

 GRAD AND PROFESSIONAL SCHOOLS

Data-Driven Methodology Utilizing Tuition Reimbursement Benefits to Identify Untapped Student Populations for Recruitment

By Alex Fronduto and Heidi Bishop

This study delves into the changing landscape of graduate enrollment in education programs post-COVID-19 and the “Great Resignation.” Despite an overall increase in graduate enrollment, education programs experienced a decline. Using methodology merging institutional data with tuition benefits from other institutions, this research identifies unique growth opportunities and partnerships for student recruitment. These findings emphasize the urgency for innovative strategies to enhance graduate enrollment in the dynamic higher education landscape.

Introduction and Literature Review

According to the National Student Clearinghouse Research Center, overall undergraduate enrollment rose by 2.1 percent for Fall 2023, marking the first increase since 2020. Nevertheless, freshman enrollment experienced a 3.6 percent decline, a trend predating the COVID-19 pandemic and recognized as the “Enrollment Cliff” (Conley 2019; Hossler and Bontrager 2014; June 2022). This continued decrease in freshman enrollment has forced colleges and universities to think strategically about where they can increase overall enrollment to make up for the possible deficits in freshman enrollment. Many institutions have turned their focus to graduate degree programs. Interestingly, graduate

student enrollment increased during the COVID-19 pandemic across the country (+3 percent in 2020 vs. 2019, +2.4 percent in 2021 vs. 2020). However, there is a noticeable decrease in overall graduate enrollment for 2022 compared to 2021 (-1.2 percent) (National Student Clearinghouse Research Center 2023). It’s worth noting that while the fall 2022 graduate enrollment marks the first year-over-year decrease, the overall fall enrollment remains well above pre-pandemic levels.

Although many graduate programs enjoyed increased enrollment during the pandemic, those within the education field experienced the opposite and continue to lag in enrollment to this day. Comparing 2021 to 2020, there was a 2 percent decline in education

programs, and this got even worse in 2022 compared to 2021 where there was a 5.5 percent year-over-year decrease (National Student Clearinghouse Research Center 2023). This enrollment decrease is evident across the spectrum of master's and doctoral programs in education. Institutions are faced with the challenge of thinking strategically and creatively to increase their pipeline and sustain pre-pandemic level enrollments. Unlike undergraduate programs where enrollment numbers are "relatively straightforward to predict," graduate programs that offer flexible learning options (*i.e.*, online, part-time, etc.) tend to be more unpredictable (Hasanein 2020, 20). This challenge is compounded by a significant increase in online programs, intensifying competition for a smaller pool of students.

Online education, driven by the need for working professionals to pursue flexible learning, has a long-standing history (Harasim 1990). Online programs were steadily increasing prior to COVID-19 and then boomed during the pandemic as all institutions had to quickly switch to remote learning. Many institutions discovered that programs once deemed unsuitable for online delivery could be successfully adapted with innovation and dedicated course design efforts (Guppy, *et al.* 2022). Consequently, many programs that were exclusively face-to-face have evolved into hybrid or fully-online formats. Asynchronous online programs, once considered a luxury before the pandemic, are now commonplace. Prospective graduate students are presented with a diverse array of online programs and institutions to explore.

The "Great Resignation," first observed in the wake of the COVID-19 pandemic, has fundamentally altered the labor market (Cook 2021). Workers across various sectors have reevaluated their career choices, seeking job opportunities that align more closely with their personal values, work-life balance preferences, and professional aspirations (Amanor-Boadu 2022). Education professionals, no matter the sector, were heavy participants in the "Great Resignation" and are still having an impact felt today with teaching and staff shortages throughout PK–12, higher education, and corporate settings (Winfield and Paris 2022).

During the "Great Resignation," many individuals left their jobs in higher education due to a convergence of factors. The COVID-19 pandemic imposed significant stress and burnout on educators dealing with abrupt transitions to remote teaching (Leech, *et al.* 2022). Work-life balance became a priority as remote work blurred boundaries between personal and professional life (Bhat, Yousuf, and Saba 2023). Some reassessed career goals and sought alternatives, while others were motivated by compensation and benefits concerns (Parker and Horowitz 2022). Higher education professionals, specifically, have cited that they look for a safe, positive, and flexible working environment (Fronduto 2023). The flexibility of remote work prompted relocations; job insecurity led to departures in search of greater stability; and others chose to retire early (Amanor-Boadu 2022).

The pandemic brought about a myriad of factors that collectively impact graduate enrollment in education programs. These include a diminished pool of individuals in the education field as seen in staffing shortages across the country, professionals being too occupied with their jobs to pursue a graduate degree, and a perception of decreased value in a graduate degree relative to its cost. To stay competitive, institutions should continuously adopt and evaluate data-driven methods for identifying potential markets.

Problem

The decreased enrollment in graduate education programs poses a significant challenge for the ongoing development of educators, administrators, and learning professionals across various domains, including PK–12, higher education, and corporate settings. Given the persistent nature of this enrollment decline, the authors' institution found it imperative to explore innovative strategies aimed at revitalizing enrollment numbers and fostering future pipeline and partnership prospects.

As one of many four-year universities in the Boston metropolitan area, there are a myriad of public and private universities for potential students to choose from. The institution in this study is a large, private, four-year university in this competitive market. One way the institution has differentiated itself has been

through the breadth and depth of program at both the undergraduate and graduate levels that is unparalleled. Despite this, student recruitment remains challenging. The methodology presented here yielded insights that informed new recruitment strategies.

Previous recruitment and marketing methods included word of mouth from current students and alumni, reliance on the university brand, and digital advertising. These methods have been shown to increase student enrollment and are still essential aspects of a successful marketing plan. For example, social media is known to be a powerful recruitment tool for students due to its prevalence, ability to improve response time, its potential for personalization, and its relatability (Hossler and Bontrager 2014; Huebner 2020; Weindling 2017). Though all of these methods are still important aspects to a successful marketing plan, the competitive landscape for students has intensified. The question then arises: how can we differentiate ourselves?

In today's competitive landscape for graduate education, institutions are continually exploring innovative strategies to attract and recruit new graduate students, including personalized marketing campaigns based on digital interactions, virtual visit options, micro-credential offerings (RNL and PLEXUSS 2022), student diversity (Hassanein 2020), and social or peer-to-peer networking (Munoz 2022). Institutions are also leaning more into their strategic enrollment data to make more informed data-driven decisions with the goal of evolving to use predictive analytics in the future to forecast enrollment trends (Muhammad and McManus 2018).

The authors' research question arose when it was discovered that students enrolled in higher education courses were primarily utilizing tuition reimbursement benefits provided by the institution they worked for. These reimbursement benefits are advantageous to the employee as they can pursue a degree at low or no cost. The authors' primary goal was to identify other institutions with comparable tuition reimbursement benefits that do not offer similar education programs. This could lead to increased enrollment and revenue dollars while simultaneously introducing students to new educational offerings. According to the Ruffalo Noel Lev-

itz 2023 Graduate Student Recruitment Report, cost is still a major factor in the decision-making process for enrolling in a graduate program, and thus, this strategy would help mitigate that concern.

One of the secondary goals was to identify potential best practices or program enhancements from competitor institutions that could make the programs more appealing to prospective students in the long-term. This involved examining both two-year and four-year institutions, different types of degree programs, and variations in program delivery (*i.e.*, online, hybrid, part-time, summer programs, etc.) By understanding the similarities and differences between this institution and others, the authors' can make more informed decisions regarding program expansion or modifications to spur student enrollment.

Methods/Methodology

This study's methodology used a combination of publicly-available institutional data integrated with data collected on employee educational benefits and degree programs offered by geographically-competing institutions. The goal was to analyze the resulting data set to identify potentially untapped graduate student populations for recruitment. The authors selected institutional data from the Integrated Postsecondary Education Data System (IPEDS) curated by the U.S. Department of Education's National Center for Education Statistics (NCES), which integrates the results from multiple, interrelated surveys institutions are mandated to complete annually. This provided accurate, comprehensive, publicly-available data with multiple data formats (*i.e.*, csv, Excel) that included the necessary variables (*i.e.*, location, institution type, and available degree programs) for 550 institutions to initially answer the research question.

Although IPEDS provides basic institutional data, it does not capture information on each institution's employee educational benefits nor the specifics on the levels of its education degree programs (*i.e.*, undergraduate, graduate, doctoral). The authors tried to, and were unable to, find another publicly-available data source that included this information. As a result, the authors developed a double-pronged approach to collect the data

TABLE 1 ➤ Example of Coding of Institutions Education Programs by Degree Level and Emphasis

Institution ¹	Education Programs	Associates (K-12)	Bachelors			Masters			Doctorate		
			K-12	GE	HE	K-12	GE	HE	K-12	GE	HE
A	✗	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖
B	✓	✗	✓	✗	✗	✓	✗	✗	✗	✗	✗
C	✗	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖
D	✓	✗	✓	✗	✗	✓	✗	✗	✗	✗	✗
E	✓	✗	✓	✗	✗	✓	✓	✓	✓	✓	✗
F	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓
G	✓	✗	✓	✓	✗	✓	✓	✗	✓	✓	✗

Key: ✓ = Present; ✗ = Absent; ⊖ = Not applicable; GE = General Education; HE = Higher Education

¹ Actual institution names have been replaced with lettered identifiers to anonymize the data.

that IPEDS did not provide but was vital to answering the research question.

In May 2022, using IPEDS, the authors queried and exported the data (Excel spreadsheet) for two and four-year institutions by geographical region (*i.e.*, state, region, mile radius, etc.) The authors excluded trade or job-specific institutions from the query, and removed data fields that were irrelevant to this study. The authors then added new data fields to capture the program and employee benefit information for each institution.

Next, each institution's website was used to document if they offered education programs (absent=0, present=1), at what level, and in what specialty (*i.e.*, K-12, general education, higher education). The grader then assigned coding (absent=0, present=1, not applicable=99) for each category as shown in Table 1.¹

For employee tuition benefits, however, the authors used a different method to collect this data, as many institutions did not host or provide employee benefit information on their primary websites. Rather, many outsourced employee benefit information to HR-related or benefit websites for employees. Since there was variation in where institutions posted this information, the authors decided the data collection strategy would leverage

a series of Google keyword searches, conducted in May 2022, to identify this information for collection purposes.

Keyword searches included the name of the institution and each of the following phrases: "employee tuition benefits," "employee benefits," "employee reimbursement," "employee remission," or "employee educational benefits." By performing these word searches, the authors were able to identify, collect, and code (categorize) the data on employee tuition benefits for each institution using the coding scheme in Table 2.

For each institution that provides tuition remission or reimbursement, the authors elected to also gather narrative information (*i.e.*, family member remission,

TABLE 2 ➤ Coding of Education Benefits

Code	Benefit Category
0	No Benefits
1	Tuition Discount
2	Tuition Remission
3	Tuitions Remission + Discounts
4	Tuition Remission + Reimbursement
5	Tuition Reimbursement
98	No Information Available

¹ For presentation purposes, icons were substituted in place of the numbered codes for enhanced readability.

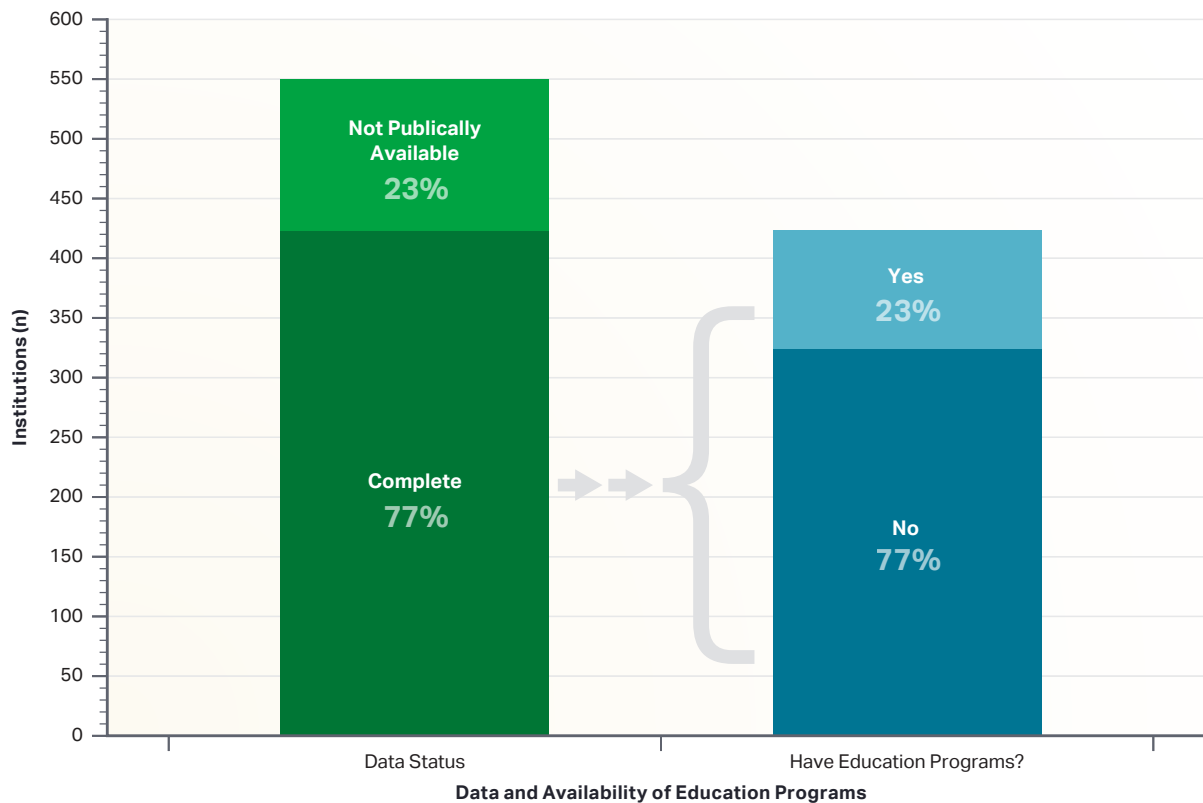


FIGURE 1 ➤ Breakdown of Institutions Surveyed

remission network of institutions, remission eligibility details) about the specifics of the benefit. While it may seem counterintuitive to look at the details of tuition remission when you know the chance of matriculation to your institution is low, in this study, it yielded some striking insights into potential student populations that may have otherwise been overlooked. For example, differences in tuition remission benefits can vary greatly from state to state and institution to institution, which was not obvious prior to this study.

Lastly, it was the goal of this study to develop a flexible and scalable methodology that can be applied by any institution—big or small—to determine how to better position or differentiate their institution or programs from their competitors. The authors propose that this methodology can be used by two-year, four-year, public, or private institutions and is scalable depending on staff resources and technology available. It

can be implemented with as little as one staff and basic Microsoft Excel.

In this study, the authors used one to two staff members and a combination of Microsoft Excel (analysis) and R programming (data visualization of geographic information) to complete the data collection in four weeks, which resulted in the identification of 423 institutions (127 schools were excluded for incomplete information or information that was not publicly available) (*see Figure 1*). If additional staff and/or technological tools had been available, the authors likely could have reduced the collection and analysis time from four weeks to potentially a few days. This is discussed in more detail in the *Limitations and Future Research* section of this article.

Data Analysis/Results

Of the initial 550 institutions surveyed, 23 percent ($n = 127$) of institutions were not pursued due to the lack

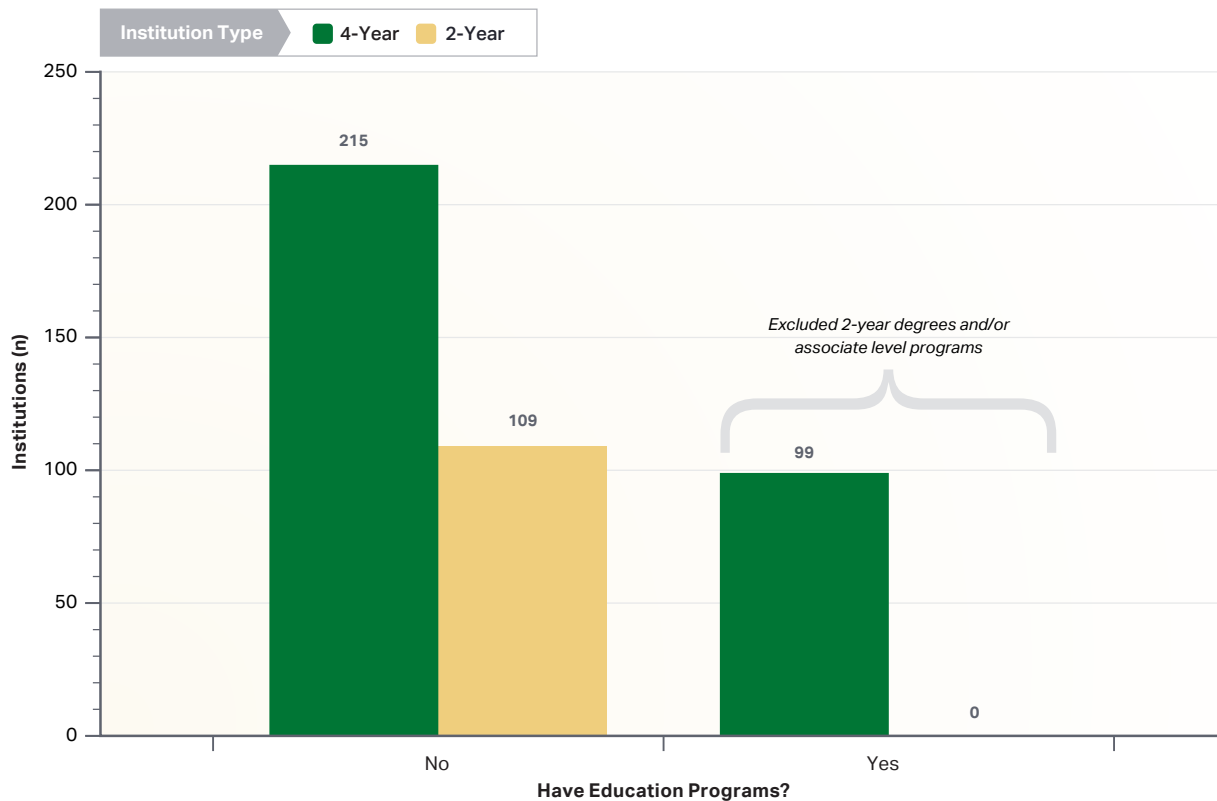


FIGURE 2 ➤ Presence and Absence of Education Programs at 2- and 4-Year Institutions

of information that could be gathered. Of the remaining 423 institutions surveyed, 77 percent ($n=324$) do not have education programs at the bachelor level or above, while 23 percent ($n=99$) do have such programs (see Figure 1). A subset analysis of the 324 institutions was performed, which identified that both two-year ($n=109$) and four-year ($n=215$) institutions without educational programs at the bachelor level or above presented a significant opportunity for recruitment (see Figure 2).

However, the availability and impact of tuition remission policies cannot be understated. Although 109 two-year institutions were identified as potential opportunities, the individual institutions policies either eliminated or included them as potential recruitment opportunities. For example, in one state, the authors found that an employee's educational benefits are dependent on their employment classification. Employees at four-year institutions in this state are classified as state employees who get tuition remission, while

employees at two-year institutions are not classified as state employees, and only receive reimbursement as a result. Therefore, counterintuitive to the authors' assumptions, the employees at the two-year institutions are positioned to take their tuition reimbursement to the institution of their choice. In contrast, the authors found another state that provides tuition remission to all employees at community and public four-year institutions to attend any public institution in the state. As a result, employees are heavily incentivized to use their remission benefits within the state's system of institutions. In this case, the only reason such an employee would seek out an institution outside of this network would be if none of the state institutions provided the degree program they sought or the program was not accessible to them (*i.e.*, not offered part-time, online, or hybrid, etc.)

An analysis of the type of employer educational benefits offered by institutions was performed. Of the 423

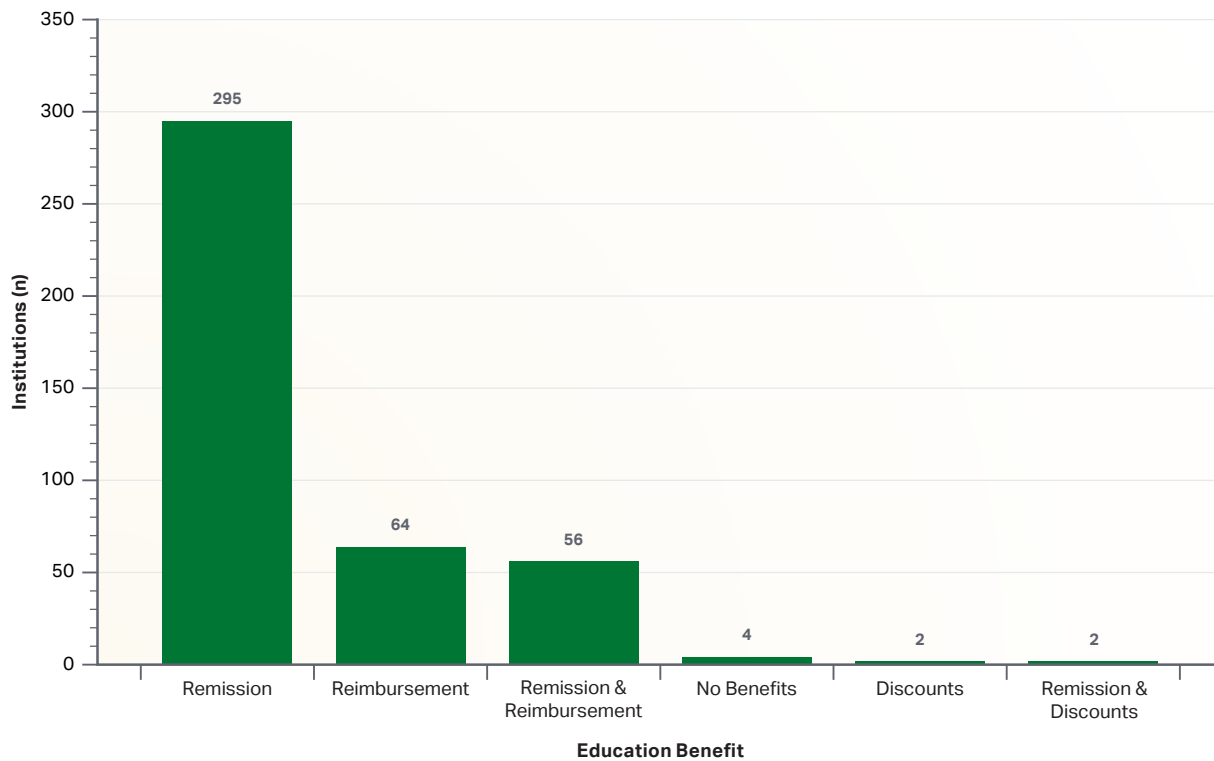


FIGURE 3 ➤ Employee Education Benefits Offered by Institutions

institutions surveyed, 70 percent ($n=295$) offer tuition remission, 15 percent ($n=64$) offer reimbursement, 13 percent ($n=56$) offer a combination of tuition remission and reimbursement, 1 percent ($n=4$) offer no educational benefits, and 1 percent ($n=4$) offer either tuition discounts or discounts combined with remission (see Figure 3).

Since we assumed that most employees would opt to use the tuition remission benefit ($n=295$) at their respective institution of employment, the authors excluded them as a viable population for recruitment. Rather, the study focused on the 120 schools that offer tuition reimbursement ($n=64$) or a combination of tuition reimbursement and remission ($n=56$) (Figure 3), as potential students would have more flexibility to use this benefit at other institutions. Another subset analysis of these 120 institutions was performed to identify which institutions (with or without education programs) presented the best opportunities for recruit-

ment (see Figure 4, on page 54). Eighty-seven percent ($n=104$) of institutions that offer a form of reimbursement do not offer education programs (see Figure 4). As a result, for institutions with reimbursement benefits, these institutions present the strongest opportunities for recruitment.

In contrast, while all the institutions in Figure 4 offer a form of reimbursement which is favorable to recruitment, the authors wanted to identify general characteristics (*i.e.*, part-time or full-time, hybrid and/or online, evening or summer programs, comparable degrees) of the sixteen institutions' education programs to determine if there are opportunities or gaps, that could be exploited for recruitment at these institutions, or best practices that should be considered to enhance or differentiate the program offerings and institution from competitors.

A subset analysis of the sixteen institutions identified in Figure 4 was performed. Based on the anal-

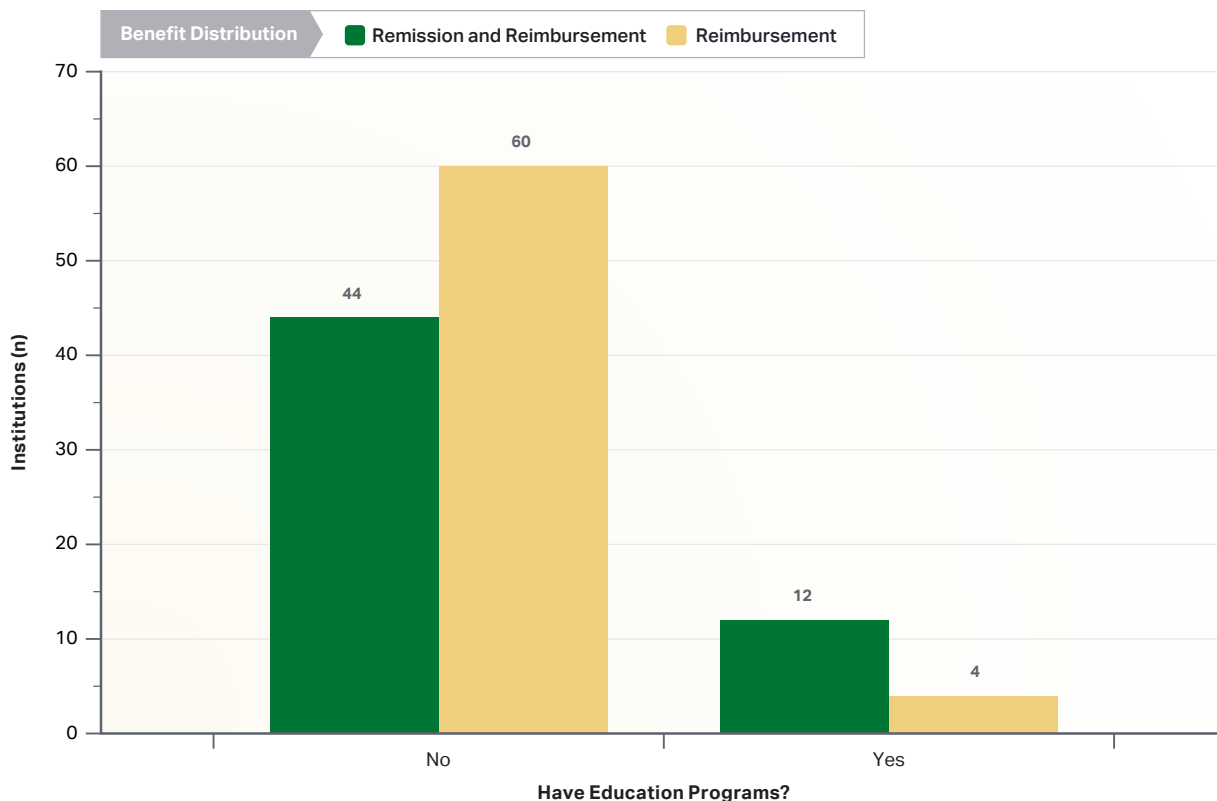


FIGURE 4 ► Distribution of Reimbursement Benefits at Institutions With and Without Education Programs

ysis, 63 percent ($n=10$) of the institutions are private institutions. Unsurprisingly, 100 percent ($n=16$) and 63 percent ($n=10$) of the institutions offer full-time and part-time programs, respectively, which is commonplace throughout academia. With regards to program flexibility, 44 percent ($n=7$) offer either evening or summer programs and 69 percent ($n=11$) offer either hybrid or online programs. As for the depth and breadth of education programs, 31 percent ($n=5$) of the schools offer programs equivalent or similar to the authors' institution.

While analyzing the characteristics of the sixteen institutions (with education programs) provided insight into the similarities and differences with the authors' institution, it was clear that from a cost-benefit perspective, these institutions should not be prioritized over the schools without education programs ($n=104$) as they may not easily translate into more student en-

rollees. In summary, the 104 schools (without education programs) should be prioritized as the authors believe they present the greatest opportunities for increased enrollments.

Discussion

In general, the most recruitment opportunities lie with schools without education programs ($n=324$) (at the bachelor level or above), which accounted for 77 percent of the institutions in this study. This factor alone does not guarantee students will matriculate as they may be incentivized through tuition remission to pursue a degree at the institutions where they are employed. However, when combining employee educational benefits, like reimbursement, with the availability of a wide variety of programs, the authors believe institutions are positioned to provide potential students with an alternative to their employing institutions. For example, in

this study, 33 percent ($n=104$) of the 324 institutions without education programs are prime and plentiful opportunities for recruiting potential students.

In contrast, the landscape for opportunities with institutions with existing education programs ($n=99$) is different. Of these institutions, only 16 percent ($n=16$) offer tuition reimbursement to their employees, but of those sixteen, eleven are not comparable to institutions like the authors' in the types of programs and program delivery, and therefore, are potential opportunities for recruitment as the institution provides learning opportunities the others do not. However, the cost-benefit of pursuing these students should be considered carefully, as these institutions may not yield the volume of consistent enrollments. In short, these are not the low-hanging fruit like the institutions without education programs ($n=324$).

From this study, we can conclude that pursuing institutions that do not offer education programs and offer reimbursement ($n=104$) are the most plentiful and easiest opportunities to pursue for increasing enrollment. In contrast, while there are opportunities with institutions that offer some education programs and reimbursement ($n=11$), identifying and recruiting these potential students may be harder and less plentiful. Based on the study findings, the authors' institution has approximately ten times the opportunities with institutions that do not offer education programs than those that do.

Overall, regardless of whether or not competing institutions offered educational benefits to their employees, the authors discovered that what differentiates the institution from competitors is the breadth and depth of educational programs offered. While this study did not quantify if having more specialty programs equates to higher enrollment or revenue, institutions may want to consider from a cost-benefit perspective if adding niched or new programs is an effective strategy to increase enrollment and differentiate themselves from other competing schools.

The insights gained from this study and methodology are specific to this institution, and the implementation of the proposed methodology may yield different

insights for other institutions based on their research question and variables of interest. However, the application of this methodology can be far reaching and informative in the development of institutions' recruitment and enrollment strategies. For example, based on the findings, this methodology could inform strategies to include or support activities to strengthen or create meaningful relationships between HR and faculty, strategic partnerships, or articulation agreements that enhance and foster an enrollment pipeline, the development of specific scholarship or discount opportunities, and so on.

Limitations and Future Research

The scope of this study focused on identifying new and potentially untapped student populations for recruitment to inform enrollment strategies. This study did consider socioeconomic factors and tuition costs - which carry significant weight in a student's final selection of a learning institution or program - as out of scope. However, this study provides a foundation for further research into these factors. Another study could also examine how these factors can be addressed and translated into new or innovative recruitment and enrollment strategies.

In contrast, within the scope of this study, most limitations noted were regarding data quality, data availability, and leveraging new technologies. While the data provided from the IPEDs database was complete in nature, the quality of the information provided by the schools may vary. The authors experienced a few instances where information provided by IPEDs (as reported by the institution) had changed or was incorrect when compared to the institution's website or other online resources. Data in IPEDs, by its charter, is updated annually, whereas institutions can make changes and update their websites, as needed, thus creating the disconnect.

The other challenge this study highlighted was the availability of data on institution's employee educational benefits. Of the initial 550 institutions, 23 percent ($n=127$) were excluded from the final data set and analysis because key data was not available (not found

on Google search or not evident on the institution's web site). If this study were to be repeated, investigators may want to consider other methods, such as surveying institutions directly, to reduce the number of institutions omitted from analyses.

Another theme throughout this study was the use of technology to increase the speed (reduce the time) or quality of data collection, data analysis, and visualization. Although the methodology presented here can be low-tech in its implementation, technology can greatly enhance its scalability and speed in delivery of results. Due to minimal staff and resources, the authors used very basic data collection (Google/website searches and Excel) and data visualization (R) tools/methods based on their availability and skills on-hand. Given the availability of skilled staff, using technology ranging from web scraping, data analysis, or data visualization platforms (*i.e.*, SAS, SPSS, R, etc.), and even artificial intelligence could be leveraged to further optimize and deliver results quickly.

For example, web scraping tools were not available for the team. Using web scraping tools could be used to significantly decrease search times (allowing researchers more time to evaluate more schools) and improve data search results. Similarly, using data analysis platforms, such as, but not limited to SAS, SPSS, and Tableau allow for the centralization of data management tools and functionalities in one system. However, as with any of these advancements, they require skilled staff and the technology at-hand which may not always be a viable option for some institutions.

Despite the limitations and lessons learned, this study sets a foundation for future inquiry. The methodology presented can be used to conduct a follow-up or longitudinal study of enrollment changes at this institution and among competitors to validate the trends identified and to identify new ones. Similarly, the methodology can be applied to other disciplines and programs at any institution.

Lastly, it would be short sighted to not acknowledge how new technology and tools (*i.e.*, artificial intelligence, machine learning, etc.) are rapidly changing our world. With each new advancement, there is an opportunity for this methodology to be modernized

to incorporate more automated ways to collect and analyze data, and in turn, predict future enrollment trends. For example, long-term curation of data and the introduction of machine learning technologies into enrollment management could potentially position institutions to predictively model enrollment trends and other factors affecting enrollment. One day, it may even be possible to use these technologies to intentionally prescribe nimble changes to enrollment strategies that yield an immediate and positive impact on an institution's enrollment.

Conclusion

This research attempts to address and mitigate the ongoing challenges faced by higher education institutions in the context of shifting enrollment trends, particularly in graduate education programs. This study explores the multifaceted impact of the COVID-19 pandemic, the "Enrollment Cliff," and the "Great Resignation" on graduate education enrollment. The methodology employed in this research, combining publicly available institutional data with a targeted investigation into employee educational benefits, offers valuable insights. By focusing on institutions without education programs and with reimbursement benefits, this study identifies significant recruitment opportunities. The findings underscore the importance of aligning institutional offerings with the needs and preferences of prospective students, emphasizing the role of tuition reimbursement in attracting individuals seeking flexible learning options.

This research not only contributes valuable insights specific to the institution, but also establishes a foundation for broader discussions on enrollment management strategies in the evolving landscape of higher education. As institutions grapple with unprecedented challenges, this study advocates for continuous adaptation, data-driven decision-making, and a proactive approach to meeting the dynamic needs of students in an ever-changing educational landscape. Though the insights presented here are specific to one institution, the proposed methodology can assist all different types of institutions and programs with future recruitment/partnership opportunities.

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