

Occupational Shifts and Higher Education Credentials

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Introduction

Thank you for downloading this joint research report by UPCEA and Chmura Economics & Analytics. Our collective mission is to help our constituents anticipate occupational and economic changes, ultimately helping to bring better educational offerings to society. This report illustrates a number of major occupational shifts in technology, healthcare, and other industries, and their impact on higher education. While new occupational categories are certain to arise, and existing ones may change, UPCEA and Chmura hope to shed greater light on this complex topic.

The U.S. is at a unique period in time. An aging Baby Boomer population, the unique dynamics related to maturing Millennial and Generation Z learners, technological advances, and shifting labor needs are rapidly changing the economic and occupational landscape. Taking these factors into consideration, and coupling them with the country's deeply-rooted four-year degree model, will challenge many institutions to adopt or consider new or alternative educational models.

A Generational Perspective

No discussion of the changing landscape of higher education would be complete without addressing the shifting socioeconomic and cultural landscape. Millennials are now the largest generation in the labor force.¹ More than a third of American workers are Millennials (defined as adults 18-34). Close on their heels is Generation Z (those born 1996 and after) who are already beginning to make their mark in the workforce. Each generation—from the Baby Boomers to Generation Z—had/has different expectations for their educational experiences. Where Boomers and Generation X were traditionalists, Millennials and Gen Z are non-traditional, seeking different learning methodologies and pathways.

In a June, 2017 UPCEA and Blackboard joint report,² researchers found that younger learners (18-35) are not using their degrees in their jobs, leading them to question the value of their education. These respondents also indicated a greater interest in educational, professional and skill-based certificates or badges, seminars and other short-term learning options. Feedback showed that Millennials who did not attend or left school early cited more important obligations, high costs, and the lack of financial aid.

¹ <http://www.pewresearch.org/fact-tank/2016/09/01/8-facts-about-american-workers/>

² <http://upcea.edu/upceablackboard-survey-navigating-generational-shifts-understanding-todays-student-demographics-preferences-and-expectations/>

Many Boomers are beginning to retire, leaving vacancies in the job market, creating workforce changes, and shifting economic power to younger generations. The up-and-coming workforce is much more cost-conscious as education becomes more expensive, student debt reaches record highs (the average Class of 2016 graduate has more than \$37,000 in student loan debt³), and they face greater personal demands.

Generation Z learners are digital natives, socially aware, and both globally- and family-focused, interested in on-demand access to information, fiercely entrepreneurial, and very concerned about accumulating student debt and the prospect of being employed. Some of their parents lost their jobs in the 2008 recession, leaving them wary of company loyalty and interested in self-employment. They are interested in pursuing early professional experience and though they value education, they prefer a self-directed digital model.⁴

Non-Degrees & the Rise of Alternative Credentialing

Though alternative credentialing in the form of certificates, short-term courses, licensing, badges and micro-credentialing has been around for some time, mainstream adoption is a relatively new phenomenon, reflecting student demand, increased engagement with business communities, and the additional revenue stream it provides to universities and colleges.

Alternative credentials have been a staple of for-profit education providers looking for rapid student turn over, but it is rapidly gaining a foothold in more traditional higher educational institutions both to address the needs of students interested in fast and portable evidence of learning, and for the financial benefits they bring to the institution. These diverse credentials provide higher education with the opportunity to partner with local business and industry groups and professional associations to meet the training needs of a specific population in a geographic region.

Alternative credentials are a less expensive alternative to degrees for both providers and students. Adult learners are choosing to forego the traditional four-year degree model for a number of reasons, but much of it has to do with economic concerns: as course and program fees soar, student debt is rising, leaving many students questioning the value of a conventional degree. Weak wage growth, low interest rates, growing income inequality, and globalization⁵ have all contributed to economic uncertainty that filters down to the individual student's purchasing decisions for large ticket items like degrees. Instead they are looking to less time- and cost-intensive educational options.

While students are opting out of the traditional four-year degree because of its high price tag, schools are taking advantage of many of the new technologies developed as a result of investments in edtech over the last decade. Non-credit offerings can also be developed quickly, responding to local or regional employer needs (internal employee professional development) or skills gaps. These non-traditional options may appeal more to cost-conscious learners interested in developing a specific skill set, preparing for a shift in careers, or seeking credentials to stack with existing degrees for professional distinction. A 2014 study⁶ by the U.S. Census Bureau found that 30% of the adult population possesses an alternative credential, often taking advantage of competency-based digital badge series or certificates in a market-driven area of study.

³ <https://studentloanhero.com/student-loan-debt-statistics/>

⁴ Ologie special report: This is Gen Z, 2015

⁵ <https://www.forbes.com/sites/oliviergarret/2017/02/23/how-to-break-out-of-the-stagnant-wage-growth-trap/2/#64a6c5023691>

⁶ <http://www.usatoday.com/story/news/nation/2014/07/11/nanodegrees-alternative-credentials/11236811/>

Detailed Findings: Awards

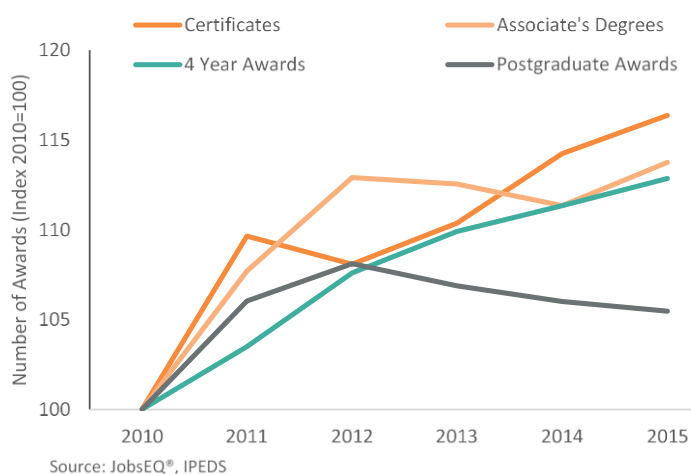
One key indicator that higher education must pursue a proactive approach to educational options for the adult learner is that the U.S. is seeing a drop in higher education enrollment rates despite higher high school graduation rates.⁷ Similarly, award data from the last five years indicates a growing interest in certificate programs linked to the most in-demand occupations. Certificate awards expanded faster (16%) than associate’s degrees, four-year awards, and postgraduate awards for the years 2010-2015. This finding supports earlier research conducted by UPCEA and Pearson³ showing growth in alternative credentialing.

The number of associate’s degrees awarded rose 14%, while bachelor’s and post-baccalaureate degrees rose 13%, and postgraduate awards grew 5%. Certificates of less than one year jumped 19% over this period, as did certificates of more than one year but less than two years. However, certificates of two years but less than four years declined by 25%.⁸ The UPCEA/Pearson research showed that in 2016, a significant amount of alternative credentialing activity was being conducted by larger, more resourced institutions. The study also showed that in 2017, smaller institutions began offering alternative credentials.

For several years, private sector players like Udemy, Udacity, edX, Coursera, LinkedIn, and scores of privately-led accelerated coding bootcamps controlled the lion’s share of the talent development and skills progression in alternative credentialing through MOOCs and other online programs. The online hospitality service company Airbnb even started its own university to teach its employees data science.⁹ While these organizations stepped in to meet the need for lower cost/faster turnaround education, none of these private providers have been able to offer accreditation for their alternative credentials. Now that certificates, badges and other non-degree credentials have earned greater acceptance, accredited higher education institutions may be better able to adapt and provide this missing element to adult learners.

Many schools are responding by offering fast-track, non-degree courses that get trained students into the workforce faster, but that can also be easily scaled back or dismantled when the supply of workers meets industry need. The significant first step is identifying those industries projected to grow quickly, driving

Figure 1: Awards of Certificates Outpaced Other Awards (2010-2015)



⁷ UPCEA/Pearson Presentation – June 14, 2017

⁸ Examples of certificates of more than two years but less than four include cosmetology, auto technician, airframe mechanics, and registered nursing.

⁹ <https://techcrunch.com/2017/05/24/airbnb-is-running-its-own-internal-university-to-teach-data-science>

demand for occupations and skills, and the education needed to fill those jobs.

Chmura's JobsEQ® platform has identified high growth areas for the next 10 years in response to specific social and economic needs.¹⁰ For example, healthcare and social assistance (elder care, biotech, pharmaceutical, home health, rehabilitation care) will grow to accommodate the large numbers of retiring Baby Boomers and the attrition of employees retiring or moving to new occupations. Similarly, technological advances and innovations are creating more opportunities in areas as diverse as virtual reality, video games, drones, and translation and interpretation services.¹¹ Chmura also points out that replacement demand will play an important role in job growth as new employees take over jobs vacated by retiring professionals.¹²

Detailed Findings: Jobs

While many highly-skilled jobs will continue to require a minimum four-year degree, those occupations that make up the largest part of America's labor market are often defined as "middle-skill" jobs that require education beyond high school, but not a four-year degree. Many of these are manufacturing jobs with companies that discovered offshoring was expensive and managing skilled labor at a distance was difficult.¹³ Many traditional colleges and universities are not adequately addressing the economic or personal student needs in these areas, leaving a skills gap between job availability and accessible training. Demand for these jobs is strong and expected to remain so through 2024.¹⁴

Likewise, employment in the healthcare and social assistance sector and the professional, scientific, and technical services sector is projected to be some of the fastest growing over the next 10 years. Total employment in healthcare is projected to grow at an average annual rate of 1.9% over the same period, while employment in professional services is projected to grow at an annual rate of 1.2%. The top 10 industries driving this growth are all forecast to grow by at least an average annual rate of 2.0%.

¹⁰ <http://www.chmuraecon.com/blog/2017/may/02/economic-impact-health-care-and-retail-jobs-will-be-in-deman-during-the-next-10-years/>

¹¹ <https://www.gobankingrates.com/investing/fastest-growing-industries-invest-2017/>

¹² <http://www.chmuraecon.com/blog/2017/july/10/computer-science-jobs-on-the-rise/>

¹³ <https://www.usatoday.com/story/news/nation/2014/09/30/job-economy-middle-skill-growth-wage-blue-collar/14797413>

¹⁴ <http://www.nationalskillscoalition.org/state-policy/fact-sheets>

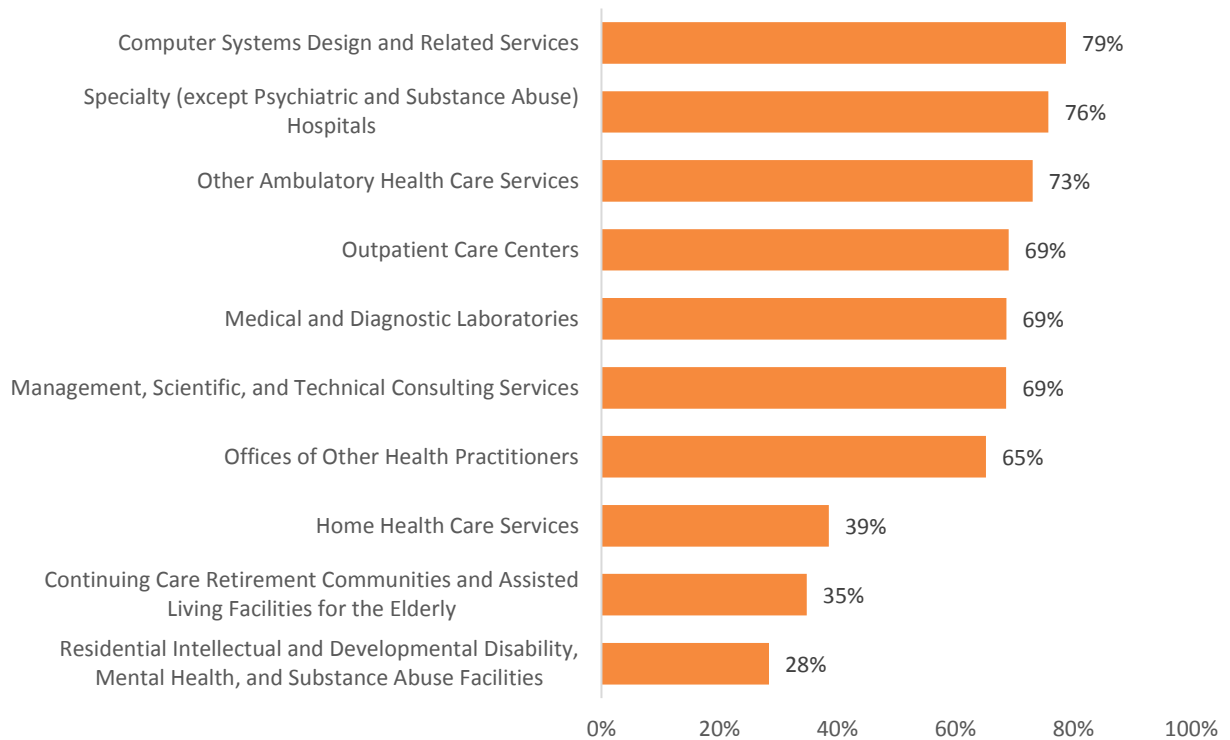
Table 1 – Top 10 Healthcare and Professional Services Industries with the Fastest Employment Growth Forecasts

NAICS	Industry	Four Quarters Ending 2016Q4		Forecast Over the Next 10 Years	
		Employment	Avg. Annual Wages	Total Growth Demand	Avg. Annual Growth Percent
6216	Home Healthcare Services	1,506,807	\$29,294	903,796	4.8%
6233	Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly	911,977	\$26,916	435,902	4.0%
6213	Offices of Other Health Practitioners	1,023,143	\$45,148	468,522	3.8%
6214	Outpatient Care Centers	918,003	\$61,340	403,448	3.7%
6219	Other Ambulatory Healthcare Services	326,475	\$43,647	128,519	3.4%
6215	Medical and Diagnostic Laboratories	273,282	\$60,521	87,209	2.8%
6232	Residential Intellectual and Developmental Disability, Mental Health, and Substance Abuse Facilities	726,825	\$31,140	204,728	2.5%
6223	Specialty (except Psychiatric and Substance Abuse) Hospitals	261,496	\$63,073	61,286	2.1%
5416	Management, Scientific, and Technical Consulting Services	1,602,827	\$88,669	422,123	2.4%
5415	Computer Systems Design and Related Services	2,083,154	\$105,873	473,519	2.1%

Source: JobsEQ®

Many of the jobs that will need to be filled in these growing sectors typically require a postsecondary award (such as a certificate, associate’s degree, or higher) to enter, but not all. As shown in the chart below, only about a quarter of the jobs in residential intellectual and developmental disability, mental health, and substance abuse facilities typically require a postsecondary non-degree award or higher. In contrast, nearly 80% of those employed in computer systems design and related services are in jobs that typically require at least a post-secondary non-degree or higher.

Figure 2: Percentage of Occupations within Healthcare and Professional Services Industries Typically Requiring at Least a Postsecondary Non-Degree Award for Entry



Source: Chmura Economics & Analytics, JobsEQ®

Occupations in the top 10 healthcare and professional services industries are forecast to grow at varying rates. Of the 678 occupations detailed in these industries, 24 account for a significant share of employment (greater than 1%). Of those, 15 typically require at least a postsecondary non-degree, and 14 are forecast to exceed an average growth rate of 2% over the next 10 years (Table 2).¹⁵ Four typically only require a postsecondary non-degree.

¹⁵ Employment of computer programmers is projected to decline due to offshoring. <https://www.bls.gov/ooh/computer-and-information-technology/computer-programmers.htm#tab-6>

Table 2 – Occupations with the Fastest Projected Employment Growth Within Top 10 Healthcare and Professional Services Industries

SOC	Occupation Title	10-Year Growth Demand	10-Year Average Annual Growth	Typical Entry-Level Education Required
29-1123	Physical Therapists	70,333	4.4%	Doctoral or professional degree
29-2061	Licensed Practical and Licensed Vocational Nurses	99,918	4.2%	Postsecondary non-degree award
29-1141	Registered Nurses	235,104	4.1%	Bachelor's degree
31-1014	Nursing Assistants	167,375	4.0%	Postsecondary non-degree award
31-9092	Medical Assistants	55,859	3.6%	Postsecondary non-degree award
29-2041	Emergency Medical Technicians and Paramedics	55,341	3.6%	Postsecondary non-degree award
13-1161	Market Research Analysts and Marketing Specialists	39,352	3.2%	Bachelor's degree
11-3021	Computer and Information Systems Managers	32,651	3.0%	Bachelor's degree
15-1121	Computer Systems Analysts	72,535	2.9%	Bachelor's degree
11-1021	General and Operations Managers	50,595	2.7%	Bachelor's degree
15-1132	Software Developers, Applications	95,281	2.7%	Bachelor's degree
15-1133	Software Developers, Systems Software	46,959	2.7%	Bachelor's degree
11-9199	Managers, All Other	31,491	2.5%	Bachelor's degree
13-1111	Management Analysts	80,138	2.4%	Bachelor's degree

Source: JobsEQ®

The awards related to these occupations conferred over the last five academic years reveal trends in specific occupations. Certificates and four-year awards for computer systems analysts have been increasing and offsetting recent declines in associate’s degrees—note the relatively slower growth of awards for associate’s degrees in Table 3.

Similarly, for awards related to software developers, both application and systems, the number of four-year awards has been increasing steadily since 2010, and related certificates have jumped nearly 75%. Associate’s degrees, however, have stayed relatively flat in comparison. Some of the largest and fastest growing certifications include information technology, computer graphics, and computer programming.

Table 3 – Percent Change in Related Awards Conferred, Academic Year 2010 – 2015

SOC	Occupation Title	Total	Certificates	Associate's	4-Year	Post-graduate
13-1111	Management Analysts	104%	204%	117%	98%	98%
11-1021	General and Operations Managers	105%	200%	116%	99%	101%
11-9199	Managers, All Other	108%	196%	122%	105%	102%
13-1161	Market Research Analysts and Marketing Specialists	100%	185%	92%	97%	113%
11-3021	Computer and Information Systems Managers	145%	175%	107%	150%	151%
15-1132	Software Developers, Applications	170%	174%	131%	184%	171%
15-1133	Software Developers, Systems Software	158%	173%	111%	170%	164%
15-1121	Computer Systems Analysts	132%	157%	90%	141%	171%
29-2041	Emergency Medical Technicians and Paramedics	108%	103%	143%	236%	62%
31-1014	Nursing Assistants	95%	96%	210%	20%	5%
29-2061	Licensed Practical and Licensed Vocational Nurses	82%	83%	92%	26%	9%
29-1141	Registered Nurses	137%	66%	103%	165%	186%
31-9092	Medical Assistants	72%	65%	116%	35%	171%
29-1123	Physical Therapists	122%	46%	1475%	141%	121%

Source: JobsEQ®

While national data provide good insights into demand occupations for the U.S., the type of industries concentrated in a region will lead to different results for higher education institutions with a smaller footprint.

Conclusions

Economic and generational shifts are now bringing about a win-win opportunity for higher education. The occupations predicted to face the greatest growth, and younger adult learners' interest in reducing their education expenses and preference for faster, focused learning, suggest that universities and colleges will find this the ideal time to make the leap (or expand their offerings) into alternative credentialing. New tuition revenue streams and the prospect of expanding brand recognition into new markets make certificates and badges viable, flexible alternatives to traditional four-year degrees in many instances. By diversifying their offerings (badges, micro-credentialing, asynchronous lectures, etc.) schools can meet the needs of learners, while also offering a new pathway for professional development for local businesses and professional and industry groups.

Key Findings and Recommendations

- The economy is shifting faster than the educational model.
- Despite decades of encouraging all young learners to enroll in four-year colleges, it is now clear that some need/prefer alternative learning methods.
 - Higher education enrollments are decreasing while enrollments in alternative credentialing (including certificates, badges, licenses, etc.) and associate's degrees are on the rise.
 - Alternative credentialing is an effective way to develop "middle skills" for today's blue-collar jobs.
- Two of the fastest growing fields in the next decade are predicted to be healthcare and professional services.
- Alternative credentialing's growth is directly tied to its ability to meet the needs of adult learners, but it also has inherent value for the colleges and universities that choose to embrace it.
- Today's adult learners have different priorities and preferences than past generations—they want greater flexibility, shorter commitments, more options, and studies that bring value immediately.
- For-profit/private sector entities staked out alternative credentialing early on, but the market is large enough to accommodate colleges and universities that wish to supply non-degree programming—and they have the brand recognition, size, and resources to reach larger populations.

About the Authors

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Christine Chmura is the founder of Chmura Economics & Analytics in 1999. She has served as a keynote speaker for national and international conferences, and is a quoted source in the media on regional and national economic trends throughout the nation. Before founding and running Chmura Economics & Analytics, she was a chief economist for SunTrust Bank for almost a decade. She holds a Ph.D. in finance and economics from Virginia Commonwealth University.

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Patrick Clapp is an economist at Chmura Economics & Analytics. He has been with Chmura for over four years, with experience spanning workforce and economic development, training alignment, strategic planning, and economic forecasting. He has worked with clients in 17 states, including state and local workforce development boards, economic development organizations, postsecondary education institutions, and private industry. Patrick holds a dual B.A. degree in economics and government from the College of William and Mary.

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Jim Fong is the Director of UPCEA's Center for Research and Strategy. The Center primarily addresses the need for market research and benchmarking information among over 400 UPCEA member colleges and universities. Prior to UPCEA, he held leadership positions at Penn State Outreach and a number of consulting and analytics companies. He holds an M.S. in statistics, an MBA with a concentration in marketing and business strategy, and a B.S. in mathematics from the University of Vermont.

About UPCEA

UPCEA is the leading association for professional, continuing, and online education. Founded in 1915, UPCEA now serves most of the leading public and private colleges and universities in North America. For more than 100 years, the association has served its members through its Center for Research and Strategy, National Council for Online Education, innovative conferences and specialty seminars, professional networking opportunities, and timely publications. The Center for Research and Strategy is the research and consulting arm of the association, formed to meet the research needs of its members.

About Chmura Economics and Analytics

Chmura Economics and Analytics is a leader in providing the education, business and government sectors with economic and analytical consulting. It also offers JobsEQ, an industry leading platform bringing a research team approach to client assignments and Chmura products, delivering a broad spectrum of expertise to solve problems and answer questions. Chmura's economists conduct primary research, investigate prior art, and create custom forecasting and economic models. Its mathematicians and statisticians analyze primary and secondary data and ensure data integrity while data scientists develop technology solutions to deliver data and create visualizations to help tell the story of the data. Chmura's strategic planners develop implementation plans to move from data-driven analysis to action plans.