# Five Trends That Are Reshaping the Course of American Higher Education

Ou Lydia Liu
*Educational Testing Service*

Follow this and additional works at: https://www.ce-jeme.org/journal

---

# Five Trends That Are Reshaping the Course of American Higher Education

Ou Lydia Liu

Educational Testing Service

**Abstract**

The landscape of higher education has gone through substantial changes due to technological advancements, automation, and shifting learner demographics, further complicated by the pandemic situation. In this paper, I will discuss five trends in higher education: (a) the emergence of parallel tracks of education and training from both higher education institutions and corporates, (b) broader expansion of hybrid education and further separation of time and space in instruction, (c) polarized enrollment and retention between selective and non-selective institutions, (d) reckoning in admissions around equity and diversity, and (e) new paradigms of international education. The five trends will significantly impact how higher education might be evaluated, operated, and reformed.

Higher education in the United States is going through tremendous changes due to the development of educational technologies, shifting learner needs and demographics, and mounting pressure institutions face in enrollment competition. The sweeping force of COVID-19 has propelled many institutions to accelerate over-due changes by revisiting admissions practices, revamping curriculum development, reprioritizing partnership and fund-raising strategies, and renewing relationships with employers and the workforce. In the paper, I will discuss five general trends in higher education in the United States.

## 1 Parallel Tracks of Higher Education: Competitors and Partners

Unsatisfied with the rate at which talents are being prepared and the skill sets of new hires, American corporates are entering the educational training space traditionally dominated by higher education institutions. In June 2020, Google announced its career certificates program which provides training to many in-demand fields such as project management, data analytics, and UX design that takes $49/month and an average of 6 months to complete (Grow with Google, 2021). Google's Senior Vice President for Global Affairs Kent Walker wrote on his Twitter account that "In our own hiring, we will now treat these new career certificates as the equivalent of a four-year degree for related roles." Google's certificate program has attracted over 130 employer partners who are willing to hire with such certificates. Another notable example is the IBM digital badging program which was initiated in 2014 and has offered more than 3.5 million badges. These are just a few examples of how large corporates are creating programs to tackle education and training traditionally in higher education institutions' purview.

Note that this is not the first time technology companies provide industry certificates. In the 1990s, companies such as Microsoft and Cisco started to offer certificates for IT-related domains. The difference is that the certificates offered today are much broader in supporting applications from cloud computing to digital marketing, rather than tied to knowledge about a specific technology vendor. The parallel tracks made up by both traditional institutions, typically slow to change, and corporates eager to address upskilling and reskilling issues will continue to grow and co-exist, making them both competitors and partners. Many of the content generated and taught in corporate training programs come from higher education institutions. The partnership between Starbucks and Arizona State University (ASU) is a good example (Koenig, 2019). As of Spring 2019, there were 12,000 Starbucks employees

enrolled in ASU classes and 3,000 had graduated with a bachelor's degree from ASU's online courses (Koenig, 2019).

Another change introduced by the entrance of technology employers in the training space is the shift of the cost of higher education from learners to employers (Koenig, 2021b), propelled by the growth of paid apprenticeship programs.    The paid apprenticeship programs in the U.S. rose by 70% from 2011 to 2020 (U.S. Department of Labor and Employment & Training Administration, 2021). Programs such as the Amazon Technical Academy (Amazon, 2021) offer free training to employees and non-employees in high-demand fields such as cloud computing and software engineering.

As a result of employers' entering the training space, students are going to have more choices. They can choose to go to a traditional four-year university or enroll in a certificate program which takes a lot shorter to earn a credential recognized by relevant industries. Furthermore, the advent of companies such as Guild Education, a startup which helps employees leverage tuition reimbursement programs offered by employers, introduced even more flexibility as individuals navigate study and work and altered the traditional one-way pathway from study to work. In fact, students as consumers are increasingly concerned about the efficiency of their learning path. According to the Strada's Work and Education survey (2021), when asked about American adults' education goals and preferences, 25% indicated that they prefer to pursue a certificate, certification, or license, compared to 15% opting for a bachelor's degree and 12% for an associate's degree.

Employers' foray into training will also pressure higher education institutions to focus more on skills not just on degrees.   Employers have long expressed dissatisfaction with the workforce competencies of college graduates. For example, according to the National Association of Colleges and Employers' survey (2018), although 100% of the employers believe critical thinking and problem-solving skills are important, only 56.8% of them believe college graduates are proficient in those skills. Given the rapidly changing industry requirements, colleges and universities will need to prepare students for life-long learning and focus on skills that are transferable and generalizable. When making college choices, more and more students will ask questions about what skills and experiences a college can provide that would allow them to be competitive in the global workforce, rather than just focusing on degree attainment.

As employers enter the training space, we are also going to see a surge in microcredentials and digital badges. Microcredentials are shorter programs that focus on a particular set of skills.  They help learners demonstrate a specific skillset without linking to a degree program. There are currently over 700,000 microcredentials offered, and many take place on large open-source platforms such as Coursera.  One factor that plays a prominent role in the popularity of credentials over degrees is the low graduation rates in the United States.   Roughly 60% of students graduate from four-year institutions within six years of enrollment and many students left colleges without any credentials even after completing a considerable amount of college courses and other academic requirements.  A recent initiative, called "Credential as You Go" (Koenig, 2021a), was designed to help individuals document their qualifications and earn recognition for the learning and experience they obtained from a variety of prior activities (e.g., college, apprenticeship, industry certificates, military experience), without a college degree.

One perspective not to lose in the burgeoning of a dual-track, more flexible postsecondary education is that discrete training doesn't capture the full spectrum of benefits of postsecondary education.  While a six-month program at a coding bootcamp can offer intense training on job-relevant technical skills, it doesn't necessarily offer experience on collaboration, civics learning, and a variety of activities that a typical student experiences on a college campus.  And it's the type of well-rounded education that helps promote life-long learning and transferable skills. While the modern economy necessitates a fast and efficient way of preparing workers, a sustainable society would also require informed citizens and culturally responsive individuals. It's important for short-term training programs to partner with institutions to provide a full range of experience to learners to balance life, work, and learning needs.

## 2    Broader Expansion of Hybrid Education and Further Separation of Time and Space in Higher Education

Before COVID-19, online education was slowly gaining popularity in U.S. higher education in that about one-third of students had experience with some type of online learning (U.S. Department of Education et al., 2019b). Before the pandemic, the implementation of online education was lopsided across America's higher education

landscape with pioneers such as Southern New Hampshire University and West Governors University gaining national reputations for widespread operations in online education, while many others forayed into online education as beginners. In 2018, the top 10 institutions in online learning dominated 20% of the total market (Boggs et al., 2021). The pandemic has forced many more institutions into full or partial remote learning. Across the country, for many months, students took college classes online from home. While U.S. institutions are opening up with the easing of COVID cases, the expansion of online education might be here to stay and is being disrupted by massive platforms and content providers such as Coursera (Gallagher & Palmer, 2020). Learners might have enjoyed the benefits of taking classes from the convenience of home and in many cases at their own pace. Institutions with experience in online learning such as University of Illinois and Georgia Tech have moved entire degree programs online, significantly reducing the cost of degree attainment. Other institutions strive to offer blended learning to anticipate changes after the pandemic. Some institutions are investing heavily in their infrastructure and staff development in order to gain a competitive edge in the race to offer blended learning. For example, Northeastern University spent $50 million setting up 200 classrooms for hybrid learning (Mangan & Parry, 2020). In addition, organizations have been created to explore hybrid learning, where students learn through online course materials and come to in-person sessions for support. For example, The Hybrid College Network (https://hybridcollege.org/) was created about five years ago and has served 2,500 college students across 15 hybrid colleges in the country. They reported retention of 78%, higher than the 63% retention rate for four-year public institutions (U.S. Department of Education et al., 2020).

As institutions navigate online learning, college students' attitudes towards online learning also changed substantially. According to the Digital Learning Pulse Survey conducted by Cengage (2021), over 70% of students prefer to have the option of full online learning and the majority of students also showed more optimism towards online education than before, despite the host of adversities associated with online learning, including the feeling of stress, internet connectivity, and lack of support from the academic institution.

Despite the continuing trend of online education, its varying quality is a big concern. When the pandemic hit, many institutions simply moved instruction online through Zoom or any other videoconferencing tool, without much digitalization of the course content or update of pedagogy. With the availability of technological advancements, institutions need to think about how to leverage artificial intelligence in course planning, grading, and providing feedback, and also to explore how personalized learning can be incorporated to tailor specific learning needs. Boggs et al. (2021) outlined a number of suggestions for institutions to grow online learning, including providing sufficient and ongoing technical support to students, adopting a student-centered approach which offers customized counseling and guidance, providing sufficient support to faculty members on content production and instructional design, and have a process that allows reflection and improvement. A future trend would be for institutions to consider how to offer a college experience that's flexible, efficient, and affordable in order to sustain the many changes higher education institutions are facing.

## 3    Polarized Application, Enrollment, and Retention Across Institution Types

Another trend that's transpiring is the widening divide in applications, enrollment, and retention between selective and non-selective institutions, and also between two- and four-year institutions. Despite the struggles, many institutions face during the pandemic, highly selective institutions have seen significant surges in their applicants (Nietzel, 2021b). For example, applicants to Harvard University rose by 42%, to Princeton University by 15%, and to University of Pennsylvania by 34% in 2020 (Snyder, 2021). Institutions that are selective, defined as admitting 50% or fewer of their applicants, also see increases in applications. For example, applications went up by 15% at doctoral institutions and by 7% at baccalaureate colleges. Four-year selective public and private institutions have seen a 12% and 11% increase in applications, respectively (Common App, 2021).

Many institutions that are less selective suffer from declining enrollment (Howell et al., 2021; National Student Clearinghouse Research Center, 2021; Nietzel, 2021a). Note that 80% of students are enrolled at less selective institutions and only 20% of students study at selective institutions (U.S. Department of Education et al., 2019a). Overall, college enrollment is 5.9% lower than last spring's number. Community colleges in the U.S. are the worst-hit sector with a nearly 12% decline in enrollment, due to factors such as financial hardships, childcare dilemmas, and health issues that plagued many of the individuals in the pipeline for community colleges. Enrollment at private and

public four-year institutions declined at a smaller scale at 4.5% and 2.8%, respectively. Students with the highest academic performance (i.e., with high school GPAs higher than A) had the highest rate of enrollment decline, as many of them chose to have a gap year. Their declines were somewhat offset by the increases in enrollment by students with weaker academic performance (i.e., GPAs B- or lower). A more troubling sign is that Free Application for Federal Student Aid (FAFSA) renewals declined by 5%, suggesting some students from low-income families were not coming back to college and the attrition was worse at 8% for students from the lowest income families (i.e., annual household income less than $25,000).

Community colleges also experienced the largest decline in retention rates at 4.9%, and private four-year institutions also had a lower retention rate by 1.2%. Public four-year institutions actually showed a small increase of 1.4% in retention rate. In addition to varying across institution types, retention also varies across student subgroups. Black and Native Hawaiian/Other Pacific Islander students have increased retention by 2.6% and 4.8% respectively at public and private four-year nonprofit institutions, while Asian and White students' retention remained largely unchanged.

Setting aside the pandemic situation, demographic shifts in the high school population is another factor posing pressure for higher education enrollment. For example, the number of U.S. high school graduates will peak at around 3.6 million by 2026 and decline to 3.3 million around 2030, which means there will be just fewer students in the college pipeline (Dua et al., 2020). Future trends in application, enrollment, and retention are uncertain in that students may or may not continue to choose two- or four-year institutions to embark on their academic journey before entering the workplace. One thing that is certain is that higher education institutions are bound to focus more on value, access, and outcomes. Students face a lot of obstacles and distractions that can easily pull them out of the academic setting. The burgeoning nontraditional education programs will also likely have an impact on whether students choose to enroll and stay in college. Many of the newer educational offerings boast a more flexible, cheaper, and quicker path to middle-skill jobs and have the potential to further disrupt the higher education landscape.

Given the overall high costs of high education, the pressure is going to continue to fall on higher education institutions to prove value, attract students, and retain students, while doing so in an equitable way. It is well documented that higher levels of education are associated with higher levels of financial return in the workplace. According to the U.S. Bureau of Labor Statistics, the median weekly earning was $619 for individuals with less than a high school diploma, $938 for individuals with an associate degree, and $1,305 for people with a bachelor's degree (Bureau of Labor Statistics, 2021). However, value in terms of income varies significantly across types of institutions, programs, and student demographics, according to a report released in 2021 by the Postsecondary Value Commission (2021). For example, among individuals of 25-34 years old with a bachelor's degree or above, the median annual income was $54,700 for White, and $49,400 and $49,300 for Black and Hispanic individuals, respectively (U.S. Department of Education & National Center for Education Statistics, 2019). It's important for institutions to focus on generating value for all students in an equitable and fair way.

In sum, the pandemic has brought unprecedented challenges to many institutions, and we've seen drastic measures taken by institutions to protect their sustainability. For example, in 2020, University of Akron laid off 96 unionized faculty members, including ones with tenure, as part of the university's cost saving measures. The financial stress will continue for institutions as competition intensifies. For institutions to stay relevant, focusing on value, offering high-quality instruction that is industry relevant, and creating a flexible and affordable learning path for students of all backgrounds is key.

## 4 Reckoning in Admissions Around Equity and Diversity

Admissions have attracted heated attention in the U.S. in the past few years, partly fueled by a series of college admissions scandals, dubbed the "Varsity Blues Scandal", in which wealthy parents employed illegal and unethical means to help secure a spot for their offspring(s) at elite U.S. institutions (Whistle, 2020). Concerns were raised about the role standardized testing plays in admissions. Criticisms include that standardized test scores perpetuate performance differences between ethnic groups, with students from Black and Hispanic backgrounds performing lower than White students (U.S. Department of Education et al., 2021), and that standardized test scores are correlated with family income (ACT, 2016). However, a fact that is less noted is that college admissions tests are not the first measure to show ethnic group differences in students' academic journey, as such differences are well-documented in assessment at earlier education stages. For example,

in the nation's report card—the National Assessment of Educational Progress (Bohrnstedt et al., 2015), consistent performance gaps have been identified between White and Black, and White and Hispanic students. For example, 47% of White 8th graders scored at or above Proficient level on NAEP reading in 2017, but only 18% of Black and 23% of Hispanic students achieved that (Zhang et al., 2020). In many cases, Black and Hispanic students' lower performance on college admissions tests reflects inequities in prior education experiences, school resources, and family support.

Before the pandemic, some institutions and graduate programs were experimenting with test-optional or test-blind admissions practices. Test-optional means that it's up to the applicant to decide whether to submit a test score or not, and if a score is submitted, the admissions review committee will consider it in the evaluation. Test-blind means that the test scores are not required and will not be reviewed even if applicants send the test scores. Before the pandemic, there was no clear data on how many institutions and programs were changing their admissions policy, but the pandemic has accelerated institutions and programs' decision to suspend or even permanently drop the requirement of standardized test scores. As of now, more than 1,000 colleges have gone test-optional, including a number of highly selective institutions (Carnevale, 2020). The University of California (UC) system has made the decision to drop standardized tests from admissions and scholarship applications (McDonnell Nieto del Rio, 2021). Given the sheer size and national stature of the UC system, their decision is projected to have a far-reaching impact on how other higher education institutions in the U.S. approach admissions.

As standardized tests attract most of the attention in the admissions reform, other variables typically used in admissions are also being put under the spotlight. A recent study conducted by researchers at Stanford University with over 60,000 college applications revealed that college essays have a stronger correlation with reported family income than SAT scores (Alvero et al., 2021). Students from wealthier families tend to choose essay topics that received higher marks. For example, students from higher income families tend to write about human nature and seeking answers while students from lower income families tend to write about time management and relationships. The study has received national attention and points to the need of evaluating all major criteria used in college admissions for their respective strengths and limitations,

as similar scrutiny should be applied for reference letters, GPA, and extracurricular activities. In addition, questions are raised about the authenticity of college essays. Although standardized tests have limitations, in most cases they take place in a monitored, secure, and fair testing environment while there is no mechanism to check who wrote and helped with the essays. They could be heavily edited by college-educated parents or paid services.

While institutions' rush to drop standardized testing may be well-intentioned, many of the unintended consequences are not carefully examined. For example, without the standardized test scores, the admissions review committee may rely more on the rest of the evaluation criteria, while apparently those criteria may be equally susceptible to the limitations facing standardized test scores, evidenced by the case of college application essays. Another consideration is how international students will be impacted by the changes in admissions policy. International students had been on the rise till before the pandemic and have made significant contributions to the scientific, technological, and economic advancements of America. International students are likely from foreign institutions that are less known to the admissions committees and have letters from people less familiar to the committees. Removing standardized test scores from their profile is taking away an objective measure that allows international students to be evaluated on common ground.

One particular admissions approach that has gained popularity is holistic admissions. Many institutions have turned to holistic admissions with the intention to consider a spectrum of qualifications and evidence when making decisions about an applicant's fit with the institution's admissions goals and their likelihood of success (Bastedo et al., 2018). The evaluation tends to balance academic qualifications with personal experience and attributes. One feature of holistic admissions is that institutions typically shun the practice of using a cut or threshold in GPA or standardized test scores; instead, they consider the relative strengths and weaknesses of an applicant across many criteria. Many organizations have also developed resources to help facilitate holistic admissions. For example, ETS has a website devoted to holistic admissions (https://www.holisticadmissions.org/) that aims to provide a platform for institutions to gain knowledge of holistic admissions and share effective practices.

Research to date documenting the scale and outcomes of holistic admissions is scarce. Among the few, the results are mixed about whether holistic admissions achieve the

targeted admissions objectives, such as increases in GPA, standardized test scores, retention, and graduation in the admitted cohort. Urban Universities for Health (2014) surveyed 163 public universities with at least two or more health profession schools and found that 38% of the schools adopt many elements of holistic admissions, 48% use some elements, and 14% use few to no elements. About 38% of the schools that practice holistic admissions experienced an increase in GPA in the admitted class, 52% showed no change, and 10% showed decreased GPA. About 41% saw an increase in standardized test scores, 48% unchanged, and 11% saw a decrease. Sixteen percent of the schools using holistic admissions also had an increase in graduation rate, 80% didn't change, and 4% decreased. Grabowski (2018) reported that in the selection of students for interview in medical school admissions, practicing holistic admissions was able to yield a higher than expected percentage of female, underrepresented, and self-report disadvantaged students. Coplan and Evans (2021) attempted to unveil the discrepancy that although many health profession programs practice holistic admissions, limited programs have accomplished the intended diversity. They found that having faculty champions who are strongly committed to diversity and inclusion appeared to significantly influence the admissions process. Another study (Wilson et al., 2019) discussed how GRE can be used in holistic review to achieve overall admissions objectives in the Graduate School of Biomedical Sciences.

Despite some promising findings from the limited existing research, more investigation is needed to understand the process, implementation, and effect of holistic admissions. Due to the ambiguous nature of admissions, institutions that claim to use holistic admissions may apply rules and policies in very different ways. For holistic admissions to be faithfully implemented, sufficient and ongoing training is required for institution staff who conduct admissions. When a large number of applicants need to be evaluated, the practice of holistic admissions adds another challenge to any review committee. Information on how decisions are made when no cut or threshold is implemented typically is missing from institutions' webpage discussing their admissions policies. Future research that examines the challenges that admissions committees experience and how they address such challenges would be valuable to deepen our understanding of holistic admissions.

While institutions navigate the challenges in admissions, the idea of lottery in admissions also gained traction (Craig, 2021). The intention of lottery was to ensure opportunities are spread more evenly across subgroups of students. The concept of lottery is not new in K-12 admissions. For example, school officials at the Thomas Jefferson High School for Science and Technology, one of the country's most prestigious STEM schools, are considering a lottery system for the school's extremely competitive admissions (Natanson, 2020). The proposal is that based on a holistic evaluation of academic qualifications, family backgrounds, special needs, and other factors, the first 100 most qualified applicants will be admitted. Then the rest of the available slots will be randomly assigned to applicants who meet minimum qualifications (e.g., GPA over 3.5, math and science course requirements). However, experts have expressed concerns regarding the feasibility of lottery in higher education admissions. Zwick (2021) warned that as most proponents for lottery in admissions believe that some threshold setting is required in lottery, setting such thresholds and considering a host of factors could deliver the same admissions outcomes as using a standardized admissions test. Using lottery without any threshold runs the risk of admitting unqualified students while refusing talented and accomplished students who work hard to get to where they are. Zwick (2007) examined a national sample of applicants to selective colleges in 2004 and found that lottery admissions did not produce the desired diversity in the admitted class. Lottery has also been explored in admissions internationally and has not achieved the intended. For example, among high school districts in Korea that implemented lottery admissions, the gap in college entrance between high- and low-SES groups actually widened, instead of narrowed (Jao, 2016).

## 5   New Paradigms of International Education

Another trending factor in higher education is the shifts in international education. U.S. institutions have enjoyed the benefits of the influx of international students over the last few decades. From 2000 to 2019, U.S. institutions had seen a steady increase of international students in that international students increased nearly 100% from 547,867 to 1,095,299 (Figure 1; Open Doors, 2020). In the 2018/2019 school year, the top four fields were Engineering (21.1%), Math and Computer Science (18.6%), Business and Management (16.6%), and Social Sciences (7.7%).

A stronghold on international students has proven to bring technological, scientific, and financial opportunities to the U.S. In 2018, international students contributed $39 billion to the U.S. economy and helped create

Figure 1
*International Students in the U.S. from 2000 to 2019*
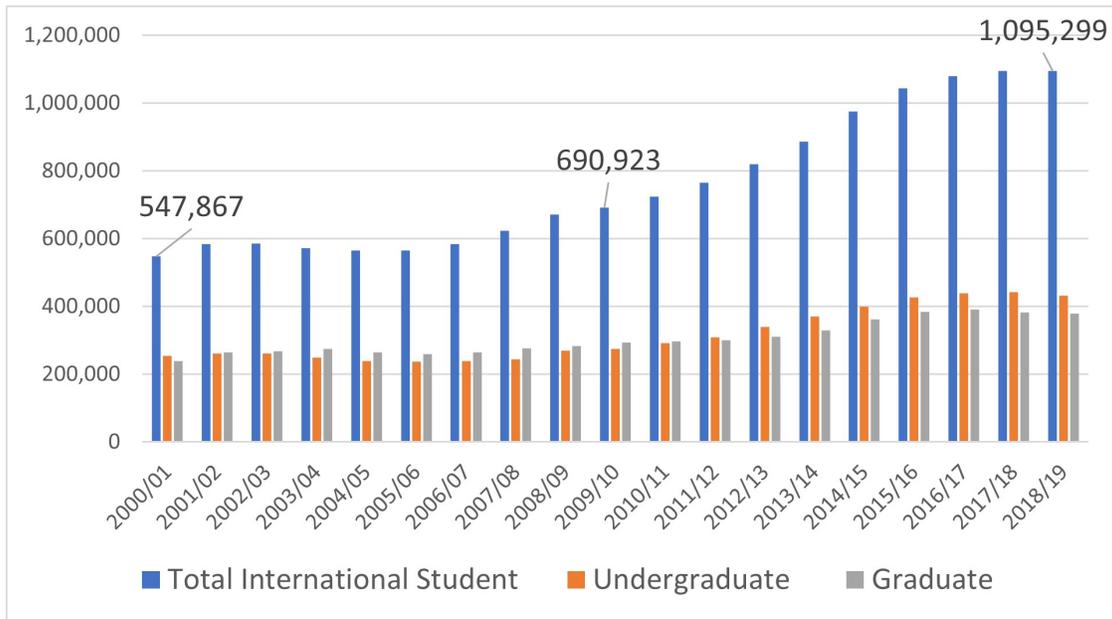


455,622 jobs (NAFSA, 2018). On the technology side, although American institutions employ nearly 60% of top AI researchers, 69% of such researchers received their undergraduate education outside of the U.S., and China sends the largest number of AI talents to the U.S. (Banerjee & Sheehan, 2020). As the think tank MacroPolo concludes, "without researchers from abroad, America's lead on talent would likely be considerably diminished" (Banerjee & Sheehan, 2020).

During the pandemic, health concerns, policy changes, and travel restrictions imposed by COVID-19 have brought multifaceted challenges to international education in the U.S. During the 2019/2020 school year, international students in the U.S. declined by 1.8% (Open Doors, 2020). New student enrollment plummeted by 43% in the Fall of 2020 as compared with the previous year (Fischer, 2020). Among the top six places of origin of international students, five were sending fewer students to the U.S., with China being the only exception.

More recent surveys showed a positive trend for recovery for U.S. institutions in attracting international students. For example, in June 2021, the Institute of International Education snapshot survey of 414 U.S. higher education institutions showed that 43% of the surveyed institutions reported an increase in international student applications (Martel & Baer, 2021). However, the rebound in

international student application varies across institutions. While 59% of doctoral institutions reported increases in international student applications, 58% of community colleges reported decreases. Most institutions reported outreach to international students is still a priority and they rely on online recruitment events, working with existing international students, and social media to drive recruitment.

Despite the persistent efforts of American institutions to attract international students, whether the U.S. bodes well in the future international education market hinges on a spectrum of factors.

The decrease in new international student applications was not just triggered by the pandemic; in fact, such a number was on the decline for four years in a row before 2020. A host of elements were at play in driving the changes in international students' preferences for destination countries, including geopolitical factors, increased competition, gun violence, visa and immigration policy, and employment prospects. In particular, the cumulative effect of the Trump administration's policies was largely viewed as unwelcoming to international students and was a deterrent in attracting new international students to the U.S.

Due to the strategic benefits of expanding international education, many countries outside of the U.S. are vying

for international students (e.g., Canada, United Kingdom, Australia). For example, while U.S. international students doubled over the last two decades, such number grew six-fold in Canada. Just in the last decade, international students tripled in Canada (El-Assal, 2020). Canada is now the third-largest host country, following the U.S. and Australia, with 642,000 international students.

At the same time, some of the source countries are striving to become host countries (e.g., China, India). For example, China has become a major destination country for African students. It hosted more than 74,000 students from 24 African countries in 2017, representing a 258% growth from 2011 to 2017 (Development Reimagined, 2020). The Indian government has launched the Study in India initiative with the goal to attract 200,000 international students by 2023 (Yeravdekar & deWit, 2018). The shifting ranking of global higher education institutions and the rise of more Asian universities to top ranks is also changing the international education landscape. According to the 2022 QS World University Rankings, Asian institutions claimed 44 spots out of the top 200 global institutions (QS, 2021). Asia is expected to become a more attractive destination in the global competition for international students.

## 6   Conclusions

The five broad trends synthesized above are going to significantly transform how higher education operates and evolves in the United States.  These are not isolated factors that drive changes in higher education but work in an intertwined manner in molding the course of higher education. Challenges and opportunities introduced by the pandemic, further complicated by continental geopolitical shifts, are going to have a long-lasting effect on whether the U.S. is able to keep its leading position in higher education.  Increasing connections with the workforce, improving quality, efficiency, and flexibility in educational offerings, and attracting international talent, particularly in STEM fields, would be key for U.S. institutions to stay successful and relevant in the global economy.

## References

ACT. (2016). *ACT composite score by family income.* http://www.act.org/content/act/en/ research/reports/act-publications/act -composite-score-by-family-income.html.

Alvero, A., Giebel, S., Gebre-Medhin, B., Antonio, A. L., Stevens, M. L., & Domingue, B. W. (2021). *Essay content is strongly related to household income and SAT scores: Evidence from 60,000 undergraduate applications.* Stanford CEPA. https://cepa.stanford.edu/content/ essay-content-strongly-related-household -income-and-sat-scores-evidence-60000 -undergraduate-applications/l.

Amazon. (2021, April 13). *Amazon helps employees become software engineers in 9 months.* Amazon News. https://www.aboutamazon.com/news/ workplace/amazon-helps-employees-become -software-engineers-in-9-months.

Banerjee, I., & Sheehan, M. (2020, June 9). *America's got AI talent: US' big lead in AI research is built on importing researchers.* MacroPolo. https://macropolo.org/americas-got-ai -talent-us-big-lead-in-ai-research-is -built-on-importing-researchers/.

Bastedo, M. N., Bowman, N. A., Glasener, K. M., & Kelly, J. L. (2018). What are we talking about when we talk about holistic review? selective college admissions and its effects on low-SES students. *The Journal of Higher Education*, 89(5), 782–805.

Boggs, H., Forero-Hernandex, P., Laboissiere, M., & Neher, K. (2021, February 15). *Scaling online education: Five lessons for colleges.* McKinsey & Company. https://www.mckinsey.com/industries/ public-and-social-sector/our-insights/ scaling-online-education-five-lessons -for-colleges.

Bohrnstedt, G., Kitmitto, S., Ogut, B., Sherman, D., & Chan, D. (2015). *School composition and the Black-White achievement gap (NCES 2015-018).* U.S. Department of Education, National Center for Education Statistics. https://nces.ed.gov/nationsreportcard/ pubs/studies/2015018.aspx.

Bureau of Labor Statistics. (2021, June). *Education pays.* BLS. https://www.bls.gov/careeroutlook/ 2021/data-on-display/education-pays.htm.

Carnevale, A. P. (2020, August 3). *Much work to be done: Promoting fairness in admissions must mean more than killing the SAT.* Inside Higher Ed. https://www.insidehighered .com/admissions/views/2020/08/03/ dropping-standardized-tests-only-one -part-equalizing-college-admissions.

Cengage. (2021). *Digital learning pulse survey:*

*Pandemic-era report card.* `https://cengage.widen.net/view/pdf/ilw9jvg8hs/pandemic-era-report-card-digital-learning-pulse-survey-infographic-1649584.pdf`.

Common App. (2021, March 9). *Application trends through March 1.* `https://mailchi.mp/f3ddd6c16b4a/application-trends-through-march-1`.

Coplan, B., & Evans, B. C. (2021). How organizational culture influences holistic review: A qualitative multiple case study. *Advances in Health Sciences Education*, 1–27. `https://doi.org/10.1007/s10459-021-10055-w`.

Craig, R. (2021, March 5). *Fear and loathing in lottery admissions.* Forbes. `https://www.forbes.com/sites/ryancraig/2021/03/05/fear-and-loathing-in-lottery-admissions/`.

Development Reimagined. (2020, September 8). *Where will Africa's students study abroad in post-COVID19 times?* Forbes. `https://developmentreimagined.com/2020/09/08/where-africans-study-abroad-post-covid19/`.

Dua, A., Law, J., Rounsaville, T., & Viswanath, N. (2020, October 26). *Reimagining higher education in the United States.* McKinsey & Company. `https://www.mckinsey.com/industries/public-and-social-sector/our-insights/reimagining-higher-education-in-the-united-states`.

El-Assal, K. (2020, February 20). *642,000 international students: Canada now ranks 3rd globally in foreign student attraction.* CIC News. `https://www.cicnews.com/2020/02/642000-international-students-canada-now-ranks-3rd-globally-in-foreign-student-attraction-0213763.html`.

Fischer, K. (2020, November 16). *COVID-19 caused international enrollments to plummet this fall. They were already dropping.* The Chronicle of Higher Education. `https://www.chronicle.com/article/covid-19-caused-international-enrollments-to-plummet-this-fall-they-were-already-dropping`.

Gallagher, S., & Palmer, J. (2020, September 29). *The pandemic pushed universities online. The change was long overdue.* Harvard Business Review. `https://hbr.org/2020/09/the-pandemic-pushed-universities-online-the-change-was-long-overdue`.

Grabowski, C. J. (2018). Impact of holistic review on student interview pool diversity. *Advances in Health Sciences Education*, *23*(3), 1–27.

Grow with Google. (2021). *Google career certificates: Job-ready skills you can put to work.* Google. `https://grow.google/certificates/`.

Howell, J., Hurwitz, M., Ma, J., Pender, M., Perfetto, G., Wyatt, J., & Young, L. (2021, June). *College enrollment and retention in the era of COVID.* College Board. `https://research.collegeboard.org/pdf/enrollment-retention-covid2020.pdf`.

Jao, Y. H. (2016). *From standardized testing to the lottery system: An expansion of the class gap in college attendance in South Korea* [Paper presentation]. 2016 Population Association of America Annual Meeting, Washington, D.C., United States. `https://paa.confex.com/paa/2016/mediafile/ExtendedAbstract/Paper5212/KoreaHSEP_JAO.pdf`.

Koenig, R. (2019, July 25). *5 Years since Starbucks offered to help baristas attend college, how many have graduated?* Ed Surge. `https://www.edsurge.com/news/2019-07-25-5-years-since-starbucks-offered-to-help-baristas-attend-college-how-many-have-graduated`.

Koenig, R. (2021a, May 4). *Mapping out a 'credential as you go' – movement for higher education.* Ed Surge. `https://www.edsurge.com/news/2021-05-04-mapping-out-a-credential-as-you-go-movement-for-higher-education`.

Koenig, R. (2021b, April 29). *Tech apprenticeships shift the costs of higher ed from students to employers.* Ed Surge. `https://www.edsurge.com/news/2021-04-29-tech-apprenticeships-shift-the-costs-of-higher-ed-from-students-to-employers`.

Mangan, K., & Parry, M. (2020, August 28). *Northeastern's $50-million bet: The university went big on its reopening gamble. Can it beat COVID-19?* The Chronicle of Higher Education. `https://www.chronicle.com/article/northeasterns-50-million-bet`.

Martel, M., & Baer, J. (2021). *Preparing for the future: the path forward for international educational exchange* (Vol. 4; COVID-19

Snapshot Survey Series). The Institute of International Education. https://www.iie.org/-/media/Files/Corporate/Publications/COVID19_Snapshot4_FINAL2.ashx.

McDonnell Nieto del Rio, G. (2021, May 15). *University of California will no longer consider SAT and ACT scores.* The New York Times. https://www.nytimes.com/2021/05/15/us/SAT-scores-uc-university-of-california.html.

NAFSA. (2018). *Economic value statistics.* https://www.nafsa.org/policy-and-advocacy/policy-resources/nafsa-international-student-economic-value-tool-v2.

Natanson, H. (2020, December 7). *Fairfax superintendent offers final options for reforming TJ admissions.* The Washington Post. https://www.washingtonpost.com/local/education/thomas-jefferson-admissions-reform/2020/12/07/c0b870de-38b2-11eb-bc68-96af0daae728_story.html.

National Association of Colleges and Employers. (2018). *Job outlook 2019.* https://www.naceweb.org/store/2018/job-outlook-2019/.

National Student Clearinghouse Research Center. (2021, April 29). *Stay informed with the latest enrollment information.* National Student Clearinghouse. https://nscresearchcenter.org/stay-informed/.

Nietzel, M. T. (2021a, March 11). *College enrollment declines have continued this spring.* Forbes. https://www.forbes.com/sites/michaeltnietzel/2021/03/11/college-enrollment-declines-have-continued-this-spring/.

Nietzel, M. T. (2021b, March 10). *New data: Applications surge at larger, selective colleges.* Forbes. https://www.forbes.com/sites/michaeltnietzel/2021/03/10/new-data-applications-surge-at-larger-selective-colleges.

Open Doors. (2020). *Fast facts 2020.* Institute of International Education. https://opendoorsdata.org/fast_facts/fast-facts-2020/.

Postsecondary Value Commission. (2021). *Equitable value: Promoting economic mobility and social justice through postsecondary education.* https://www.postsecondaryvalue.org/wp-content/uploads/2021/05/PVC-Final-Report-FINAL.pdf.

QS. (2021). *QS world university rankings 2022.* https://www.topuniversities.com/university-rankings.

Snyder, S. (2021, January 31). *With testing requirements relaxed applications soar at selective colleges.* The Philadelphia Inquirer. https://www.inquirer.com/education/applications-college-students-ivy-league-penn-princeton-20210131.html.

Strada. (2021). *Explore public viewpoint data: COVID-19 work and education survey.* https://cci.stradaeducation.org/explore-public-viewpoint-data/.

Urban Universities for Health. (2014). *Holistic admissions in the health professions: Findings from a national survey.* https://www.aplu.org/members/commissions/urban-serving-universities/student-success/holistic.html.

U.S. Department of Education, & National Center for Education Statistics. (2019, February). *Status and trends in the education of racial and ethnic groups: Indicator 30 employment and earnings.* https://nces.ed.gov/programs/raceindicators/indicator_rfd.asp.

U.S. Department of Education, National Center for Educational Statistics, & Integrated Postsecondary Educational Database. (2019a). 2018-2019 Final release data [Data set].

U.S. Department of Education, National Center for Educational Statistics, & Integrated Postsecondary Educational Database. (2019b). *Digest of education statistics: Table 311.15.* https://nces.ed.gov/programs/digest/d19/tables/dt19_311.15.asp.

U.S. Department of Education, National Center for Educational Statistics, & Integrated Postsecondary Educational Database. (2020). *Digest of education statistics: Table 326.30.* https://nces.ed.gov/programs/digest/d20/tables/dt20_326.30.asp.

U.S. Department of Education, National Center for Educational Statistics, & Integrated Postsecondary Educational Database. (2021). *Digest of education statistics, 2019 (NCES 2021-009), table 226.50.* https://nces.ed.gov/fastfacts/display.asp?id=897.

U.S. Department of Labor and Employment & Training Administration. (2021, January

31). *Registered apprenticeship national results fiscal year 2020. Data and statistics.* https://www.dol.gov/agencies/eta/apprenticeship/about/statistics/2020.

Whistle, W. (2020, September 3). *The Varsity Blues College admissions scandal continues.* Forbes. https://www.forbes.com/sites/wesleywhistle/2020/09/03/the-varsity-blues-college-admissions-scandal-continues/.

Wilson, M. A., Odem, M. A., Walters, T., DePass, A. L., & Bean, A. J. (2019). A model for holistic review in graduate admissions that decouples the GRE from race, ethnicity, and gender. *Life Sciences Education*, *18*(1), 1–12.

Yeravdekar, V., & deWit, H. (2018, July 2). *Increase international students: India's initiative.* Inside Higher Ed. https://www.insidehighered.com/blogs/world-view/increase-international-students-india\%E2\%80\%99s-initiative.

Zhang, J., Li, M., Yee, D., Park, B. J., Bohrnstedt, G., & Broer, M. (2020). *Reading motivation, reading achievement, and reading achievement gaps: Evidence from the NAEP 2015 reading assessment* (AIR-NAEP Working Paper 2020-01). American Institutes for Research.

Zwick, R. (2007, December 17). *Casting lots for college?* Education Week. https://www.edweek.org/leadership/opinion-casting-lots-for-college/2007/12.

Zwick, R. (2021, May 6). *The case against admissions lotteries: The radical idea is appealing in theory but useless in practice.* The Chronical of Higher Education. https://www.chronicle.com/article/the-case-against-admissions-lotteries.