



UTAH SYSTEM OF
HIGHER EDUCATION

LEGISLATIVE BRIEF

January 2022

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Career and Technical Education Annual Report, 2021

Career and technical education (CTE) programs focus on the knowledge and skills required to work in specific jobs or careers. CTE programs within the Utah System of Higher Education result in postsecondary certificates or associate degrees and are vital to the success of Utah's economy. CTE programs produce health care workers to staff our hospitals, craftsmen and women to build our homes, software developers to support our interconnected world, inspectors to assure the safety of our infrastructure, truck drivers to keep our store shelves stocked, and innumerable other positions that add to our quality of life.

CTE programs are offered by Utah's technical colleges, community colleges, and universities alike in all regions of the state. USHE ensures that career and technical education offerings meet the needs of local employers through direct and frequent engagement with business leaders throughout the state. As industry needs change, employers advise college and university staff on recommended updates to curricula, equipment, and expected outcomes, ensuring that graduates are well-prepared and in-demand in today's economy.

This report examines how USHE provides low-cost CTE offerings to adult and high school students and discusses the workforce outcomes of Utah's CTE graduates. The report also highlights how the Utah System of Higher Education is working to better meet employers' needs for a technically skilled labor force and provides recommendations to further enhance the provision of career and technical education in this state.

FY 2021 Highlights

The 2020-21 academic year saw the merger of Utah's degree-granting institutions and technical colleges under one governing body, the Utah Board of Higher Education. This report represents the unified efforts of the entire system of higher education in providing career and technical education offerings to Utah students. Where noted, prior years' data have been updated from what has been reported previously to reflect this merger.

In 2020-21, USHE institutions provided CTE instruction to 3.17% more full-time equivalent students than in the 2019-20 academic year. This growth is driven mostly by expanded clock-hour technical education programs. Hours of instruction in these programs grew by 13.36% this past year (see Table 1).

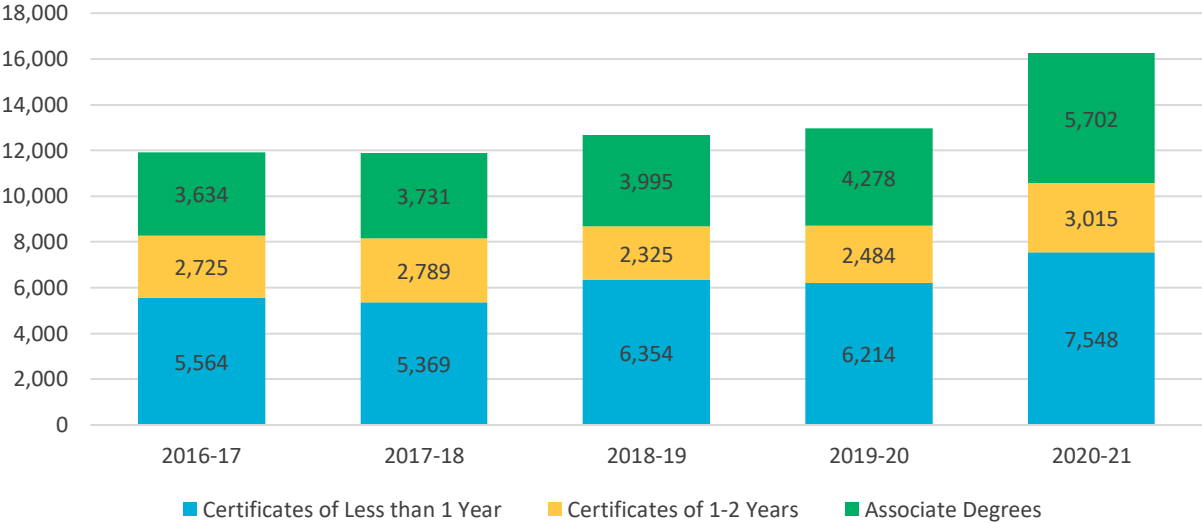
Table 1: USHE Career and Technical Education – Headcount, Credit Hours, Clock Hours, & Student Full-time Enrollment by Year			
	2018-19	2019-20	2020-21
Credit Hours – Regular	531,428.5	536,897.5	540,105.5
Credit-based Student FTE (Credit Hours/30)	17,714	17,897	18,004
Non-credit Clock Hours	4,275,639	4,073,859	4,618,272
Non-credit Student FTE (Clock Hours/900)	4,751	4,527	5,131
Total Credit Hours Equivalent [Credit Hours + (Clock Hours/30)]	673,950	672,693	694,048
Total Student FTE	22,465	22,424	23,135
Total CTE Student Headcount ‡	85,925	85,451	85,912

***Note: Non-credit clock hour totals for the 2018-19 and 2019-20 academic years represent degree-granting institutions' previously reported figures, plus data from Utah's technical colleges which were previously governed separately. Totals here reflect non-Concurrent Enrollment CTE offerings provided by Utah's degree-granting institutions, plus technical college postsecondary enrollments in programs approved by the Council on Occupational Education (COE). Concurrent Enrollment and secondary students enrolled in COE-approved programs are reported in Table 2, *Secondary Enrollment in USHE CTE Offerings*, below.

‡ Total CTE student headcounts include individuals who enrolled at multiple institutions and who may be counted more than once due to challenges inherent to collecting and maintaining a statewide student identifier.

The 2020-21 academic year saw USHE institutions award more CTE certificates and degrees than at any time previously. Of all CTE awards earned by students, 35% were for associate degrees, 18% were for certificates lasting between one and two years in length, and 46% were for the shortest of certificates lasting less than one year in length (note that percentages are rounded; see Figure 1).

Figure 1: Total CTE Certificates & Degrees Awarded



CTE Offerings to High School Students

USHE institutions provide career and technical education to secondary students through direct enrollment at the technical colleges, or through Concurrent Enrollment coursework provided by degree-granting institutions in Utah high schools and on college campuses. Regardless of which option is used, high school students can earn college credit toward postsecondary certificates and degrees at a fraction of the regular cost of tuition. Some students are even able to earn full postsecondary awards before graduating from high school.

Table 2: Secondary Enrollment in USHE CTE Offerings

College/University	Secondary Headcount Enrolled in CTE Certificate/Degree Coursework	CTE Credits or Equivalent (average credits per student in parentheses) ‡	Secondary CTE Program Graduates
Bridgerland Technical College	106	518 (4.89)	106
Davis Technical College	1,903	13,265 (6.97)	276
Dixie State University	2,181	6,596 (3.02)	41
Dixie Technical College	161	1,510 (9.38)	69
Mountainland Technical College	1,275	14,296 (11.21)	630
Ogden-Weber Technical College	908	7,683 (8.46)	120
Salt Lake Community College	4,614	20,678 (4.48)	6
Snow College	942	4,234 (4.49)	72
Southern Utah University	352	1,128 (3.20)	0
Southwest Technical College	337	1,366 (4.05)	70
Tooele Technical College	284	1,928 (6.79)	25
Uintah Basin Technical College	1,124	5,899 (5.25)	343
Utah State University	1,447	6,220 (4.30)	0
Utah Valley University	6,248	23,068 (3.69)	0
Weber State University	9,162	39,715 (4.33)	18
Total	31,044	148,104 (4.77)	1,776

***Note: Totals here represent CTE concurrent enrollment offerings from degree-granting institutions, or direct enrollment of high school students at technical colleges in programs approved by the Council on Occupational Education (COE). Note also that Uintah Basin Technical College awarded 14 additional certificates to secondary students in FY 2021 that are not reflected here, as those programs, though approved by COE, are approved for secondary students only and are not considered postsecondary awards.

‡ Instruction measured in clock-hours has been converted to a credit hour equivalent using a 30:1 clock-hour to credit-hour ratio.

In total, USHE institutions counted 1,776 CTE graduates among secondary students enrolled at Utah's public colleges and universities during the 2020-21 school year. Seven of these awards were associate degrees, with the other 1,769 being postsecondary certificates of varying lengths. These students are graduating high school with postsecondary CTE credentials already in-hand, with the skills necessary to immediately enter Utah's workforce if they so desire. Many of these credentials will also stack into higher-level awards for those wishing to continue their college education.

Alignment with Industry

In May 2021, the Utah Board of Higher Education adopted a new strategic plan to guide the higher education system in its efforts over the next several years. The Board's strategic plan focuses on six key priorities: (1) system unification, (2) access, (3) affordability, (4) completion, (5) workforce alignment, and (6) research. Specific to the fifth priority on workforce alignment, the Board of Higher Education has established a goal to increase the share of college and university awards that are associated with specific high-wage and high-demand careers in Utah by 3% within the next five years, and by 4% for students from underrepresented demographics.

To achieve the Board's goals, institutions have identified three main strategies that will drive students to complete highly demanded educational programs:

1. First, institutions aim to increase participation in the higher education system among adults with and without a high school diploma. By increasing enrollments, specifically among adults who could benefit most from additional education, USHE will be providing industry with a larger pool of candidates qualified to fill vital job openings.
2. Second, colleges and universities are to increase student participation in work-based learning opportunities. Work-based learning benefits all parties: students are given valuable career experience, the opportunity to develop positive work habits, and expanded professional networks; educators can more closely align program curricula to local industry needs as expressed by experience providers; and employers are able to tap into a rich pool of potential hires. By expanding opportunities for work-based learning, students can get real-world experience working in Utah's most highly demanded careers.
3. Lastly, USHE institutions are to ensure that students are meaningfully informed on the value and the return on investment of higher education. As students understand the expected workforce outcomes associated with specific educational programs, a greater share will choose pathways leading to Utah's most sought-after careers.

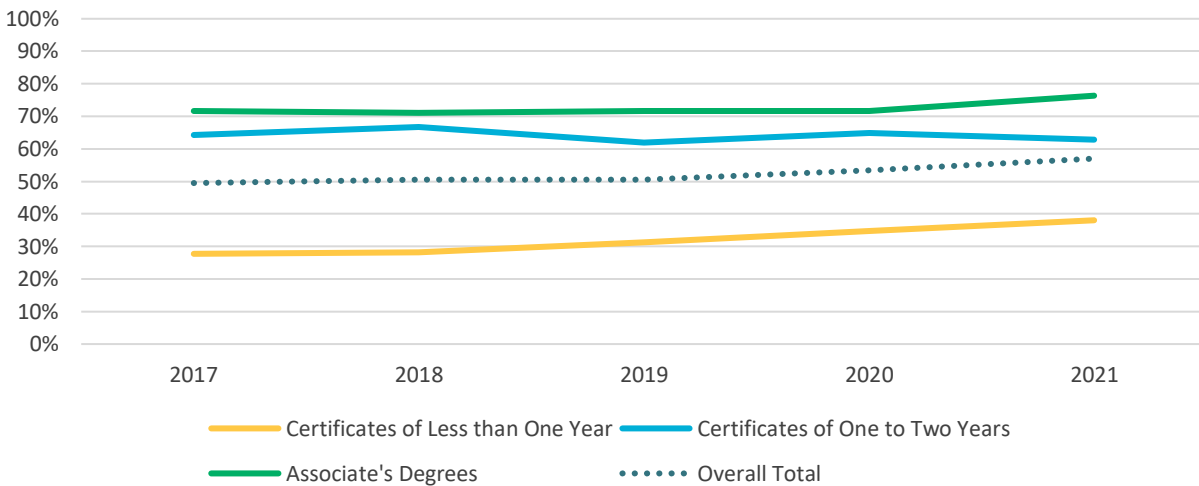
To track progress in meeting the Board's goals, the Utah System of Higher Education has identified specific educational programs at each of Utah's 16 public colleges and universities that lead to high-wage and high-demand careers. These careers are identified as 4- and 5-star jobs in the Utah Department of Workforce Services' biennial star rankings and have a good employment outlook and relatively high wages. Examples of these high-wage and high-demand programs are shown in Table 3.

Table 3: Top 10 Largest CTE Programs Leading to High-wage and High-demand Jobs, 2021

Associate Degrees		Certificates	
Program	Graduates	Program	Graduates
Business Administration & Management	913	General Computer & Information Sciences	615
Registered Nursing/Registered Nurse	861	Welding Technology/Welder	465
General Computer & Information Sciences	482	Automotive Mechanics Technology	393
Business/Commerce	278	Licensed Practical/Vocational Nurse Training	390
Design & Visual Communications	175	Truck & Bus/Commercial Vehicle Operator	341
Radiologic Technology/Science	152	Computer Programming/Programmer	246
Airline/Commercial/Professional Pilot & Crew	131	Electrician	211
Early Childhood Education & Teaching	126	Web Page, Digital/Multimedia Design	171
Automotive Mechanics Technology	61	Real Estate	164
General Engineering	60	Computer Systems Networking & Telecomm	154

USHE aims to increase the overall share of certificates and degrees coming from high-wage and high-demand programs by 3% by 2027. Viewing data from the last five years, between 50% and 60% of all CTE awards lead to 4- and 5-star jobs, but there is a significant difference when looking at differing award levels (see Figure 2). While 76% of CTE associate degrees awarded in 2021 can lead to a high-wage and high-demand job only 42% of certificates lasting less than one year in length do so.

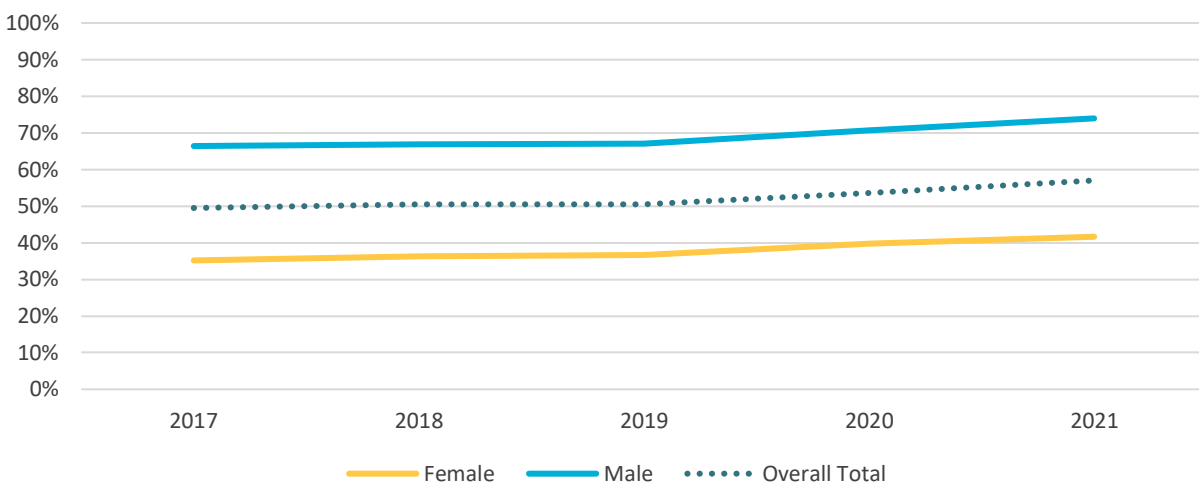
Figure 2: Share of CTE Graduates from High-wage and High-demand Programs, by Award Level



Such a large disparity is not due to a dearth of job opportunities for graduates of the shortest of certificate programs. Rather, the wages that these graduates can expect to earn are not sufficiently high for their jobs to be considered high-wage and high-demand in DWS' star rankings (see Figure 5 for graduates' one-year wages stratified by certificate or degree received). However, many of these programs offer credentials that are stackable in a pathway that ultimately leads to a high-wage and high-demand career. For example, a nursing assistant program is not considered high-wage but is the first step in a pathway that includes an associate degree in registered nursing, which corresponds to a DWS 5-star job.

For historically underrepresented students, USHE aims to increase the overall share of certificates and degrees coming from high-wage and high-demand programs by 4% by 2027. This population of students includes those of non-white racial backgrounds, in addition to women. When looking at all career and technical education certificates and associate degrees awarded over the past five years, there has been an average 31% gap between men and women in their shares of awards coming from programs leading to 4- and 5-star jobs (see Figure 3). By educating students on specific programs’ return on investment, USHE hopes to encourage more women to enter coding, machining, and other programs that lead to in-demand and high-paying careers.

Figure 3: Share of CTE Graduates from High-wage and High-demand Programs, by Gender



Workforce Outcomes

The Utah System of Higher Education analyzes the workforce outcomes of its CTE graduates through data matching with the Utah Department of Workforce Services’ unemployment insurance wages data system. While DWS’ UI wage system does not include information on self-employed individuals or federal or non-profit workers, the system is sufficiently robust to provide valuable insight into the labor market outcomes of USHE graduates.

Career and technical education program completion has an immediate effect on graduates’ employment status. The share of students who are employed increases sharply upon completion of a CTE credential, as almost 9% more students from the 2020 cohort year were employed during the quarter after graduation than were employed in the quarter immediately prior to graduation. Disaggregating by CTE award level, we see the greatest immediate gains in employment among those enrolled in certificate programs lasting between one and two years. These students saw an increase of over 12% in the share of individuals employed from the quarter before to the quarter after graduation (see Figure 4). In total, over 85% of

adult 2020 career and technical education graduates were employed in the state of Utah in the first year after graduation, with 77% of graduates employed in the very first quarter after graduation (see Table 4).

Figure 4: CTE Graduates' Workforce Retention, 4 Quarters Pre- to 8 Quarters Post-Graduation

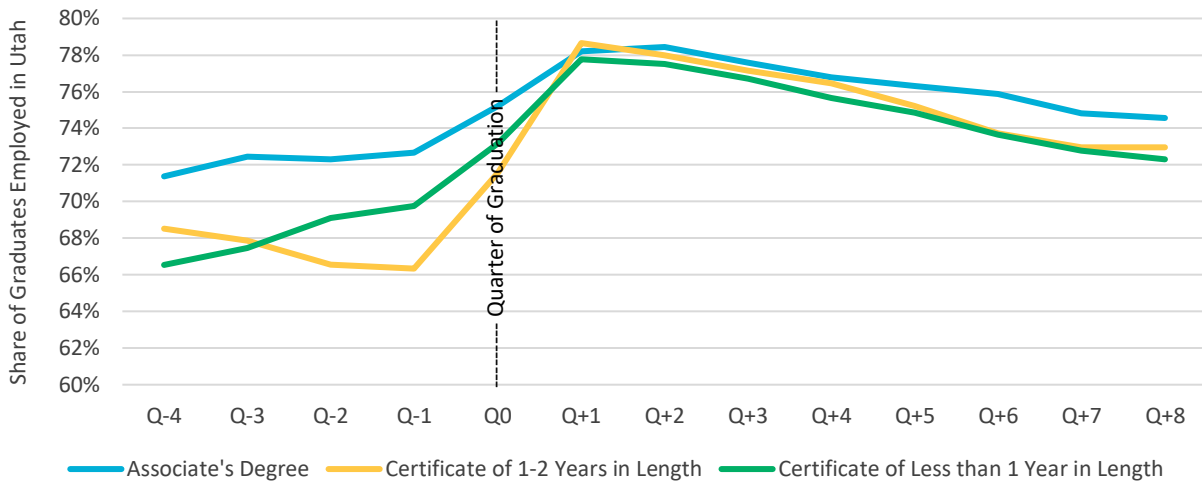


Table 4: USHE CTE Job Placement Rate by Area of Study

Classification of Instructional Program (CIP) Group	Placement Rate
Agricultural/Animal/Plant/Veterinary Science and Related Fields	83.33%
Architecture and Related Services	93.33%
Business, Management, Marketing, and Related Support Services	84.68%
Communication, Journalism, and Related Programs	85.71%
Communications Technologies/Technicians and Support Services	85.19%
Computer and Information Sciences and Support Services	81.11%
Construction Trades	92.49%
Culinary, Entertainment, and Personal Services	80.15%
Education	86.59%
Engineering	79.65%
Engineering/Engineering-Related Technologies/Technicians	74.70%
Family and Consumer Sciences/Human Sciences	90.70%
Health Professions and Related Programs	87.84%
Homeland Security, Law Enforcement, Firefighting and Related Protective Services	89.82%
Legal Professions and Studies	72.41%
Mechanic and Repair Technologies/Technicians	86.49%
Parks, Recreation, Leisure, Fitness, and Kinesiology	100.00%
Precision Production	83.61%
Science Technologies/Technicians	84.85%
Transportation and Materials Moving	81.44%
Visual and Performing Arts	79.58%
Overall Placement Rate	85.27%

***Note: Some programs are omitted above due to *n* sizes of fewer than 10 students.

Figure 4 illustrates workforce retention in the two years immediately following graduation from a CTE program. Retention is expected to decrease as time passes, as many graduates will leave the labor force to

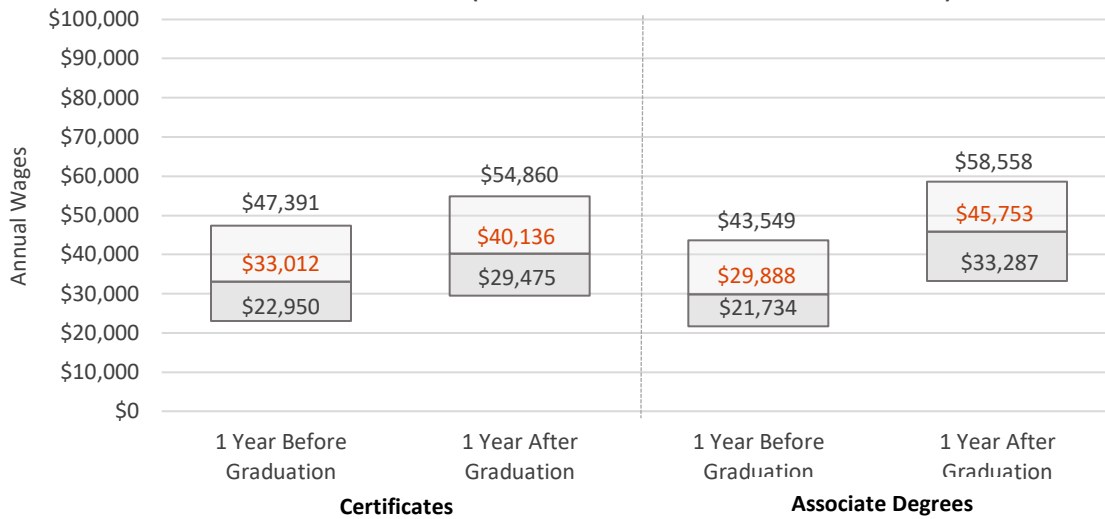
enroll in further education, to raise a family, to move out of state, or through death. This is observed in the downward slopes in the share of students found in DWS wage records from one to eight calendar quarters after graduation. However, CTE graduates' job retention remains high, as fully 73% of graduates are still found in the Utah labor force two years after completing their programs. Associate degree recipients have the highest job retention rates, though CTE certificate recipients' job retention rates are only 2% lower.

Interestingly, Figure 4 shows that 2020 associate degree recipients worked before graduation in higher rates than students who completed certificate programs. Also surprising, for students enrolled in programs lasting less than one year (including nursing assistant, emergency medical technician, commercial truck driving, pharmacy technician, and construction programs), there is no decline in employment rates in the year leading up to graduation. One could expect that workforce participation would decline as students forego employment to enroll in schooling, with that decline being visible in the year before graduation for students enrolling in programs lasting only a few months. But in reality, there is no dip in workforce participation in the quarters before short-term certificate graduates enroll; students are, in large part, opting to continue their employment while working toward graduation, regardless of the length of CTE credential sought.

In addition to graduates placed in Utah's workforce, almost 3.5% of unplaced 2020 graduates continued their enrollment at USHE institutions after completing their CTE programs. In total, only 11% of USHE CTE students do not appear in USHE enrollment or DWS employment files in the year after graduation, meaning they received employment out of state, secured employment with an organization that does not report wages to DWS, enrolled in a non-USHE institution, or their status is otherwise unknown.

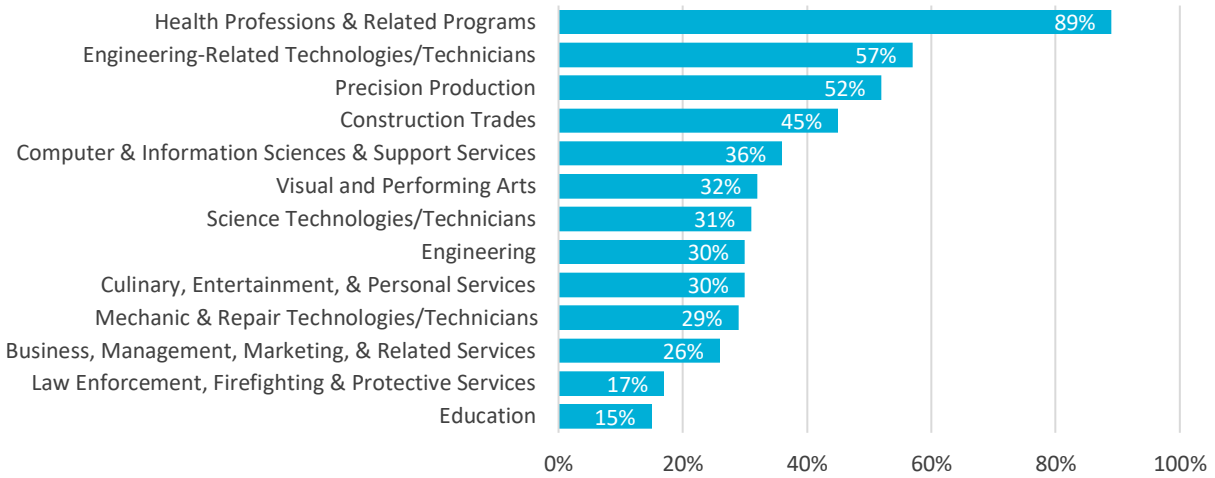
Salaries for CTE graduates are shown to significantly increase upon completing their credential programs (see Figure 5). For graduates of certificate programs already working in the year before graduation, median annual salaries rose from \$33,012 to \$40,136 in the year after graduation, an increase of 21.58%. Recipients of associate degrees saw an even greater bump in wages, as their annual median annual earnings rose from \$29,888 in the year before graduation to \$45,753 in the year after, and increase of 53.08%. This observation aligns with prior USHE research showing the graduates can expect higher wages with each successive level of credential obtained.

Figure 5: CTE Graduates' Median Wages, One Year Before and After Graduation (with 25th and 75th Percentiles)



The immediate returns on students' investment in a CTE credential are striking. Figures 6 and 7 show observed wage growth from the year prior to graduation to the year after graduation from various specific programs and at different award levels. These figures analyze wage growth among students who worked in all four quarters in the years prior to and after graduation, and whose annual salaries surpassed \$15,080, the expected income of someone working full-time at the federal minimum wage. 2020 graduates from associate degree programs in the health professions realized the largest gains in annual salaries from the year before to the year after graduation, as graduates' wages increased by an average of 89%. Engineering-related technologies, precision production, construction trades, and computer and information science programs round out the top five programs with the highest real salary gains. Note, however, that because DWS wage records do not include the number of hours worked per week, we are unable to see how wages increased for those already working full-time compared to those who jumped from part- to full-time employment after graduation.

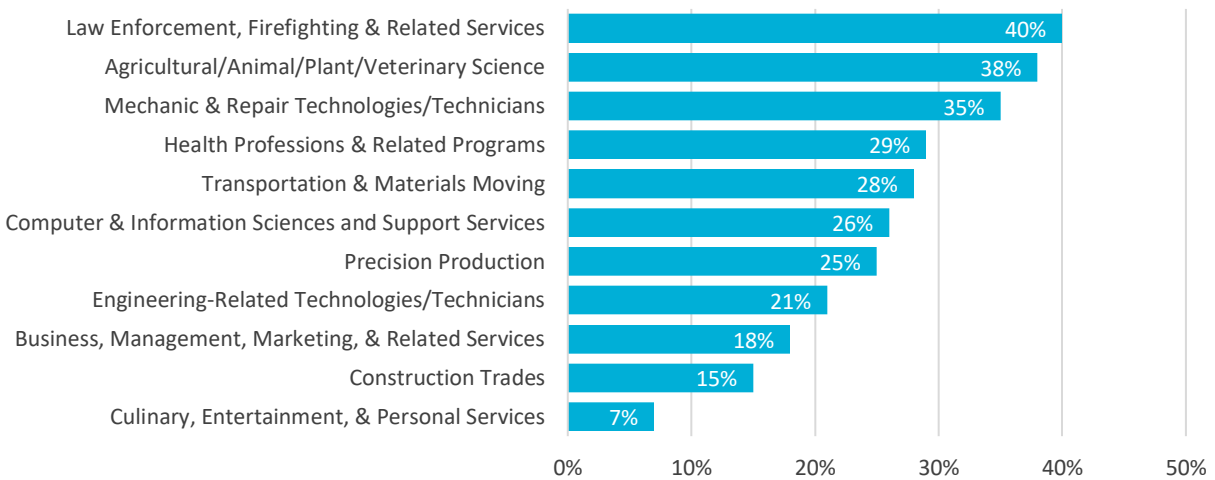
Figure 6: Wage Growth, One Year Before to One Year After Graduation with a CTE Associate Degree



***Note: Some programs are omitted above due to *n* sizes of fewer than 10 students.

Graduates from certificate programs also realized significant gains to wages from the year prior to the year after graduation, though not to the extent that associate degree recipients did. Law enforcement and firefighting graduates saw the largest real increases in wages, followed by completers of agricultural/animal sciences and mechanic and repair technologies programs. Of note, not a single CTE program, regardless of whether resulting in an associate degree or certificate, saw a decline in average wages from the year before to the year after graduation.

Figure 7: Wage Growth, One Year Before to One Year After Graduation with a Postsecondary CTE Certificate



***Note: Some programs are omitted above due to *n* sizes of fewer than 10 students.

Tuition and Fees

During the 2020-21 academic year, full-time tuition and fees for credit-based CTE programs ranged from \$1,965 to \$3,829 per semester across Utah’s public colleges and universities. According to the College Board, tuition at Utah’s public universities currently ranks fourth lowest in the nation, with full-time tuition and fees averaging \$7,390 per year, fully \$3,350 less than the national average of \$10,740¹. Even still, the Utah Board of Higher Education has adopted a strategic goal to remove structural barriers to affordability. To this end, USHE is committed to increasing FAFSA completion, evaluating and prioritizing state-sourced student financial aid, and expanding shared services across the system of higher education to reduce institutional costs.

Many USHE institutions offer technical certificate programs in a competency-based format wherein tuition is assessed per contact hour. Table 6 shows tuition rates for these programs, with an estimate of tuition expenses for a one-year (900 hour) certificate.

College/University	FY 2021 Tuition, per Contact Hour	Tuition for a 1-year (900 Hour) Certificate Program
Bridgerland Technical College	\$2.00	\$1,800
Davis Technical College	\$2.10	\$1,890
Dixie Technical College	\$2.25	\$2,025
Mountainland Technical College	\$2.10	\$1,890
Ogden-Weber Technical College	\$2.00	\$1,800
Salt Lake Community College	\$2.40	\$2,160
Snow College	\$2.00	\$1,800
Southwest Technical College	\$2.00	\$1,800
Tooele Technical College	\$2.00	\$1,800
Uintah Basin Technical College	\$2.00	\$1,800
Utah State University	\$2.25	\$2,025

Fees for technical programs are charged in addition to tuition and differ from college to college. Fees typically help defray the cost of consumables and/or college services and are thus dependent upon students’ specific programs of study. USHE colleges and universities strive to minimize student fees and textbook costs to the greatest extent possible, especially for high school students attending USHE institutions.

¹ College Board, *2021-21 Trends in College Pricing*, <https://research.collegeboard.org/pdf/trends-college-pricing-student-aid-2021.pdf>.