (0.013)	0.023 (0.012)	0.049*** (0.013)	0.029* (0.013)	0.048** (0.015)
Max number of programs	5,497		5,497		5,497	
Max number of universities	648		648		648	

Notes:

(1) \* represents  $p < .05$ , \*\* represents  $p < .01$ , and \*\*\* represents  $p < .001$ .

(2) Model (1) controls for institution-level characteristics, and model (2) also controls for program-level characteristics (as shown in Table 1). Both models have institution and year fixed effects and OPEID-clustered standard errors.

(3) Each of the cutoffs is the threshold between defining a program as new or established. The coefficient shown is for new (versus established) programs.

(4) Each coefficient is the result of a separate regression.

**Table 3: Regressions examining student outcomes by the number of years a master's program has been in operation.**

**Panel A: Public universities.**

Outcome	2004-05 cutoff		2007-08 cutoff		2010-11 cutoff	
	(1)	(2)	(1)	(2)	(1)	(2)
Debt (log)	-0.003 (0.001)	0.000 (0.001)	-0.003 (0.002)	0.000 (0.002)	-0.004 (0.003)	-0.001 (0.003)
Debt-to-earnings (pct)	0.001 (0.001)	0.003 (0.002)	0.001 (0.002)	0.004 (0.002)	0.001 (0.004)	0.005 (0.004)
Would pass GE (pct)	-0.001 (0.001)	-0.002 (0.001)	-0.002 (0.002)	-0.003 (0.002)	-0.002 (0.003)	-0.003 (0.003)
Max number of programs	6,838		6,838		6,838	
Max number of universities	464		464		464	

**Panel B: Private universities.**

Outcome	2004-05 cutoff		2007-08 cutoff		2010-11 cutoff	
	(1)	(2)	(1)	(2)	(1)	(2)
Debt (log)	0.002 (0.002)	0.008*** (0.001)	0.002 (0.002)	0.010*** (0.002)	0.000 (0.003)	0.013*** (0.003)
Debt-to-earnings (pct)	0.002 (0.003)	0.009*** (0.002)	0.002 (0.003)	0.012** (0.003)	0.002 (0.006)	0.016** (0.005)
Would pass GE (pct)	-0.002 (0.002)	-0.006*** (0.002)	-0.003 (0.002)	-0.008*** (0.002)	-0.003 (0.004)	-0.010** (0.004)
Max number of programs	5,260		5,260		5,260	
Max number of universities	641		641		641	

Notes:

(1) \* represents  $p < .05$ , \*\* represents  $p < .01$ , and \*\*\* represents  $p < .001$ .

(2) Model (1) controls for institution-level characteristics, and model (2) also controls for program-level characteristics (as shown in Table 1). Both models have institution and year fixed effects and OPEID-clustered standard errors.

(3) Each of the cutoffs is the threshold between defining a program as new or established. The coefficient shown is for each additional year that a program has been in operation following the listed year, so a positive coefficient for debt would mean that longer-operating programs yield more debt than newer programs.

(4) Each coefficient is the result of a separate regression.

**Table 4: Regressions examining student outcomes by whether a master's program is new (versus established) and racial/ethnic diversity.**

**Panel A: Public universities.**

Outcome	<5 pct		5-20 pct		20+ pct	
	Black/Hispanic		Black/Hispanic		Black/Hispanic	
	(1)	(2)	(1)	(2)	(1)	(2)
Debt (log)	0.061*	0.038	0.014	-0.010	0.001	-0.015
	(0.024)	(0.021)	(0.013)	(0.012)	(0.015)	(0.014)
Debt-to-earnings (pct)	0.006	-0.005	-0.019	-0.016	0.004	-0.015
	(0.029)	(0.028)	(0.015)	(0.015)	(0.022)	(0.021)
Would pass GE (pct)	0.020	0.016	0.029*	0.024*	0.010	0.019
	(0.015)	(0.016)	(0.012)	(0.011)	(0.017)	(0.018)
Max number of programs	1,303		3,720		1,822	
Max number of universities	286		397		277	

**Panel B: Private universities.**

Outcome	<5 pct		5-20 pct		20+ pct	
	Black/Hispanic		Black/Hispanic		Black/Hispanic	
	(1)	(2)	(1)	(2)	(1)	(2)
Debt (log)	0.018	0.027	-0.030	-0.058***	-0.064**	-0.100***
	(0.038)	(0.029)	(0.018)	(0.016)	(0.019)	(0.018)
Debt-to-earnings (pct)	0.010	0.010	-0.043	-0.078**	-0.001	-0.084*
	(0.040)	(0.033)	(0.028)	(0.026)	(0.035)	(0.034)
Would pass GE (pct)	0.044	0.056**	0.022	0.039*	0.006	0.060*
	(0.025)	(0.022)	(0.017)	(0.016)	(0.026)	(0.025)
Max number of programs	772		2,961		1,581	
Max number of universities	310		515		355	

Notes:

(1) \* represents  $p < .05$ , \*\* represents  $p < .01$ , and \*\*\* represents  $p < .001$ .

(2) Model (1) controls for institution-level characteristics, and model (2) also controls for program-level characteristics excluding race/ethnicity (as shown in Table 1). Both models have institution and year fixed effects and OPEID-clustered standard errors.

(3) The coefficient of interest is whether a program is new (created after 2004-05) versus established (created after then). Results are robust to different starting periods.

(4) Each coefficient is the result of a separate regression.

**Table 5: Regressions examining student outcomes by whether a master's program is new (versus established) and field of study.**

**Panel A: Public universities.**

Outcome	Education		STEM		Business	
	(1)	(2)	(1)	(2)	(1)	(2)
Debt (log)	-0.041*	-0.049*	0.063*	0.033	-0.014	-0.024
	(0.019)	(0.019)	(0.026)	(0.026)	(0.021)	(0.021)
Debt-to-earnings (pct)	-0.058**	-0.072***	0.077	0.072	0.036*	0.023
	(0.019)	(0.019)	(0.052)	(0.063)	(0.016)	(0.016)
Would pass GE (pct)	0.056***	0.072***	0.006	0.019	-0.012	-0.009
	(0.010)	(0.009)	(0.024)	(0.032)	(0.009)	(0.009)
Max number of programs	1,578		581		880	
Max number of universities	417		199		396	
Outcome	Social sciences		Liberal arts		Other	
	(1)	(2)	(1)	(2)	(1)	(2)
Debt (log)	-0.083***	-0.068***	0.043	0.049*	-0.002	-0.015
	(0.019)	(0.019)	(0.023)	(0.024)	(0.017)	(0.018)
Debt-to-earnings (pct)	-0.064*	-0.059*	-0.150*	-0.133	-0.109***	-0.105***
	(0.025)	(0.027)	(0.073)	(0.080)	(0.027)	(0.029)
Would pass GE (pct)	0.010	0.004	0.194**	0.158*	0.037	0.015
	(0.025)	(0.029)	(0.058)	(0.062)	(0.022)	(0.024)
Max number of programs	921		900		1,087	
Max number of universities	350		280		323	



**Panel B: Private universities.**

Outcome	Education		STEM		Business	
	(1)	(2)	(1)	(2)	(1)	(2)
Debt (log)	-0.090*** (0.023)	-0.074** (0.024)	0.143** (0.050)	0.112* (0.051)	-0.088*** (0.019)	-0.096*** (0.020)
Debt-to-earnings (pct)	-0.068** (0.024)	-0.050* (0.025)	0.108 (0.099)	0.059 (0.094)	-0.028 (0.016)	-0.031* (0.015)
Would pass GE (pct)	0.030 (0.016)	0.019 (0.017)	-0.106 (0.065)	-0.062 (0.050)	0.017 (0.009)	0.017 (0.010)
Max number of programs	1,308		221		1,075	
Max number of universities	481		80		522	
Outcome	Social sciences		Liberal arts		Other	
	(1)	(2)	(1)	(2)	(1)	(2)
Debt (log)	-0.156*** (0.028)	-0.134*** (0.028)	-0.047 (0.030)	-0.045 (0.029)	-0.043 (0.023)	-0.030 (0.024)
Debt-to-earnings (pct)	-0.171** (0.055)	-0.159** (0.059)	-0.435*** (0.014)	-0.416*** (0.118)	-0.105 (0.065)	-0.074 (0.068)
Would pass GE (pct)	0.102* (0.050)	0.098 (0.051)	0.190** (0.060)	0.182** (0.064)	0.093* (0.038)	0.082* (0.041)
Max number of programs	607		546		757	
Max number of universities	321		207		305	

Notes:

(1) \* represents  $p < .05$ , \*\* represents  $p < .01$ , and \*\*\* represents  $p < .001$ .

(2) Model (1) controls for institution-level characteristics, and model (2) also controls for program-level characteristics excluding CIP codes (as shown in Table 1). Both models have institution and year fixed effects and OPEID-clustered standard errors.

(3) The coefficient of interest is whether a program is new (created after 2004-05) versus established (created after then). Results are robust to different starting periods.

(4) Each coefficient is the result of a separate regression.

**Appendix 1: Regressions examining student outcomes by the number of years a master's program has been in operation and racial/ethnic diversity.**

**Panel A: Public universities.**

Outcome	<5 pct Black/Hispanic		5-20 pct Black/Hispanic		20+ pct Black/Hispanic	
	(1)	(2)	(1)	(2)	(1)	(2)
	Debt (log)	-0.006*	-0.005	0.000	0.003*	-0.002
	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)
Debt-to-earnings (pct)	-0.001	0.002	0.003	0.004	0.000	0.003
	(0.004)	(0.004)	(0.002)	(0.002)	(0.003)	(0.003)
Would pass GE (pct)	-0.002	-0.004	-0.003	-0.003	0.000	-0.001
	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)
Max number of programs	1,289		3,678		1,839	
Max number of universities	285		397		277	

**Panel B: Private universities.**

Outcome	<5 pct Black/Hispanic		5-20 pct Black/Hispanic		20+ pct Black/Hispanic	
	(1)	(2)	(1)	(2)	(1)	(2)
	Debt (log)	-0.007	-0.005	0.001	0.006**	0.009***
	(0.006)	(0.004)	(0.002)	(0.002)	(0.002)	(0.002)
Debt-to-earnings (pct)	-0.007	-0.005	0.005	0.011***	0.005	0.013***
	(0.006)	(0.005)	(0.003)	(0.003)	(0.004)	(0.004)
Would pass GE (pct)	-0.003	-0.005	-0.003	-0.006**	-0.003	-0.008**
	(0.004)	(0.003)	(0.002)	(0.002)	(0.003)	(0.003)
Max number of programs	738		2,875		1,600	
Max number of universities	303		508		356	

Notes:

(1) \* represents  $p < .05$ , \*\* represents  $p < .01$ , and \*\*\* represents  $p < .001$ .

(2) Model (1) controls for institution-level characteristics, and model (2) also controls for program-level characteristics excluding race/ethnicity (as shown in Table 1). Both models have institution and year fixed effects and OPEID-clustered standard errors.

(3) The coefficient of interest is whether a program is the number of years that a program has been in operation since 2004-05. Results are robust to different starting periods.

(4) Each coefficient is the result of a separate regression.

**Appendix 2: Regressions examining student outcomes by the number of years a master's program has been in operation and field of study.**

**Panel A: Public universities.**

Outcome	Education		STEM		Business		Health	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Debt (log)	0.005*	0.006*	-0.009*	-0.006	0.005	0.004	-0.004	-0.003
	(0.002)	(0.003)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)
Debt-to-earnings (pct)	0.008***	0.009***	-0.009*	-0.006	-0.002	-0.001	-0.016***	-0.016***
	(0.002)	(0.002)	(0.008)	(0.009)	(0.002)	(0.002)	(0.003)	(0.003)
Would pass GE (pct)	-0.007***	-0.008***	0.002	0.001	0.001	0.001	0.006*	0.006*
	(0.001)	(0.001)	(0.005)	(0.006)	(0.001)	(0.001)	(0.003)	(0.003)
Max number of programs	1,547		570		860		979	
Max number of universities	417		199		394		347	
Outcome	Social sciences		Liberal arts		Other			
	(1)	(2)	(1)	(2)	(1)	(2)		
Debt (log)	0.008**	0.006*	-0.004	-0.004	0.000	-0.001		
	(0.002)	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)		
Debt-to-earnings (pct)	0.006	0.005	0.028**	0.027**	0.012***	0.010**		
	(0.003)	(0.003)	(0.008)	(0.009)	(0.003)	(0.003)		
Would pass GE (pct)	0.000	0.001	-0.029***	-0.026**	-0.003	-0.001		
	(0.003)	(0.003)	(0.007)	(0.008)	(0.003)	(0.003)		
Max number of programs	904		921		1,057			
Max number of universities	348		282		317			

**Panel B: Private universities.**

Outcome	Education		STEM		Business		Health	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Debt (log)	0.011*** (0.003)	0.011*** (0.003)	-0.017** (0.006)	-0.016* (0.006)	0.012*** (0.002)	0.013*** (0.002)	0.004 (0.004)	0.005 (0.004)
Debt-to-earnings (pct)	0.008** (0.003)	0.008* (0.003)	-0.011 (0.019)	-0.011 (0.019)	0.004 (0.002)	0.004 (0.002)	-0.014** (0.005)	-0.016** (0.005)
Would pass GE (pct)	-0.005* (0.002)	-0.004 (0.002)	0.008 (0.009)	0.008 (0.009)	-0.002* (0.001)	-0.002* (0.001)	-0.001 (0.004)	0.002 (0.004)
Max number of programs	1,274		218		1,045		872	
Max number of universities	475		80		514		408	
Outcome	Social sciences		Liberal arts		Other			
	(1)	(2)	(1)	(2)	(1)	(2)		
Debt (log)	0.018*** (0.003)	0.018*** (0.003)	0.003 (0.003)	0.005 (0.003)	0.004 (0.003)	0.003 (0.003)		
Debt-to-earnings (pct)	0.024*** (0.005)	0.025*** (0.006)	0.060*** (0.015)	0.062*** (0.014)	0.016 (0.008)	0.014 (0.008)		
Would pass GE (pct)	-0.012* (0.006)	-0.014* (0.006)	-0.022* (0.009)	-0.022* (0.010)	-0.011* (0.005)	-0.010* (0.005)		
Max number of programs	584		546		721			
Max number of universities	312		206		297			

Notes:

(1) \* represents  $p < .05$ , \*\* represents  $p < .01$ , and \*\*\* represents  $p < .001$ .

(2) Model (1) controls for institution-level characteristics, and model (2) also controls for program-level characteristics excluding CIP codes (as shown in Table 1). Both models have institution and year fixed effects and OPEID-clustered standard errors.

(3) The coefficient of interest is whether a program is the number of years that a program has been in operation since 2004-05. Results are robust to different starting periods.

(4) Each coefficient is the result of a separate regression.