HIGHER ED PULSE REPORT: Futureproofing Institutions Against the Demographic Cliff
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Introduction

For at least two generations, colleges and universities have been yoked to a troika of enrollment destiny—geography, demography, and the economy. Conventional wisdom has held that these factors dragged or pushed institutions one way or another, toward boom or bust, and all any school could do was try to manage at the margins.

With at least two of those three - geography and demography - locked in a reinforcing contraction in the next forecast window, schools are awakening to the realization that geography, demography, and the economy no longer dictate an inevitable and uncontrollable future. Or at least that they need not. Unbridling an institution from these three horsemen of enrollment fate is essential because, without renewed active institutional strategic planning and execution, the projections for many schools are bleak and the prognosis grim.

At the highest levels, the contours of the challenge are probably known—in four or five years, over the length of just one college class, regional population and economic contractions will be exacerbated by continued population shifting. That geographic reality will converge with an uneven, pre-destined “birth dearth,” draining the pool of traditional-aged college enrollees. One future will draw down enrollments nearly universally, and the combination is poised to squeeze specific schools drastically, even exponentially.

There is good news, however.

We, at Othot, an emerging and leading provider of advanced analytics and AI for higher ed, and our partner institutions show that, by using data-driven intelligence and modern AI practices, schools can futureproof their institution and not just survive the forecasted contractions, but grow and strengthen their schools and programs.

Newly accessible data and analytical tools can help schools see how substantially the upcoming demographic and geographic realities will influence their enrollments—not by state or region, but at the individual institution level.

For the first time, some of that information is available in this report. Here, we present new ways higher education institutions can and should visualize and understand their specific place during these demographic changes, as well as how they can imagine future enrollment classes. More than presenting new ways to think about the future of college enrollment, this report uses analytical tools on public data with 454 schools nationwide to create compelling and institution-specific forecasts of how they will be impacted by the oncoming environment. With this information, leaders can reconsider and, if necessary, adjust their recruitment and retention strategies using related strategic and tactical suggestions provided.
The Situation

Over the next five years, nationally, enrollments are projected to rise slowly. Estimates are that this rising tide will be largely driven by an increased high school graduation population, itself driven largely by improvements in high school retention rates. However, certain regions will be flat or declining over this period, such as the New England and North Central regions. With the class of 2025, however, the national tide will crest as the number of domestic high school graduates peaks.

After that, a broad national decline in high school graduates - the echo of the “birth dearth” that started in 2008 - will begin a corresponding decline in college enrollments. That decline is projected to be much more significant and more dramatic than the preceding growth.

Estimates are that this decline will linger through at least 2030, but likely beyond. The Western Interstate Commission for Higher Education (WICHE), for example, projects, “an almost 11 percent decline of high school graduates is predicted between the Classes of 2025 and 2037.”

Nathan Grawe, author of *Demographics and the Demand for Higher Education*, writes that, based on his own analysis, “a brief and modest five percent increase” will precede “a precipitous reduction of 15 percent or more. The reduction in population and higher education demand at the end of this period is staggering.”

FIGURE 1: FIRST TIME STUDENT GROWTH RATES – 2020 TO 2028
Forecasted Number of College-Going Students in the US

[Graph showing projected college-going students from 2020 to 2029 with a -15% decline from 2025 to 2029.]

The declines will be uneven, varying by region, and also significantly by institution type.

These numbers are often discussed from a national, big picture perspective, and thus many school administrators face this future with the perception of shared fate. A deeper look at the data shows a different reality, however—the declines will be profoundly uneven, varying by state, setting, as well as significantly by institution type. In other words, the near future of enrollment will not be felt equally by all schools.

WICHE, for example, projects the decline in high school graduates in the northeast to be a deep 14% while falling a still substantial but less dramatic 6.6% in southern sections of the country. WICHE notes that states, “such as California, Illinois, and Connecticut, are projected to see significant declines.”
Breaking down the regions even further provides a deeper look at the projected rise in high school graduates than the subsequent decline. For some of these more detailed regions, the increase in the near term will somewhat balance the expected declines in the latter half of the 2020s. Other regions will not be as fortunate. New England and the East North Central will experience little growth in the near term and significant peak-to-trough reductions in high school graduates (see Figure 2).

Further, based on the most recent statistics from the Centers for Disease Control and Prevention, which tracks birth rates, the US birth rate continues to decline, a condition that may foretell a deeper, longer contraction among future traditional college students.

**FIGURE 2: PEAK AND TROUGH ANNUAL GROWTH RATES OF FIRST TIME STUDENTS – 2020 TO 2028**

The shrinking pool of high school graduates will correspond with significant overall population shifts by state. Looking ahead to 2040, the Demographics Research Group at the University of Virginia projects that two of the states pinpointed by WICHE, Connecticut and Illinois, will experience simultaneous overall population declines—down 1.4% and 3.1%, respectively.

For schools in these states, this is a double-whammy of declining access to traditional-aged students and a simultaneously shrinking pool of learners of any age. For colleges and universities that recruit from these areas, this is potentially alarming.

Of course, demographics are not the only determinant of college enrollment. Other factors such as economic conditions, type of institution, and unexpected shocks such as COVID-19 also play a role.

However, as Grawe writes, “There is no argument: demographic change is reshaping the population of the United States in ways that raise challenges for higher education.”

While those trends swirl above and around all institutions, unquestionably schools must have relevant, actionable intelligence to take meaningful action and that intelligence must be more specific than national, regional, or statewide trends. This report provides a basis of that intelligence.
Institution by Institution

Geographic variation in the forecast number of high school graduates provides meaningful information that can be used by institutions to project and plan for future enrollments.

But this information should not be seen from the view of where a school is located, the consideration should be where their future students will be—where they recruit.

To assess this impact, institution-level projections for 454 schools (see Appendix for the list of schools) are calculated based on projected high-school graduation statistics in the states from which they currently recruit. Absent any change in geographic recruitment strategies, these projections forecast enrollments for individual schools.

Further, as may be expected, where schools draw their students from varies significantly across institutions. For example, 25% of the schools in our sample recruit 90% or more of their domestic students from a single state—making them more likely to be influenced by state or even regional population and demographic changes. At the same time, almost 30% enroll less than half their students from any single state, potentially opening opportunities to survive or even thrive in the upcoming downturn. This type of factor – recruitment concentration – exemplifies the circumstances that will dictate its position during the coming decline. They, as much as any national trend, will inform what that school may do to protect itself and prosper.

And prospering is possible.

Quoting Grawe again, “Colleges and universities that choose to view enrollment shifts as a challenge whose solution could make them stronger will do much better than those that take a less proactive stance.”

He offers a “nimble path” that assumes the projections of major enrollment pressures are true but where individual institutions look for ways to “beat the odds by carefully adjusting recruitment efforts to auspicious new student pools.”

Doing that, setting an institution on a “nimble path” starts by knowing where it stands and having a clear view of the road ahead, including understanding what new or amplified competitive pressures may surface. Pivoting to a new, potential prosperous recruitment geography may be wise, but that same area may be significantly contested by other schools also trying to be just as nimble. Further, shifting concentration to another area may make a school's traditional recruiting territory vulnerable to incursion or increased investment from neighbors.

That's where the data and methodology of “Futureproofing Your Institution” will be helpful to institutional planning and strategy. The following data and charts provide a look into the future for 454 schools (primarily four-year, not-for-profit institutions), as they are currently positioned in recruiting and enrolling first-time students. In these charts, the institution-level growth projections are constructed by weighting state-level projections from Grawe and WICHE by each state's share of the institution's enrollments. These growth projections are then considered in the context of other institutions located in the state, its competitive environment, and recent data from IPEDs retention rates.
The Data and Insights

Using public data and analytics tools, we calculate for each school the degree to which they can anticipate benefiting from the expected increases before 2025 as well as be squeezed by the more sizable, expected declines thereafter. We can see how vulnerable a school may be to the coming “glide then drop” phenomenon of the demographic cliff. We also examine how some schools may consider critical existing levers at their disposal, such as shifting geographic recruitment strategies or investing to boost retention rates.

Figure 3 provides an overview of the distribution of our sample of schools across Census regions and how the pattern of growth over the next decade plays out in each region. The higher a plot point is, the more the region is predicted to grow in the near term. The further it is to the left, the more sharply it will experience the subsequent contraction. The size of the plot represents the number of institutions in our sample that are located in each region. Accordingly, even regions that may grow the most and recede the least do not provide large enough impacts to offset the net declines in other regions.

The patterns for our sample institutions are representative of the WICHE and Grawe data. For example, the growth rates by region reveal what is generally known: the Western Central states have a better-than-most future while New England and the East North Central (Michigan as an example) are approaching dire situations.
The expected impact of the demographic shift varies considerably across institutions, even among institutions located in the same state. As can be seen in Figure 4, the number of high-school graduates in Connecticut is projected to decline an average of 13.6% between 2020 and 2028, some institutions such as the US Coast Guard Academy and Wesleyan University are projected to be much less affected because their recruitment base extends well beyond the state borders, while institutions such as University of Connecticut and Eastern Connecticut State are projected to see the high school graduates in their market area decline 12% and 13%, respectively.

On the other hand, while Maryland is expected to see a modest 1% increase in the number of high-school graduates overall, some institutions such as Johns Hopkins and Loyola University of Maryland are not projected to benefit from this growth and instead are projected to see 2-3% declines in their market because their current geographic recruitment is largely outside Maryland and in areas expecting contraction.

This pattern of different projected growth rates is within cities as well. For example, though they are both in Chicago, the University of Chicago is projected to experience a 4% decline in their markets, while the University of Illinois – Chicago is projected to see an 11% decline. Though less dramatic, St. Louis University and Washington University in St. Louis, both private institutions in the same city, have very different forecasts, -6% and -3%, respectively.
Figure 5 takes a deeper look at projected institutional growth rates organized by state, ordering the same state data from Figure 4 by average state growth rates from smallest to largest. To the left, it shows that 73% of the states have a mean growth rate at or below zero. Those to the right are states expected to grow but are therefore also in areas where many schools will attempt to increase enrollments, increasing competition for students even for institutions in those states. It’s noteworthy that most of the states projected to grow significantly have relatively small populations and therefore cannot offset or replace the aggregate losses in other states. In fact, their relatively small size amplifies the perception of their growth when viewed as an average.

**FIGURE 5: GEOGRAPHIC MARKET GROWTH RATES BY STATE, ORDERED BY MEAN**

Growth Rate by State w/Box and Whisker

*It’s noteworthy that most of the states projected to grow significantly have relatively small populations and therefore cannot offset or replace the aggregate losses in other states.*
Again, the message is that it is where a school currently recruits, rather than where it is located, that matters. Those that recruit mostly in a single state are going to see their enrollments driven by the number of high-school graduates in their state—some of these institutions, like those in Maryland, will benefit from growth rates that are higher than the nation’s, while others, like those in Connecticut, will be pulled down by below average growth rates. For institutions that recruit more broadly, growth in one state will typically be offset by declines in another. As a result, there is more variance in growth rates across institutions with more concentrated recruitment patterns (see Figure 6).

The divergence in recruitment area versus physical location manifests when viewing the data by institution type. Public institutions (green in Figure 6) tend to recruit largely in their home state and are therefore more tightly tethered to the future enrollment projections there. In other words, for many public schools, where they are and where they recruit are the same. As a result, there is more variance in growth rates across these public institutions than across private institutions, which tend to have more diversified recruitment markets.

**FIGURE 6: MARKET AREA STUDENT GROWTH RATES (2020 TO 2028) BY ENROLLMENT CONCENTRATION, PUBLIC VERSUS PRIVATE**

Growth Rate by Enrollment Concentration

Not only do the projected number of high school graduates vary across similarly located institutions based on how concentrated their recruitment is in their home state, but their ability to strategically reorient their recruitment to offset projected declines also differs. Institutions that already have a presence in several states are better able to shift enrollment efforts across these states than institutions that do not. Regardless, it generally takes several years of recruitment in a new market to develop a significant flow of enrolled students.

The appropriate strategies for institutions moving forward depend not only on the longer-term projections over the decade but also on the timing of growth and decline over the decade. As discussed above, most regions are expected to experience growing numbers of high-school graduates in the near-term, followed by severe declines in the latter half of this decade.
Figure 7 illustrates the importance of considering the timing and severity of growth and decline over the next decade. The vertical axis represents expected growth rates of first-time, traditional-aged student populations from 2020 to 2025 and the horizontal axis represents expected growth rates of first-time student populations from 2025 to 2028.

Where a school falls in this graph highlights how critical it is to diversify the recruiting strategy as well as the urgency to change. Schools in the bottom left quadrant are in the most precarious situation, with very low growth rates in their markets anticipated over the next several years while facing very sharp, negative growth rates post-2025. These institutions would do well to aggressively change their recruitment strategies significantly and quickly.

And while schools in the upper right quadrant are in a good position regarding projected growth in their recruitment market area during both periods, they should consider that other institutions may well aggressively expand recruitment into their markets. That is to say, good projections do not mean good outcomes; vigilance will be required to maintain enrollments or benefit from forecast growth.

**FIGURE 7: GROWTH RATES AS A DRIVER OF STRATEGY**

**I  Don’t be fooled**
**Strategy:** Don’t be fooled by the short-term boom. Grow new markets and solidify current markets to prepare for bust.

**II  Watch out**
**Strategy:** Guard your market and don’t slip into complacency—others will be looking to expand into your market.

**III  Stay the course**
**Strategy:** Consider aggressively pursuing new markets and/or resizing.

**IV  Now is a good time to panic**
**Strategy:** Double down on strengthening your hold on current market. Select expansion in markets that reveal potential.
Figure 8 adds the dimension of concentration—that is, how dependent a school is on one particular location for first-time enrollment, as discussed previously.

Naturally, the more dependent a school is on a single state and/or region predicted to face a major retreat in high school graduates and population declines, the more urgent it is to reexamine and recalculate recruitment strategies. In this chart, the darkness of the circle indicates the concentration of recruiting for each institution in a particular geography. The darker the circle, the more concentrated. Dark circle schools in the bottom left corner are not only in challenging growth rate geographies but have very little reach or brand strength outside of their home state or region. This creates an acute situation in which it will be extremely challenging to counter the impact of declines in their current market by diversifying into new markets.

**FIGURE 8: GEOGRAPHIC RECRUITING CONCENTRATION AS AN INDICATOR OF RISK**

Growth Rate Relationship

1. Don’t be fooled
2. Watch out
3. Stay the course
4. Now is a good time to panic
The Importance of Retention and Persistence

In addition to refining recruitment strategies, a school may have other options to diversity or fortify its total enrollment position via retention—the ability to keep already enrolled students from leaving.

Figure 9 returns to having 2020 to 2028 growth rates on the horizontal axis, but the vertical axis is now retention rates. Here, counterintuitively, having lower retention rates may provide an opportunity for possible mitigation remedy for institutions projected to experience higher than average declines in new enrollments.

FIGURE 9: RETENTION RATES VERSUS GROWTH RATES

By taking a more nuanced approach that includes factors such as recruitment concentration, regional forecasts in areas of recruitment and expected competition for students in those regions, it’s possible to see that, while state and regional trends are inescapable, they may not be controlling.

How a school sees these challenges related to their unique circumstances will determine how they may plot a “nimble path” on recruitment for the next decade and beyond.
What Can Be Done?

The first critical objective of every college should be to understand where it stands in terms of the geographic situation and the demographic changes evident on the horizon. With that in hand, based on this analysis and our work with our institutional partners, we recommend strategies in four areas:

- **Increase yield rates within your existing geographic footprint:**
  Advanced analytics allows school leaders to deeply understand the individuals in their enrollment funnel and measure their likelihood to enroll. By understanding this demographic and behavioral data, machine learning algorithms can reveal what’s important to the individual as well as what specific actions are most likely to increase the probability of each prospect to enroll. Using this information, a school can grow enrollments from existing pools.

- **Increase retention/persistence rates to be in the top quartile of your cohort/competing schools:**
  Retention begins with recruitment. Advanced analytics technology can inform school leaders on the likelihood of a student to persist to the second year, well before that student steps onto campus. In addition, those tools can also review student behavior and performance while on campus and assess their likelihood to persist. These tools can more accurately identify at-risk students and deliver interventions to the right students at the right time.

- **Look to develop new recruiting geographies where students that “fit” at your institution live:**
  The ability to identify and attract students from any geography can be a new and crucial opportunity. Potential students are no longer exclusively local, every school can be a national recruiter with the right technology. Just as they’re used to increase yield in an existing recruitment funnel, advanced analytics tools can find similar students anywhere as well as help leaders understand they fit and how best to recruit and enroll them.

- **Cultivate other student populations that add to the mix of enrolled students:**
  Diversify your enrollment by recruiting students of color (a population that will not be declining as much) as well as international students. Similarly, non-traditional college-age students, foreign students, and growth in online, professional, and graduate programs can also offset projected enrollment losses.

Which of these tactics is right depends on the individual school and on the insights generated by its unique data. No two colleges are the same—recommendations can suffer without the use of advanced analytics that use AI to consider all three dimensions and provide actionable intelligence per institution. This falls in line with the [joint statement from AIR, NACUBO, and EDUCAUSE](#):

> “We strongly believe that using data to better understand our students and our own operations paves the way to developing new, innovative approaches for improved student recruiting, better student outcomes, greater institutional efficiency and cost-containment, and much more. Data are an institutional strategic asset and should be used as such.”

Given the stakes of the coming changes, now is the time for analysis and planning, followed quickly by action. Many, perhaps most, schools will adjust. Those changes, coupled with the inevitable demographic strains, will impact every school in the country.
Andy Hannah, Chairman of the Board, Chief Partnership Officer, Othot, Inc.

In 2014, Andy Hannah co-founded Othot, the leader in advanced analytics solutions for higher education institutions, where he now serves as the Chairman and Chief Partnership Officer. In his role, he is an evangelist for the Othot platform and how the use of AI and prescriptive analytics enables colleges and universities to better understand their students and make informed decisions throughout the entire student-to-alumni lifecycle.

Hannah is also an Adjunct Professor of Entrepreneurship and Analytics and Entrepreneur-In-Residence at the University of Pittsburgh. At Pitt, he is developing and delivering curriculum/student experiences at the intersection of analytics and entrepreneurship that develop skills for graduates to be leaders in the blossoming business analytics field. In addition, Hannah is a Senior Advisor and Faculty member of the International Institute of Analytics.

Hannah has been an entrepreneur since 1995, a calling that has stayed firmly with him ever since. He has played leading C-Level roles at four high tech start-ups over the past two-plus decades, and the resulting perspectives, learnings, and expertise are the cornerstones of his endeavors. Hannah's companies touched a range of industries such as information, software, consulting, and materials science.

Patricia Beeson, Ph.D., Provost Emerita, University of Pittsburgh; Director of Research, Othot, Inc.

Dr. Beeson is provost emerita at the University of Pittsburgh. She served as provost and senior vice chancellor from 2010-18. Her tenure as provost was marked by her innovative and ambitious academic vision for the University of Pittsburgh and her focus on data and analytics to help achieve the university's goals. Beeson came to Pitt in 1983 as a professor of economics and, before she was elected provost and senior vice chancellor, held several administrative posts, including associate dean for undergraduate studies in the Dietrich School, vice provost for graduate studies, and vice provost for graduate and undergraduate studies.

As Othot's Director of Research, Beeson identifies and leads cross-organizational research projects. Her research addresses key questions impacting higher education leaders. The combination of Beeson's higher education leadership experience and rich academic research background and Othot's data science capabilities offers a disciplined yet fresh and innovative approach to the research.

Beeson earned her Ph.D. at the University of Oregon.

Rohil Chada, Research Analytics Intern, Othot, Inc.

Rohil Chada is currently a Senior at the University of Pittsburgh studying Finance and Business Analytics. Outside of the classroom, Chada is involved with student organizations in the finance and analytics space and held business analytics internships at Everest Reinsurance and the Western Pennsylvania Diaper Bank. Throughout his classroom and internship experiences, he has developed a holistic professional skillset while providing shared value to each organization.

As a Research Analytics Intern at Othot, Chada paired up with his former professor, Andy Hannah, to take a closer look at the demographic shifts impacting undergraduate enrollment and assist Othot in delivering crucial insights for higher education institutions.

After graduating from Pitt, Chada will join Deloitte Consulting as a Solutions Engineering Analyst in August.