COLORADO
Department of Higher Education

THE ROAD TO AFFORDABILITY:

Reducing Cost and Maximizing Value

for Students and our State

2020

The Colorado Department of Higher Education

Annual Return on Investment Report

Statute: C.R.S. 23-1-135

COLORADO
Department of
Higher Education

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COLORADO
Department of Higher Education

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Jared Polis
Governor

Dr. Angie Paccione
Executive Director

"Almost 75 percent of Colorado's jobs and 97 percent of top ones—those that pay a living wage and have high growth rates—require a postsecondary credential. To help meet these industry demands, we must ensure that more Coloradoans earn a postsecondary credential - whether that is a 2-year degree, 4-year degree, or industry-recognized credential or certificate. Earning a postsecondary certificate or degree will yield higher wages and more opportunities for our residents. Those who continue their education beyond high school don't just earn more money, they serve our communities through critical research, essential care, and innovations. They're equipped to enter the workforce qualified to contend in competitive industries.

Our administration is focused on increasing the value of higher education by making college affordable and improving outcomes. This has become even more critical as the Novel Coronavirus has impacted our economy and workforce. For Colorado to recover, it is imperative that we make college attainable and affordable for all students in order for qualified and skilled workers to enter industry fields. Improving access and reducing costs of education and training is especially urgent for Colorado's economy, which boasts some of the most advanced workforce needs in the country.

However, with the uncertainty of our future post-pandemic, we know many Colorado students are considering postponing making a decision on going to college or pursuing a credential right now – families are considering if a college degree is even worth it?

The data show that residents with a credential were more equipped to step up and fill workforce demands during economic challenges caused by the pandemic. This report aims to help Coloradans understand their options to reducing the cost of obtaining a credential and maximize their higher education investment.

As the report details, despite tuition increases, a credential's worth can be directly correlated to student decisions and the options available to them —it depends on where a student goes to school, how long they attend, what they major in and, most importantly, if they graduate. Other factors—like living at home or on campus, and taking concurrent courses—can significantly change the time-to-degree and ultimately the expense of college. These decisions throughout an academic journey greatly impact a student's return on investment and how affordable college is.

The recommendations in this report will help us obtain the goals included in the *Roadmap to Containing College Costs and Making College Affordable*, as well as in reaching 66 percent educational attainment as a state by 2025. More now than ever, we need legislators, business and education leaders to work together and create a Colorado that works for everyone and puts making college affordable at the forefront. Armed with this robust data, individuals—and our state—can make pursuing a credential affordable while making the most of higher education investment."

Sincerely,

Jared Polis
Governor

Angie Paccione
Executive Director of the Colorado
Department of Higher Education

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Introduction

These are uncertain times. The current global pandemic has disrupted the world economy and created one of the most significant economic downturns the United States has ever seen.

More than 20 million Americans lost their jobs in April 2020, and though there was some job growth in May,[1] many industries are battling to stay afloat. Colleges and universities are particularly vulnerable since the higher education business model is dependent on high-volume, in-person interactions on campus. Additionally, many students are turning away from their top postsecondary education options, believing that the current model is unaffordable. Finally, state appropriations—a major funding source for public higher education institutions—are likely to be limited.

These financial challenges come at a time when postsecondary education is more important than ever. The need for skills and competencies accumulated en route to a postsecondary degree is likely to grow from both a practical and a strategic standpoint.[2] Prior economic downturns have shown that individuals with a postsecondary credential fair far better than those without one. In fact, according to Georgetown University's Center on Education and the Workforce, more than 95 percent of jobs created during the recovery from the Great Recession (December 2007–June 2009) went to workers with at least some college education.[3] In the current recovery, the country will need health professionals, researchers and strategists to find innovative solutions to global disruptions with assistance from others with the skills a postsecondary education provides.

With uncertainty comes the opportunity for change. As the COVID-19 pandemic spreads, some communities are more impacted than others. Black or African American and Hispanic or Latinx populations are overrepresented in both the number of people contracting and dying from the virus. Additionally, non-white populations are more likely to work in industries and positions most affected by the virus. Amid the pandemic, the death of George Floyd, an African American man, at the hands of law enforcement has brought forward a growing awareness of systemic racism fueling continued equity gaps in our society, including in postsecondary education.

If Colorado is going to thrive in these difficult economic times, Colorado institutions must prioritize affordability and cost containment as a primary approach to increasing postsecondary attainment and addressing equity. The statewide goal of 66 percent postsecondary attainment among adults by 2025 is outlined in the Colorado Department of Higher Education (CDHE) and the Colorado Commission on Higher Education (CCHE) master plan *Colorado Rises: Advancing Education and Talent Development.*[4]

In 2019, in response to the growing imperative to reduce costs for students, Governor Jared Polis, in partnership with CDHE and CCHE, released the *Roadmap to Containing Costs and Making College Affordable*. This plan reinforces the commitment to affordability identified in the master plan. It lays out short-, medium- and long-term action steps to contain costs and support students, address underlying structural issues, and increase innovation to improve outcomes. Executing the actions outlined in this roadmap will help Colorado meet the strategic goals outlined in the master plan. These goals include: increase credential completion, erase equity gaps, improve student success, and commit to affordability and innovation.

To assist lawmakers, taxpayers, students and families in understanding the value of postsecondary education in Colorado, HB18-1226, Higher Education Review Degree Program Costs and Outcomes, directed CDHE to publish an annual return-on-investment (ROI) report. In keeping with the department's commitment to focus on aligning its work with industry needs, ensuring affordability, prioritizing equity, and contributing to our state, this year's report has four key sections:

Intentional Pathways	Affordability for All
Students can impact their ROI through the pathways they choose to pursue.	It is imperative that the postsecondary system commits to affordability and cost containment to ensure access and minimize student debt.

The Equity Imperative	Value
Persistent gaps exist by gender and race/ethnicity in both the pathways that students pursue and the wages they receive.	Colorado's postsecondary system brings significant value to individuals and the state.

Many factors influence the overall ROI of a postsecondary degree. Students can impact the ROI of a degree through the **pathway** they choose to pursue. There remains an **equity imperative** since persistent gaps exist by gender and race/ethnicity for the pathways that different populations pursue and the wages they receive. The price of college goes beyond tuition; it also includes fees, room and board, and other costs associated with being a successful student. College is still unaffordable for too many people, and the price tag leads to debt that impacts many Coloradans. We must execute the objectives in the *Roadmap to Containing Costs and Making College Affordable* to reduce **cost and debt** for students. Overall, for most Coloradans, the postsecondary system brings significant **value to individuals and the state**.

Intentional Pathways

Students may consider numerous factors before and while they are enrolled at postsecondary institutions to maximize ROI. Factors such as household income, industry demand and the economy are outside of students' immediate control. However, students do have control over the pathways they choose.

Students may determine which credential to pursue based on a number of factors including, cost, interests and experiences and the possible ROI of a degree.[5] This section quantifies the impact of degree and program selection on students' income one year, five years and 10 years after graduation to help students make data-driven choices, thereby mitigating, or even overcoming, inequalities.[6] The following section builds on this work by examining inequities in one-, five- and 10-year wage outcomes by race and gender.

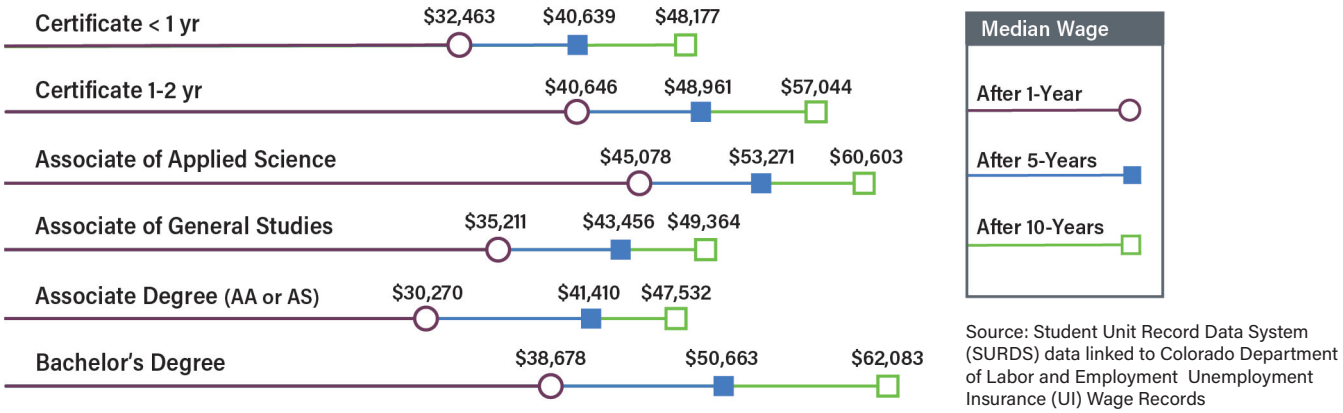
In Colorado, approximately 65 percent of students who complete an undergraduate degree (hereafter, "completers") graduate from a four-year institution with a bachelor's degree. The state's technical and community colleges have a more diverse set of degree programs, including one-year and one-to-two-year certificates, associate of applied science degree, associate of general studies degree, and associate of arts (AA) and associate of science (AS) degrees. Colorado also awards a significant number of graduate degrees each year. Wage data are only available for a portion of completers. Table 1 shows the number of completers in each degree type for each wage group as well as the percentage of completers for whom wage data are available. Students who received a one- or two-year certificate, associate of applied science, bachelor's degree or master's degree were most likely to have wage records, meaning that those students are most likely to be employed in a job that pays into the state's unemployment insurance system.

TABLE 1: Total number of completers in each wage cohort and percentage of completers with wage data

Credential Type	1-YEAR After Completing Degree		5-YEARS After Completing Degree		10-YEARS After Completing Degree	
	Completers (2004-2018)	% with Wage Data	Completers (2004-2014)	% with Wage Data	Completers (2004-2009)	% with Wage Data
Undergraduate						
Certificate (< 1 Year)	72,744	44%	40,807	42%	16,977	40%
Certificate (1-2 Years)	19,596	56%	14,029	52%	8,417	49%
Associate of Applied Science Degree	36,555	61%	25,768	58%	13,065	54%
Associate of General Studies Degree	7,875	40%	4,850	43%	2,043	40%
Associate Degree (AA or AS)	24,499	39%	15,884	42%	6,522	41%
Bachelor's Degree	280,135	50%	185,314	52%	89,856	48%
Graduate						
Master's Degree	81,849	63%	56,425	58%	29,516	53%
Doctoral Degree	19,309	46%	13,741	45%	7,018	41%

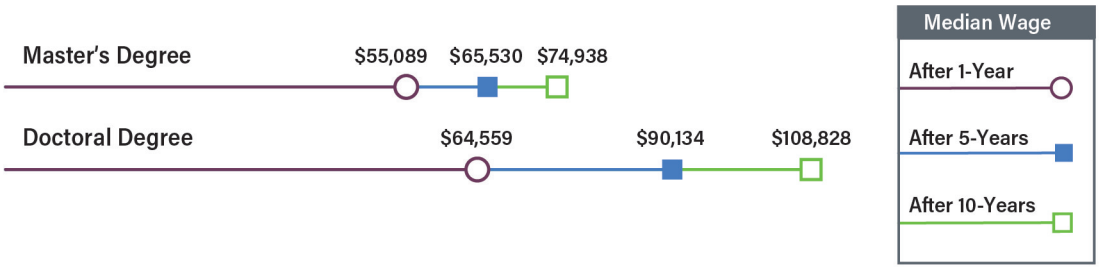
Source: Student Unit Record Data System (SURDS) data linked to Colorado Department of Labor and Employment Unemployment Insurance (UI) Wage Records

Somewhat counterintuitively, traditional bachelor's degrees do not yield the highest wage premiums one year after graduation; rather, there is a lag in payoff for bachelor's degrees. Associate of applied science and one-to-two-year certificates both have higher wage premiums than bachelor's degrees early in one's career. Associate in applied science degrees also have a higher wage premium than bachelor's degrees five years after graduation. This finding underscores the importance of shorter-term applied degrees to students and our state. Associate of general studies and other associate degrees have the lowest ROIs and are designed to support transfer to a four-year degree program rather than direct entry into the workforce, so for those programs, transfer is an important outcome. Ten years after graduation, bachelor's degree holders have the highest wage premium, and many bachelor's degree holders will go on to pursue a graduate degree, which yield significantly higher returns.



Source: Student Unit Record Data System (SURDS) data linked to Colorado Department of Labor and Employment Unemployment Insurance (UI) Wage Records

Graduate wages are important to examine since an increasing number of students are pursuing graduate degrees. Additionally, graduate degrees account for approximately 40 percent of federal student loans each year,[7] making them a key driver in growing student loan debt. Median wages for graduate degree completers are significantly higher than those for undergraduate degrees.

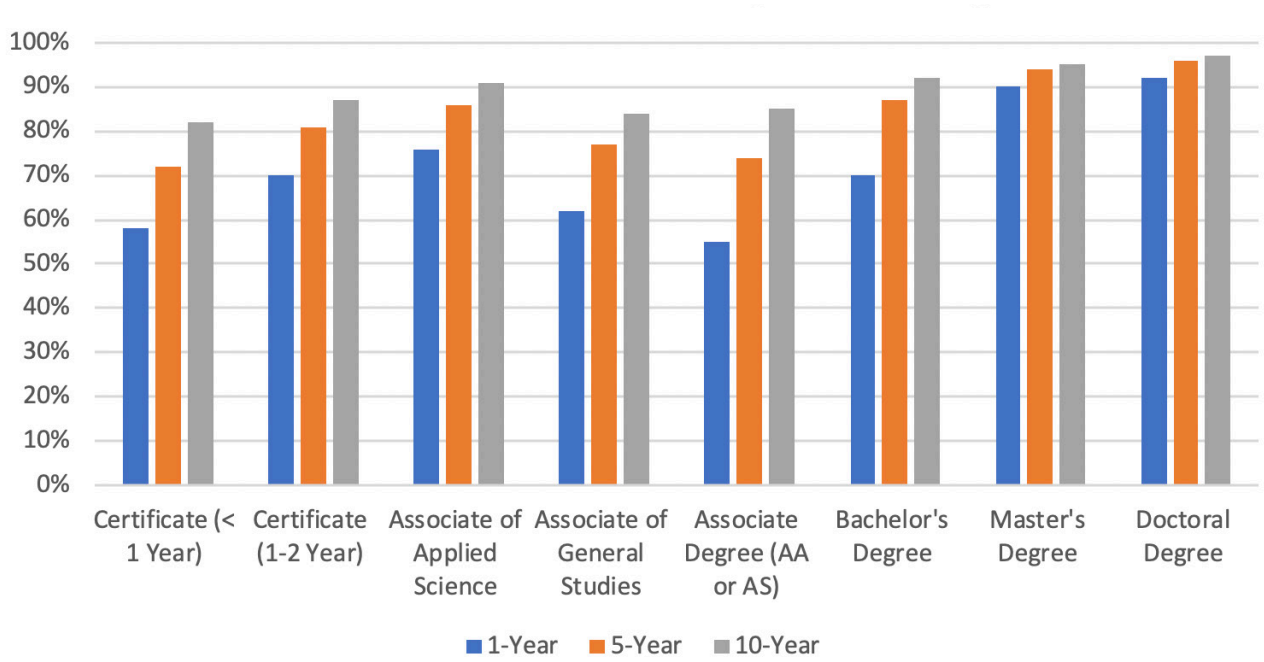


Source: Student Unit Record Data System (SURDS) data linked to Colorado Department of Labor and Employment Unemployment Insurance (UI) Wage Records

More specific wage outcome data by various institutions of higher education, programs and credential types are available online through CDHE's Postsecondary Degree Earnings Outcomes Tool https://highered.colorado.gov/postsecondary-degree-earnings-outcomes-tools

Colorado's ROI methodology builds on work that the State of Colorado has done with national partners to understand the wage returns of postsecondary degrees.[8] The 2020 report adds a new wage dimension by looking at the number of graduates who received a living wage as defined by Colorado's annual Talent Pipeline report. Tier 1 wages are at or above $23.94 per hour—a living wage for a family with two adults (one working) and one child. Tier 2 wages are at $12.47 or above per hour, a living-wage benchmark for an individual.

Percent of Graduates Earning a Living Wage for an Individual



Source: Student Unit Record Data System (SURDS) data linked to Colorado Department of Labor and Employment Unemployment Insurance (UI) Wage Records

Understanding ROI Data

Colorado led the country in understanding ROI by linking wage data to postsecondary education data as part of its partnership with College Measures, a project of the American Institutes of Research.[9]

This project led to several resources being made available to students and families displaying the average expected earnings of graduates with specific credentials from specific institutions, namely Launch My Career Colorado. This tool displayed expected earnings for credentials as well as the expected amount of time for a student to pay back postsecondary education costs, enabling students to explore the various postsecondary education paths available to them based on their interests and life goals.

The wage data is derived from the state's unemployment insurance (UI) data set. It only includes completers who earned credentials and worked in Colorado, and it excludes certain individuals, namely federal employees and the self-employed. The UI data set includes only Social Security number (SSN) as a unique identifier, so students in Colorado's Student Unit Record Data System (SURDS) database who completed an undergraduate degree cannot be matched unless they have an SSN in SURDS; students without SSNs were excluded from the wage data set.

Colorado's history with wage data made it an ideal candidate for the U.S. Census Bureau's pilot project to link degree completion data. The Postsecondary Employment Outcomes (PSEO) project leverages federal data linkages facilitated by the Census Bureau to provide national UI wage data for individuals who completed a degree program in Colorado, but who may have left the state after graduation. This allows Colorado to leverage an expanded data source to better inform students when they are making their education and training decisions.

CDHE also continues to work toward improving the wage data used in this report. The Census Bureau collaboration has a better match rate, but data are not available at the individual level. More promising is work the department is currently engaged in with the Colorado Department of Labor and Employment (CDLE) to sign an agreement with the State Wage Interchange System (SWIS). Under SWIS, any state signing the agreement will be able to exchange interstate quarterly wage records with any other state that has signed on (https://www.dol.gov/agencies/eta/performance/swis). Unlike Census Bureau data, this information *would* be available at the individual level. Once the SWIS agreement is in place, future analyses may be able to include more information on the employment outcomes of students who move out of state following their graduation from a Colorado institution.

Perhaps the most important decision students make is which area of study, or major, to pursue.[10] Tables 2 and 3 show that there is significant variation in the median wage depending on which program of study a student completes. Health care, STEM (science, technology, engineering and math) and business degrees consistently yield the highest wage outcomes for students regardless of degree level. These degrees are also most likely to lead to a Tier 1 wage. For students pursuing certificate programs, trades also yield a high wage and consistent economic stability.

Of some concern are the wage outcomes for students pursuing education, social and behavioral sciences and human services, and arts, humanities and communications. In recent years Colorado has focused on and invested both time and resources to address a teacher shortage[11] and ensure that there are enough early childhood educators to meet the state's needs.[12] Teachers serve an important role in educating the future generations; however, the median wage for educators in Colorado often falls significantly below the overall median wage for graduates with the same-level degree. One year after graduation, the median wage for education majors with a bachelor's degree is about the same as the overall median wage for all bachelor's degree graduates, but after 10 years, the median wage for education majors with a bachelor's degree is 33 percent below the median wage for bachelor's degree graduates. For graduates with a master's degree in education, 10-year median wages are more comparable to the median wage of a bachelor's degree graduate who did not pursue education. Teaching is not the only high-social-value, low-wage field; occupations in social work, human services and visual and performing arts also have low median wages. As we think about college affordability, it may be appropriate to ask whether degrees in areas of study that bring high social value but low wages should have differential pricing.

Teaching is not the only high-social-value, low-wage field; occupations in social work, human services and visual and performing arts also have low median wages. As we think about college affordability, it may be appropriate to ask whether degrees in areas of study that bring high social value but low wages should have differential pricing.

TABLE 2: Certificate and associates degrees earners-median wage and percentage who earned an individual living wage.

Credential Type	After 1 Year		After 5 Years		After 10 Years	
	Median Wage	% Living Wage	Median Wage	% Living Wage	Median Wage	% Living Wage
Certificate (<1 Year)						
Arts, Humanities and Communication	$32,011	47%	$31,733	56%	$35,730	63%
Business	$42,587	70%	$44,970	76%	$48,396	83%
Education	$24,996	37%	$32,214	59%	$30,956	52%
Health	$28,068	44%	$38,549	68%	$46,398	80%
Science, Technology, Engineering and Math	$41,616	68%	$46,689	77%	$51,019	84%
Social and Behavioral Sciences and Human Services	$26,358	41%	$29,224	53%	$37,337	66%
Trades	$43,702	74%	$45,308	78%	$56,864	89%
Certificate (>1 Year)						
Arts, Humanities and Communication	$33,806	46%	$40,972	67%	$43,391	83%
Business	$40,345	62%	$39,701	69%	$46,375	80%
Education	$26,734	44%	$31,111	55%	•	•
Health	$43,567	66%	$45,681	79%	$51,283	85%
Science, Technology, Engineering and Math	$41,442	66%	$41,857	71%	$50,128	83%
Social and Behavioral Sciences and Human Services	$43,518	68%	$45,310	77%	$43,614	80%
Trades	$43,640	74%	$52,166	82%	$61,086	89%
Associate of Applied Science Degree						
Arts, Humanities and Communication	$30,339	47%	$38,460	71%	$44,957	85%
Business	$39,666	63%	$43,667	78%	$47,738	85%
Education	$25,565	42%	$31,971	56%	•	•
Health	$52,025	86%	$58,900	91%	$66,746	94%
Science, Technology, Engineering and Math	$42,459	72%	$49,970	84%	$56,708	88%
Social and Behavioral Sciences and Human Services	$40,766	54%	$37,913	67%	$37,509	70%
Trades	$41,452	70%	$53,803	85%	$64,824	92%
Associate of General Studies Degree						
Arts, Humanities and Communication	$37,240	61%	$43,438	76%	$49,266	83%
Associate Degree (AA or AS)*						
Arts, Humanities and Communication	$33,210	54%	$41,325	72%	$46,922	84%

• Data Suppressed
*Less than 1% of degrees in this category fall into a group outside of arts, humanities or communications
Source: Source: Student Unit Record Data System (SURDS) data linked to Colorado Department of Labor and Employment Unemployment Insurance (UI) Wage Records

TABLE 3: Bachelor's degrees earners-median wage and percentage who earned an individual living wage.

Credential Type	After 1 Year		After 5 Years		After 10 Years	
	Median Wage	% Living Wage	Median Wage	% Living Wage	Median Wage	% Living Wage
Bachelor's Degree						
Arts, Humanities and Communication	$34,792	56%	$43,630	81%	$51,539	88%
Business	$46,261	79%	$58,549	91%	$73,856	94%
Education	$37,057	69%	$41,776	83%	$46,572	89%
Health	$56,910	88%	$61,249	92%	$68,498	94%
Science, Technology, Engineering and Math	$46,939	76%	$61,695	90%	$78,418	95%
Social and Behavioral Sciences and Human Services	$35,131	57%	$45,614	83%	$54,406	90%
Trades	$40,842	71%	$51,877	88%	$61,540	93%
Master's Degree						
Arts, Humanities and Communication	$42,043	74%	$52,382	87%	$61,143	93%
Business	$67,956	94%	$89,996	96%	$109,510	97%
Education	$47,104	89%	$55,093	92%	$61,020	94%
Health	$66,583	92%	$76,927	95%	$86,079	96%
Science, Technology, Engineering and Math	$63,443	90%	$81,544	95%	$101,380	97%
Social and Behavioral Sciences and Human Services	$46,494	86%	$56,797	92%	$66,849	94%
Trades	$54,765	87%	$66,467	94%	$79,992	97%
Doctoral Degree						
Arts, Humanities and Communication	$45,580	80%	$62,454	90%	$71,657	92%
Business	$75,279	100%	$124,321	100%	$118,223	100%
Education	$75,544	93%	$82,097	95%	$87,160	91%
Health	$78,099	93%	$110,692	97%	$127,750	98%
Science, Technology, Engineering and Math	$63,515	90%	$83,145	95%	$103,014	97%
Social and Behavioral Sciences and Human Services	$60,688	91%	$81,198	94%	$98,591	96%

Source: Source: Student Unit Record Data System (SURDS) data linked to Colorado Department of Labor and Employment Unemployment Insurance (UI) Wage Records

Student Choice and Wage Outcomes

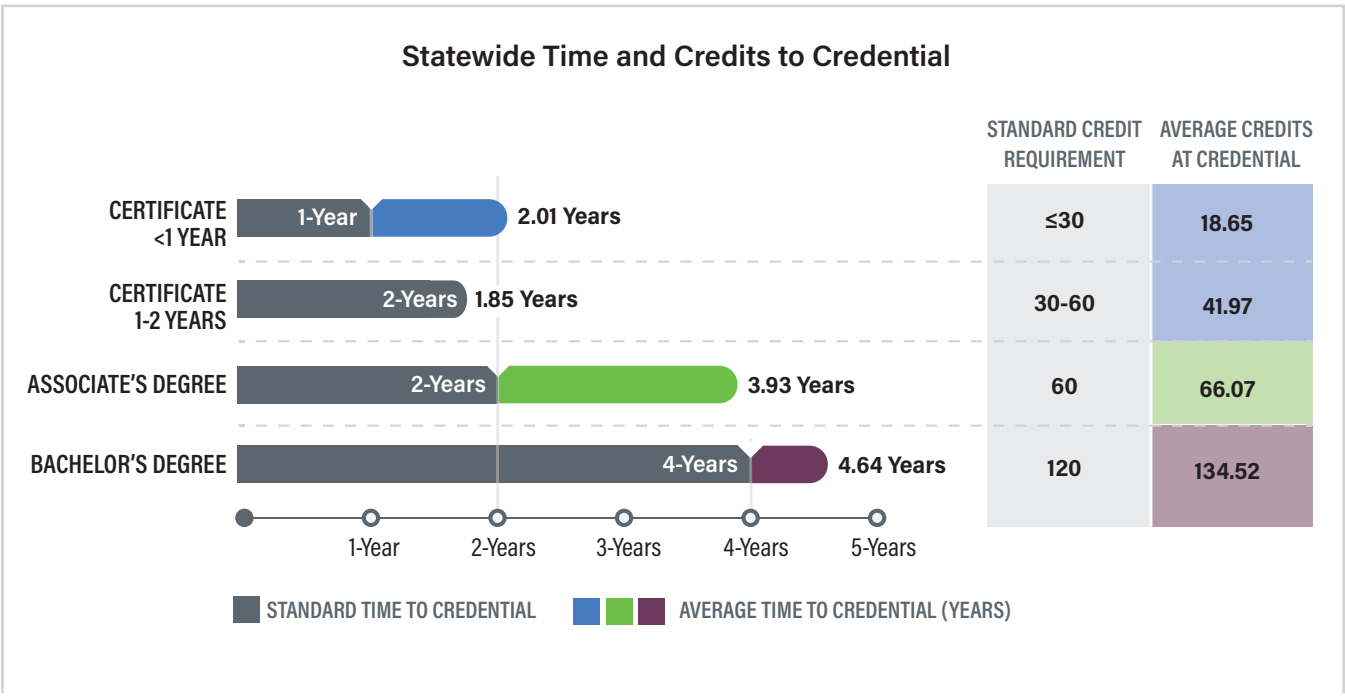
To explore the relationship between institution type, degree type and program of study, the Department performed some inferential analysis. Initial findings of this statistical analyses align with the findings in the preceding descriptive analysis. One notable pattern from the analysis is the impact of a bachelor's degree on postgraduation year-one and year-five incomes. In this analysis, which accounts for several demographic characteristics, the Department found that in the first year after graduation, holders of an associate of science, on average, earn more than bachelor's-degree holders, who, in turn, earn more than certificate holders. This pattern continues in the fifth year after graduation, at which point bachelor's-degree holders, on average, earn more than certificate holders but still less than associate-degree holders. This is contrary not only to general intuition but also to findings from other studies. One reason for this contradiction is that programs in associate of science equip students with hands-on skills they can immediately apply to deliver results. The shorter-term returns for these degrees, however, may erode in the longer term as the nature of work changes or there may be fewer opportunities for advancement. This analysis also confirms that the programs with the greatest impact on year-one and year-five incomes generally fall within the trades and STEM degree groupings.

Perhaps more students would choose credentials based on outcomes—for example, attending lower-cost, two-year institutions in pursuit of particular career paths—if they knew that they could finish college in less time with a higher wage. Others might choose to take a long view and invest in a four-year degree and graduate school, based on lifetime earning potential.

There are limitations in the ability to fully explain the relationship between postsecondary credentials and wage outcomes; data is limited on many variables that might influence the predictors and wage outcomes. Nevertheless, these results provide important insight in understanding the impact of various student choices on wage outcomes. In particular, they provide context to better inform students about program choice. As institutions design postsecondary education pathways, they should provide students with useful information to help inform their decisions. Perhaps more students would choose credentials based on outcomes—for example, attending lower-cost, two-year institutions in pursuit of particular career paths—if they knew that they could finish college in less time with a higher wage. Others might choose to take a long view and invest in a four-year degree and graduate school, based on lifetime earning potential.

Time and Credits to Credential

Students can dramatically reduce the cost of education by reducing the time and credit load it takes to complete a postsecondary credential—a strategy that also increases their likelihood of success.[13]

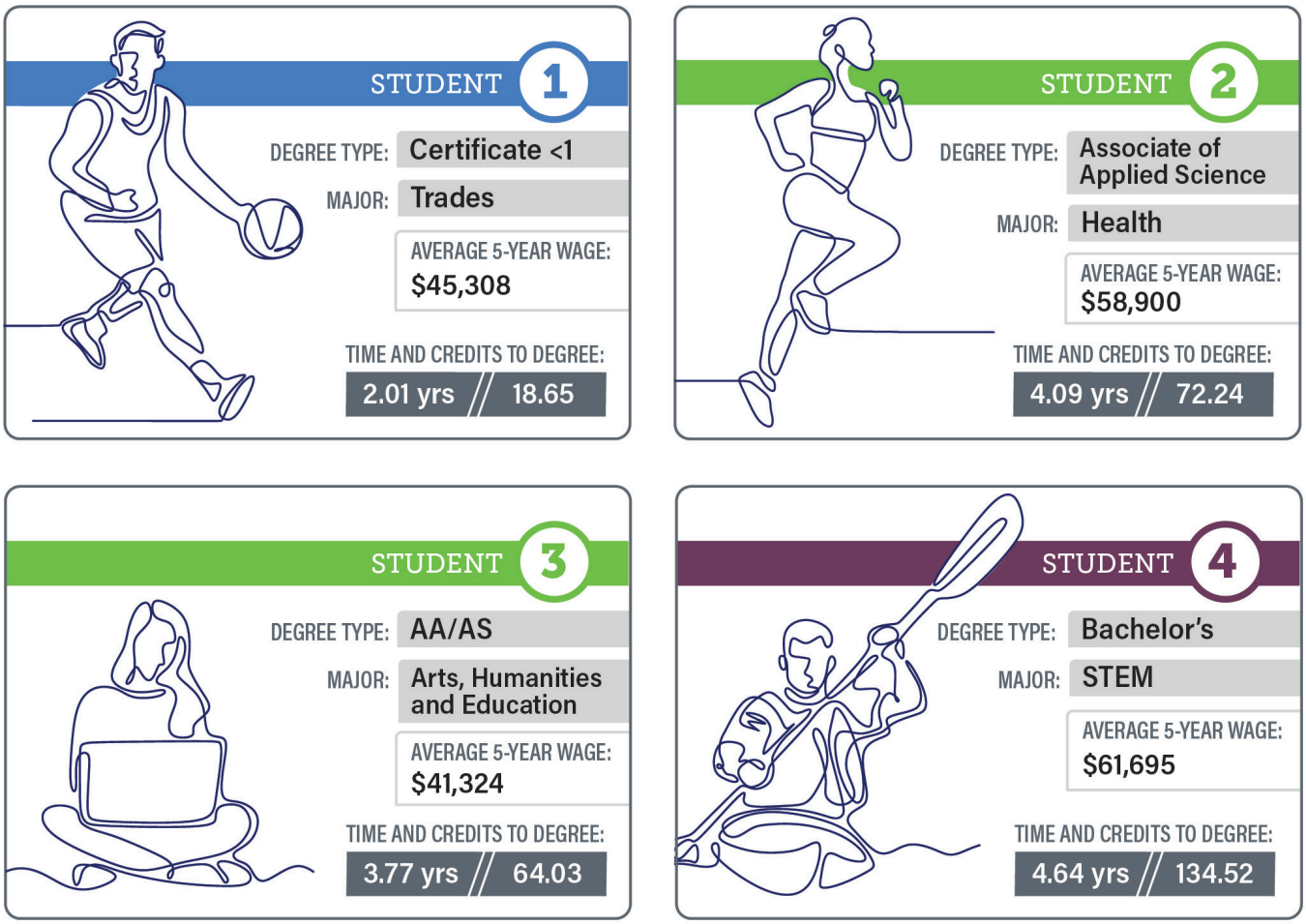


To ensure affordability and maximize the ROI of a credential, students and institutions should:

- Act to reduce the time it takes to complete to ensure students realize the increased wage earnings they receive from a degree sooner.
- Minimize the number of credits students take beyond what is required to complete a credential to ensure they are not paying more tuition or take longer than they need to.

Compared to other states, Colorado students complete credentials faster and with fewer credits—largely due to Colorado's long-standing statewide transfer and articulation agreement framework, prior learning assessment opportunities, and accelerated remedial education strategy. In addition to clear transfer pathways, Concurrent Enrollment and Prior Learning Assessment can also be used to reduce the time needed to obtain a degree. However, as these programs grow, it is essential to track credits to completion to ensure that students are not accumulating credits that will not be applied to their degree. There are some advantages in taking exploratory credits, so some credits beyond typical degree requirements is appropriate. However, institutions need to ensure that they are supporting students in making decisions intentionally and that excess credits do not increase the costs of a degree.

Think about how choices about pathways impact students. The personas below represent some of the most common choices Colorado students are making.



Source: Student Unit Record Data System (SURDS) data linked to Colorado Department of Labor and Employment Unemployment Insurance (UI) Wage Records

Key Student Decisions:

- 40% of recent high school graduates complete 12 or more credits via concurrent enrollment, reducing time to degree by at least a semester and saving them money.[14]
- Adult students may save time and money by using Prior Learning Assessment to get credit for work, military or other experience.
- Research shows that colleges can be more affordable and improve outcomes by helping students enroll in a major early in their degree program and accumulate program specific credit sooner.[15]

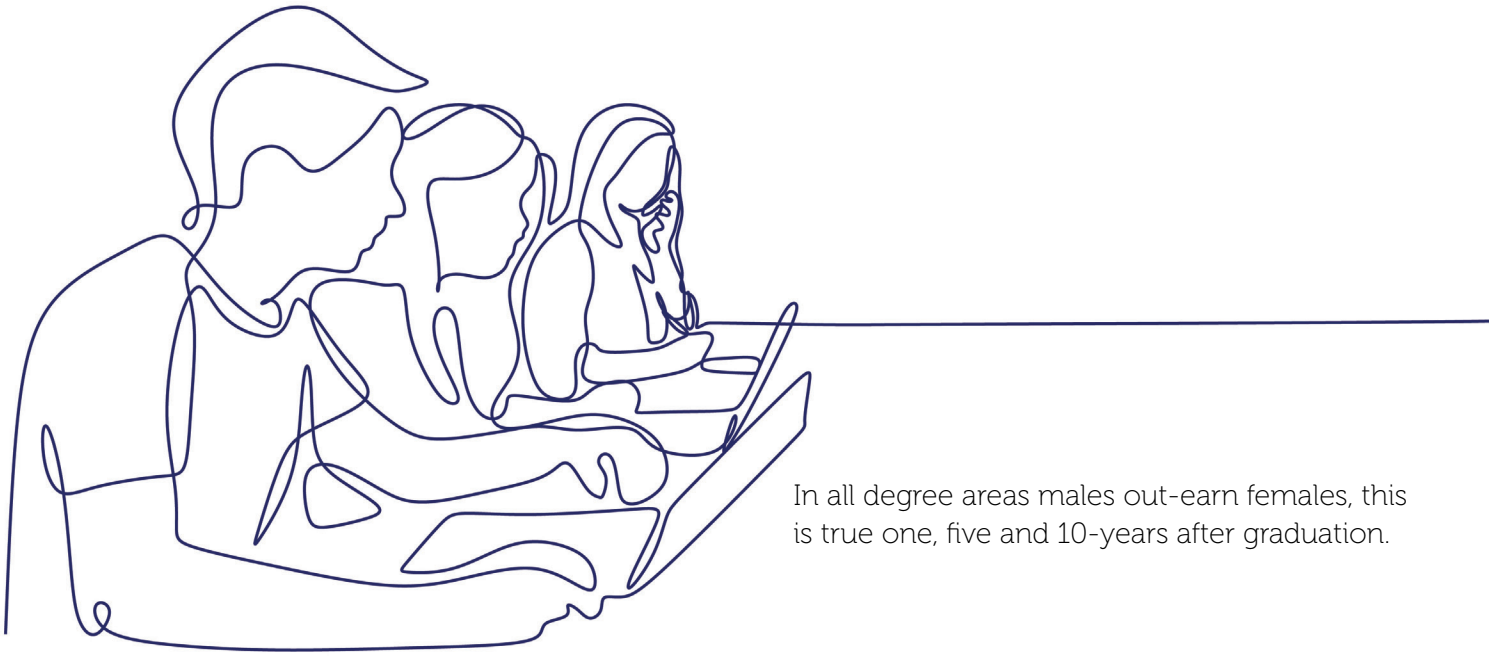
The Equity Imperative

The gender and race/ethnicity wage gaps in the United States are well documented.[16] Although Colorado has seen the pay gap between males and females narrow, at its current pace the state will not see equal pay for women and men until 2057.[17] Pay gaps also exist across race/ethnicity groups.[18]

The previous section shows that there are significant wage differences based on the types of degrees and programs pursued. Some of the wage disparities by gender and race/ethnicity can be tied to the types of careers that different populations pursue. Still, even when we control for these factors, gaps exist. To better understand what is driving wage outcomes for Coloradans, CDHE analyzed the top five postsecondary programs Coloradans enroll in to see how program choice, gender and race/ethnicity may also impact wages.

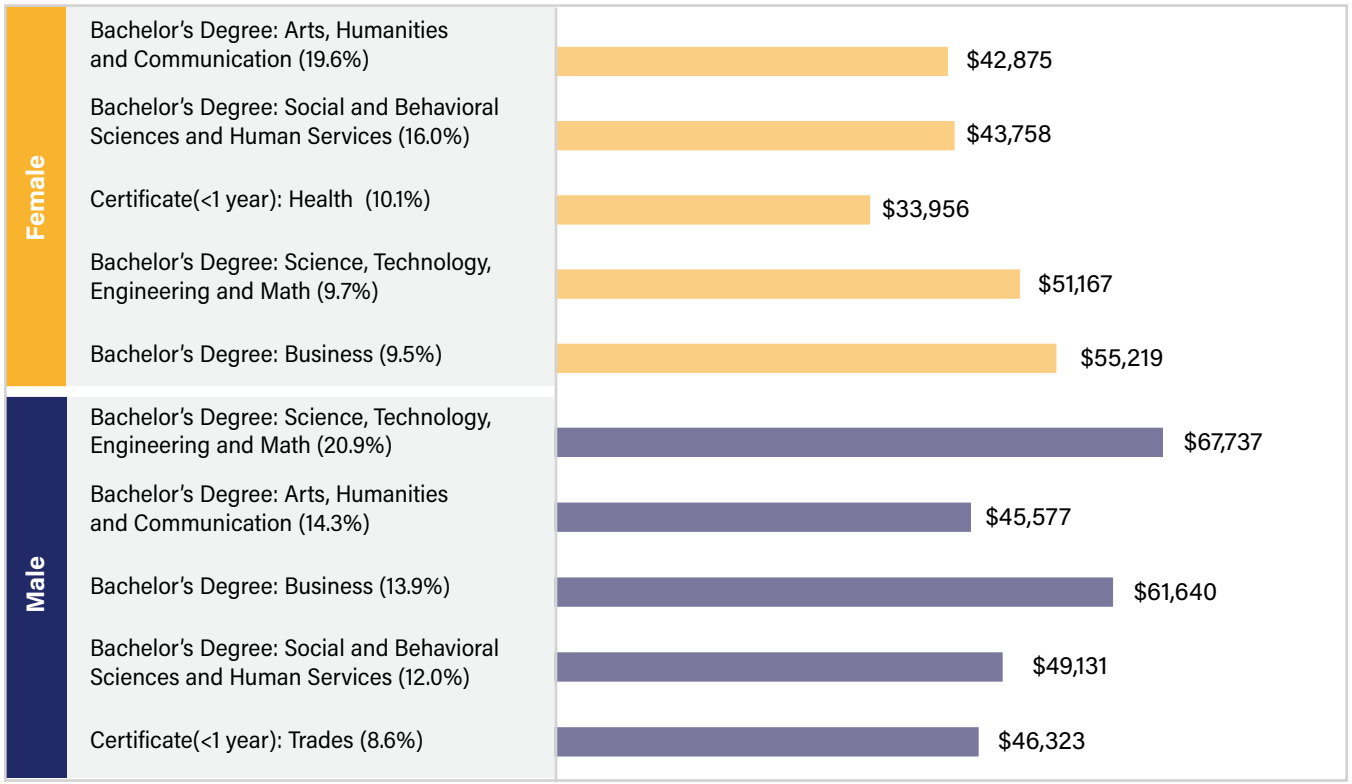
In all degree areas males out-earn females, this is true for one-year and five-year wages in addition to the 10-year wages displayed.

Men are most likely to pursue a bachelor's in a STEM field, which yields a median wage of $67,737 after five years. Females are most likely to graduate with a bachelor's degree in arts, humanities and communication, which yields a median wage of $42,875 after five years.



In all degree areas males out-earn females, this is true one, five and 10-years after graduation.

5-Year Median Wage for Top 5 Most Popular Programs by Gender



Source: Student Unit Record Data System (SURDS) data linked to Colorado Department of Labor and Employment Unemployment Insurance (UI) Wage Records

Top 5 programs based on the number of students who completed between 2004-2018, wage data based on UI records for students who completed a degree (2004-2009)

A bachelor's degree in business is among the top five degrees pursued by both men (13.9 percent) and women (9.5 percent). However, 10 years after graduation, male business graduates out-earn females with a bachelor's degree in business by $12,000 annually.

The only non-bachelor's degree programs that were among the top-five most pursued programs are less than one-year certificates in trade and in health. Approximately 10 percent of females graduated with a certificate in health care programs, which yields a five-year median wage of $33,956. Health care certificates are the sixth most popular degree programs pursued by men. Just over 5 percent of male completers receive a health care certificate requiring less than one year of study, and 10 years after completion, men make almost 50 percent more than women in health care fields ($59,051 compared to $40,315).

Between 2004 and 2009 approximately 9 percent of men graduated with a certificate in the trades, which yields a wage of $46,323 after five years; very few women complete a trade certificate (1.3 percent), and when they do their median wage is $10,000 less than the median for men after five years. While this gender difference between programs may not initially seem important, the wage outcomes for each program tell a different story. For example, males with a trades certificate have a higher median wage one year after completion than females with a health care certificate 10 years after completion.

It is important to note that students graduating from some programs, such as a bachelor's in arts, may be continuing their education to graduate school; gains from graduate education may not be reflected in this wage data.

Race/Ethnicity and Gender

It is also important to look at trends in the types of degrees different races/ethnic groups in Colorado are pursuing and understand the median wage differences between populations. A STEM bachelor's degree is a top-five program that also produces the highest wage outcomes across all populations. Asian, Hispanic or Latinx, and white males with a bachelor's degree in STEM all have a similar 10-year median wage. While this degree ranks at the top for both Asian and white males, Hispanic or Latinx males are more likely to earn a trades certificate compared to a bachelor's degree, despite the certificate producing lower long-term wages. STEM degrees are also popular among Asian females; their 10-year median wage is on par with the five-year wage of Asian males. The only times a STEM degree does not appear in a top-five degree program completed is for Black or African American and Hispanic or Latinx females. These two populations have arts, humanities and communication associate degrees in their top five.

A bachelor's degree in business is the most popular program and another high salary driver, especially for females. This degree produces the highest median wage for females of all races yet is ranked fifth overall for prevalence. Among white females, who are slightly more likely to hold a STEM degree, a business degree leads to their highest starting median wage, at $45,272. This salary increases at a similar rate to those with a STEM degree, yet the latter never surpasses the salary of business degree earners. Hispanic or Latinx females with a business degree have the highest starting wage that persists to their highest 10-year median wage, yet they still earn less than Hispanic or Latinx males in the same program.

Black or African American students are the only population most likely to pursue a bachelor's in social and behavioral sciences and human services as their top choice, closely followed by a bachelor's in arts, humanities and communication. While about 28 percent of Black or African American males are earning these degrees, the 10 percent with a trades certificate are entering the workforce with a higher salary that is sustained over time. This trend also holds true for Black or African American females, who are earning business degrees at a quarter the rate of the aforementioned programs yet surpassing their 10-year salary in half the time.

A STEM bachelor's degree is a top-five program that also produces the highest wage outcomes across all populations.

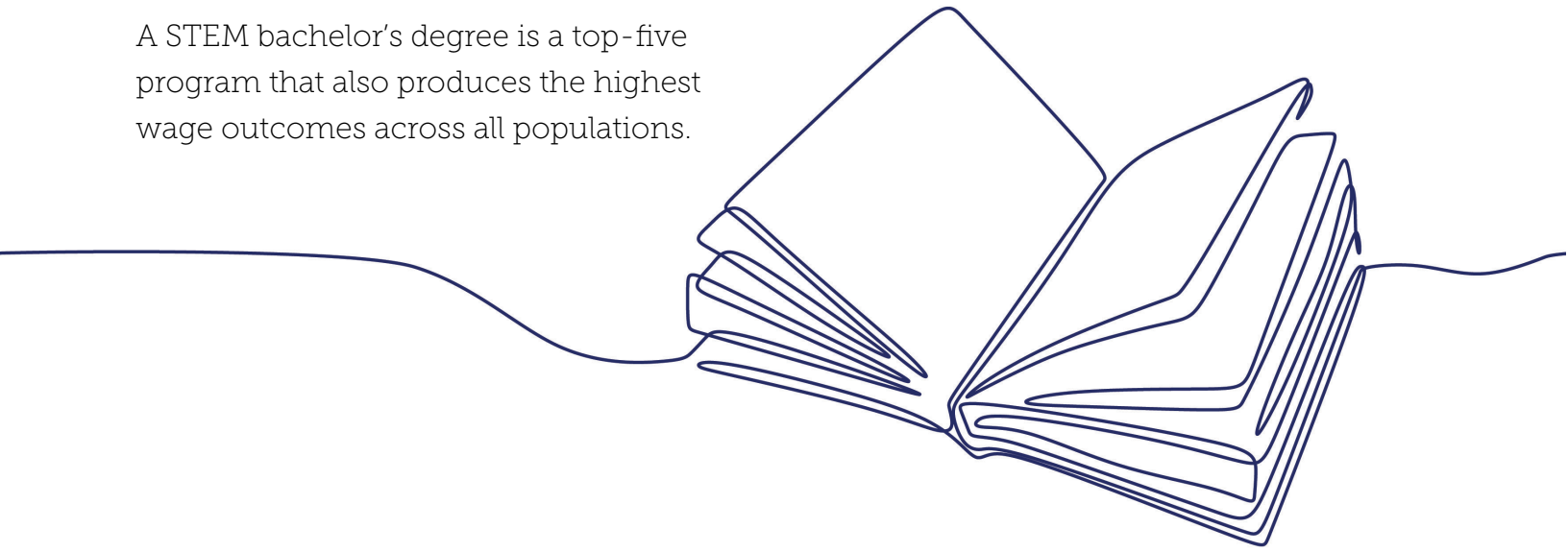


TABLE 4: Top Five Degree Programs Pursued and 5-Year Wages For Female Graduates by Race/Ethnicity

Asian | FEMALE		5-Year Wage
Degree		
Bachelor's Arts	Arts, Humanities and Communication	$44,827
Bachelor's	Business	$55,352
Bachelor's	Science, Technology, Engineering and Math	$55,276
Bachelor's	Social and Behavioral Sciences and Human Services	$47,005
Certificate < 1 yr	Health	$34,265

Black or African American | FEMALE		5-Year Wage
Degree		
Bachelor's	Social and Behavioral Sciences and Human Services	$42,993
Bachelor's Arts	Arts, Humanities and Communication	$43,055
Certificate < 1 yr	Health	$36,872
Bachelor's	Business	$50,694
Associate Arts	Humanities and Communication	$39,573

Hispanic of any race | FEMALE		5-Year Wage
Degree		
Bachelor's Arts	Arts, Humanities and Communication	$42,984
Certificate < 1 yr	Health	$29,971
Bachelor's	Social and Behavioral Sciences and Human Services	$43,488
Bachelor's	Business	$53,096
Associate Arts	Humanities and Communication	$37,824

White | FEMALE		5-Year Wage
Degree		
Bachelor's Arts	Arts, Humanities and Communication	$42,912
Bachelor's	Social and Behavioral Sciences and Human Services	$43,735
Bachelor's	Science, Technology, Engineering and Math	$51,097
Bachelor's	Business	$55,680
Certificate < 1 yr	Health	$34,806

TABLE 5: Top Five Degree Programs Pursued and 5-Year Wages For Male Graduates by Race/Ethnicity

Asian | MALE		5-Year Wage
Degree		
Bachelor's	Science, Technology, Engineering and Math	$66,161
Bachelor's	Business	$58,211
Bachelor's Arts	Arts, Humanities and Communication	$46,580
Bachelor's	Social and Behavioral Sciences and Human Services	$51,551
Certificate < 1 yr	Trades	$49,397

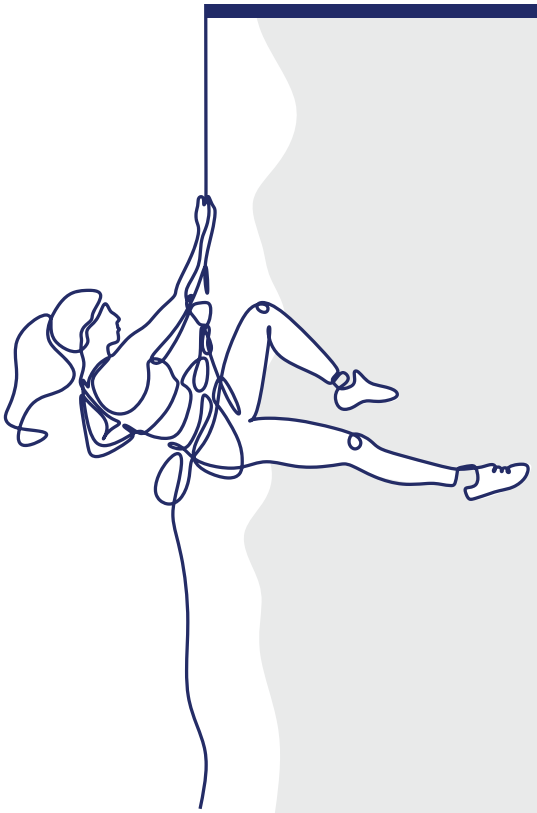
Black or African American | MALE		5-Year Wage
Degree		
Bachelor's	Social and Behavioral Sciences and Human Services	$44,888
Bachelor's Arts	Arts, Humanities and Communication	$46,078
Bachelor's	Business	$53,555
Bachelor's	Science, Technology, Engineering and Math	$60,122
Certificate < 1 yr	Trades	$40,906

Hispanic of any race | MALE		5-Year Wage
Degree		
Certificate < 1 yr	Trades	$42,456
Bachelor's	Science, Technology, Engineering and Math	$65,269
Bachelor's Arts	Arts, Humanities and Communication	$44,909
Bachelor's	Social and Behavioral Sciences and Human Services	$48,073
Bachelor's	Business	$58,618

White | MALE		5-Year Wage
Degree		
Bachelor's	Science, Technology, Engineering and Math	$67,862
Bachelor's Arts	Arts, Humanities and Communication	$45,775
Bachelor's	Business	$62,236
Bachelor's	Social and Behavioral Sciences and Human Services	$49,789
Certificate < 1 yr	Trades	$48,214

Affordabililty for All

The increasing cost of postsecondary education means that in order to increase attainment, we must do more to make college affordable. Although cost increases at public colleges have leveled out recently, tuition increases have far outpaced inflation for many years.[23]



In the face of fiscal challenges to institutions, the state and Colorado students, the higher education community must commit to the bold ideas put forward in the *Roadmap to Containing Costs and Making College Affordable.*

Nationally, the published "sticker price" for yearly tuition and fees at public two-year institutions grew **33 percent between 2009 and 2019, to $3,700**; during the same period, tuition at four-year institutions across the United States grew **35** percent, to **$10,390.**[19] In Colorado, these numbers are even more dramatic, with yearly tuition at public two-year institutions growing by 52 percent (to $**4,520**) and yearly tuition at public four-year institutions increasing 68 percent (to **$11,380**). [20]

There are many reasons for these national and state-level trends. Notably, the most dramatic tuition increases at public colleges happened between 2009 and 2012, when states, faced with declining revenues due to the Great Recession, dramatically cut higher education budgets. During that time, higher education appropriations declined 24.2 percent nationally. **While state funding for higher education increased for the seven years prior to 2020, it never reached pre-recession levels**. Higher education institutions, offset decreases in state appropriations by raising tuition; the student share of higher education revenues nationwide increased from 35.7 percent in 2008 to 46 percent in 2019.[21] Nationally, state funding for higher education remains 8.7 percent below the pre-recession high point of early 2008.[22]

Given the state budget challenges caused by the COVID-19 pandemic, Colorado is unlikely to see further increases in funding anytime soon. This is why it is so important for institutions to pursue the policies outlined in the *Roadmap to Containing Costs and Making College Affordable.* This bold plan helps postsecondary institutions rethink the traditional models and create structures for more efficient and affordable postsecondary education.

Understanding the Costs of College

Tuition and Fees
In 2018-19, in-state tuition and fees at Colorado's four-year institutions are about **$11,380 per year** *(about 9 percent above the national average)*, ranking Colorado 15th nationally. Tuition at two-year institutions is $4,520 *(about 20 percent above the national average)*, ranking Colorado **24th** nationally. *Source:* https://trends.collegeboard.org/college-pricing.

Living Expenses
Where a student lives makes a difference. Cost estimates for students who choose to live at home with family are approximately $4,500 in room and board, compared to those living on campus or independently where cost estimates are $11,500 on average for room and board.

Other costs
There are other costs that students incur while pursuing their education. The state offers parameters that serve as guidelines for reasonable budget for these costs. Cost categories include computer ($1,100), personal expenses ($1,400), transportation ($1,700) and books and other supplies ($1,800).

Collectively these costs are added together for a total defined as the **Total Cost of Attendance**.

Institutions use this cost as well as a student's family income to determine financial aid levels. Very few students pay the total cost of attendance; almost all receive a mix of federal, state and college funded grants and scholarships, otherwise known as financial aid. The total cost of attendance, subtracting financial aid, is often referred to as a student's **net price**. The net price is what a student and their family pays of-out-of-pocket.

Cost of Attendance −
- Tuition and Fees
- Room and Board
- Books and Other Expenses

Financial Aid =
- Federal Grants
- State Grants and Scholarships
- Institutional Grants and Scholarships

Net Price
What Students and Families Must Pay

Average Yearly Costs of Attedance for Students

AVERAGE COST 2-YEAR Institutions	
TUITION AND FEES	$4,520
INDEPENDENT OFF-CAMPUS HOUSING	$11,500
OTHER COSTS	$4,900
TOTAL COST OF ATTENDANCE	$20,920

AVERAGE COST 4-YEAR Institutions	
TUITION AND FEES	$11,380
INDEPENDENT OFF-CAMPUS HOUSING	$11,500
OTHER COSTS	$4,900
TOTAL COST OF ATTENDANCE	$27,780

Sources: On-Campus housing is the national average, all other costs are defined in the state budget parameters.

Because the state and the institutions have committed to affordability for in-state students, many students—particularly those from low-income families—pay little, if any tuition, and end up with a significantly lower net price overall.

To ensure affordability it is important for institutions in Colorado to direct financial aid resources to low-income students. In Colorado, almost all students whose family income is less than $48,000 and who apply for aid receive some type of financial aid from the federal government, the state or the institution.

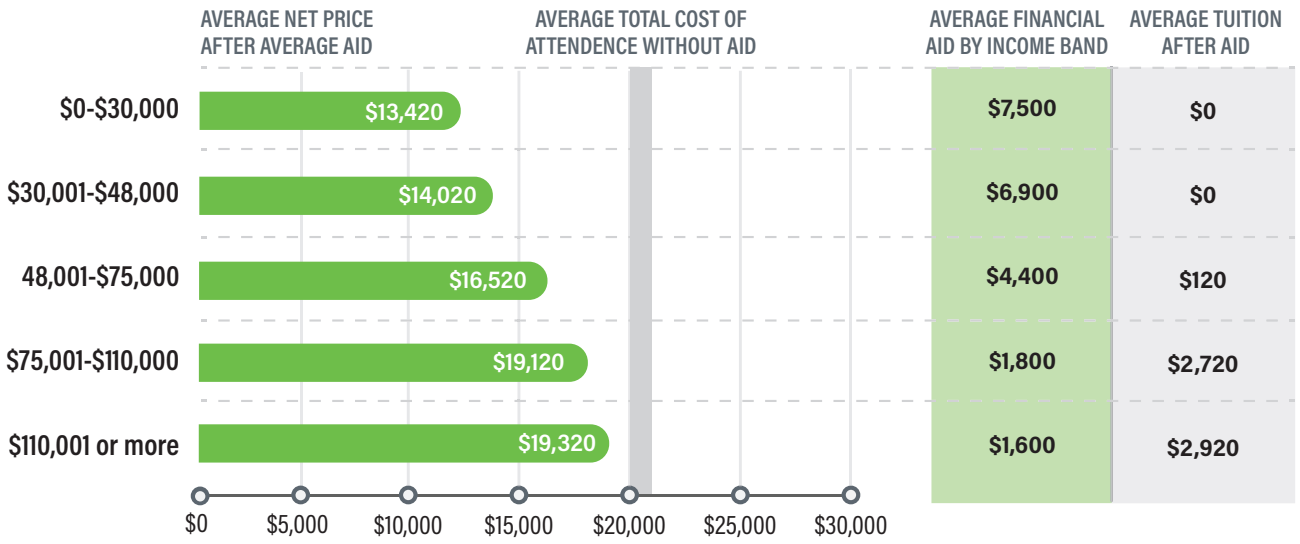
TABLE 6: Percent of Students Receiving Aid by Income

	2-Year Institutions	4-Year Institutions
$0-$30,000	98%	99%
$30,001-$48,000	98%	99%
$48,001-$75,000	88%	88%
$75,001-$110,000	52%	48%
$110,001 or more	25%	50%

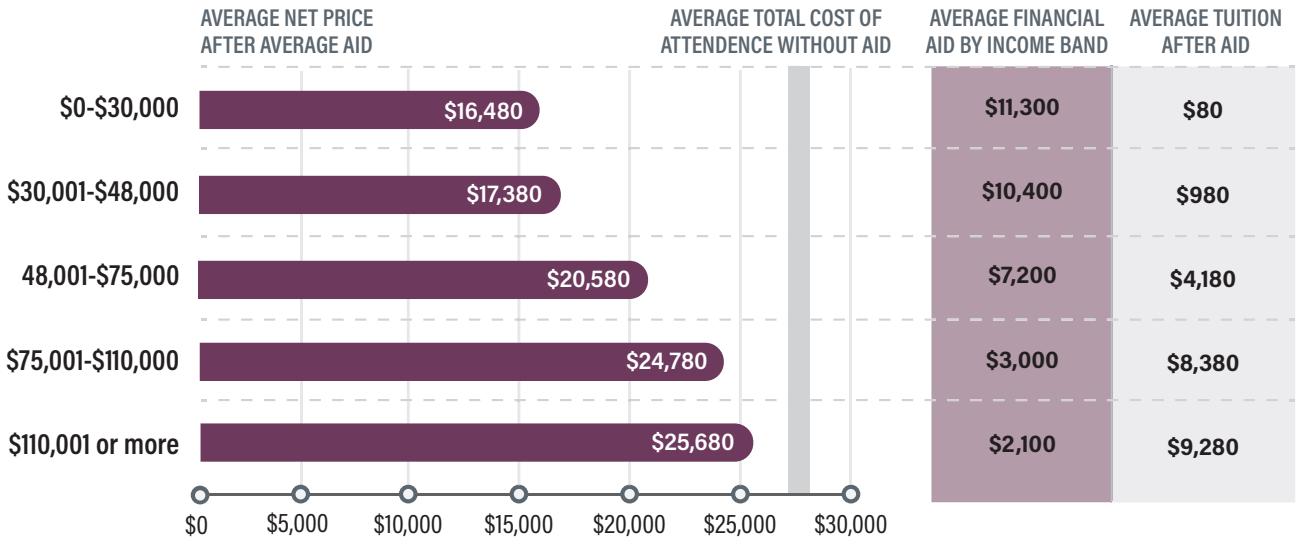
Source: IPEDS

The following figures show how much the average students pays (net price) after they receive financial aid by filing the FAFSA.

Students Attending 2-Year Institutions



Students Attending 4-Year Institutions



Differential Tutition

Many institutions both in Colorado and nationwide charge what is known as *differential tuition*—tuition that is higher based on either a student's level (freshman, sophomore, junior, senior) or their program. According to a survey conducted by Harvard University researchers in 2011, the most common programs that charge differential tuition are business, engineering and nursing programs. As of the 2015-16 academic year, 60 percent of public research institutions nationwide charged differential tuition.

Differential tuition is typically charged for courses or programs that are more expensive for the university to offer. An engineering program, for example, may require specialized equipment that a liberal arts program may not. And higher-level courses often have smaller class sizes, which also increases costs. As students' progress in their programs they often have smaller class sizes so courses may cost more as they progress in education level.

In Colorado, most institutions have differential tuition for at least one program or course level. Many institutions also have course- or program-specific fees, which can also increase costs.

Further details on differential tuition rates can be found in CDHE's Tuition and Fee report, as well as institutional websites. Colorado mirrors national trends in that the most common programs to have differential tuition are schools of business, engineering and nursing.

TABLE 7: Differential Tuition

Institution	# of Programs with Differential Tuition	Type of Differential	
		Level	Program
Adams State University	2		•
Colorado State University-Fort Collins	3	•	•
Colorado State University-Pueblo	3		•
University of Colorado-Boulder	4		•
University of Colorado-Colorado Springs	3	•	•
University of Colorado-Denver	4	•	•
University of Northern Colorado	4		•
Colorado Community College System	Multiple programs; availability varies by school		•

Differential tuition is typically charged for courses or programs that are more expensive for the university to offer.

Source: https://highered.colorado.gov/Publications/Reports/Budget/FY2020/2020_tuitionfeesreport.pdf

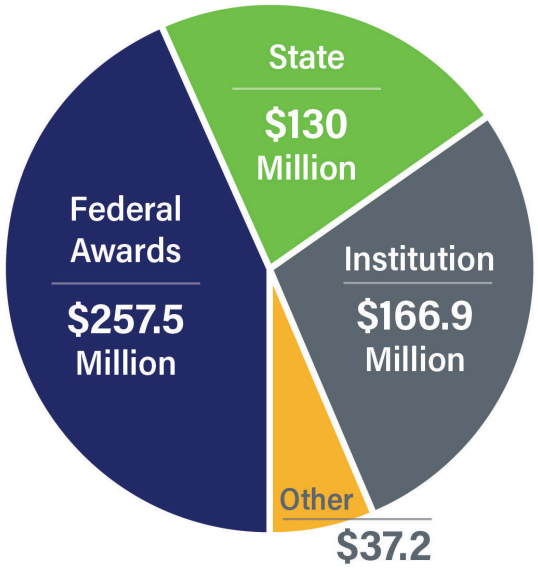
Scholarship and Grants

Scholarships and grants are an important tool for lowering the net price of postsecondary education. They can be awarded for a variety of reasons, such as financial need, academic merit or achievements in athletics or the arts. Unlike loans, scholarships and grants do not need to be paid back.

Students attending institutions of higher education in Colorado can receive scholarships and grants from several sources: The federal government, the state government and institutions themselves all dedicate funding to grant-based financial aid. Students can also seek aid from private sources. The following pie chart shows the amount of grant aid distributed to resident undergraduate students with a Free Application for Federal Student Aid (FAFSA)s at Colorado institutions by source in the 2018-19 academic year. In total, this group of students received $591.6 million in grant aid in 2018-19.

The most important thing a student can do to qualify for grant aid is complete the FAFSA. As noted in the governor's *Roadmap to Containing College Costs and Making College Affordable,* Colorado ranks 47th in the nation in FAFSA completions, meaning that Colorado students miss out on millions of dollars in federal, state and institutional financial aid each year. And because FAFSA completion is a requirement for most need-based state aid as well, students who do not complete a FAFSA also forgo that source of funding.

Amount of Grant Money Awarded by Source in 2018-19



In total, this group of students received $591.6 million in grant aid in 2018-19.

Learn more here: https://highered.colorado.gov/Publications/Reports/FinancialAid/FY2019/201819_FAReport_rel11272019.pdf

Increasing Public Benefit Access

Barriers to postsecondary affordability go beyond tuition. Institutions of higher education have traditionally focused on the academic needs of their students.

However, students are challenged in their goal of completing credentials by a variety of social factors, such as food insecurity and housing insecurity and mental health needs. A survey of Denver metro area institutions of higher education by the Hope Center for College, Community and Justice found that among students:

- 40 percent experienced food insecurity in the prior 30 days
- 55 percent experienced housing insecurity in the previous year
- 18 percent experienced homelessness in the previous year

Source: https://hope4college.com/wp-content/uploads/2019/09/RC2018_Denver_Report_20190906.pdf.

These and various other social determinants can significantly impact a student's ability to progress through a postsecondary education program. By addressing these social determinants, we can increase student success in Colorado.

Increasing enrollment in and use of various public benefits is one way to address these social determinants. Postsecondary students eligible for public benefits programs (like SNAP, TANF, WIC, Medicaid, etc.) may not know they are eligible and/or don't know how to enroll. Use of public benefits can act as a "third leg" of financial aid for students and as a short-term support that helps them complete their postsecondary credential. In this way, public benefits can help students access better long-term workforce opportunities (and potentially higher wages), thereby breaking a cycle of dependence on public benefits programs.

CDHE is committed to working with our state agency partners, institutions of higher education, county human service agencies, and external groups and stakeholders to elevate this work and address the social needs that students face. Two of CDHE's partners, Single Stop and RAND Corporation, received a nearly $3.3 million grant from the U.S. Department of Education to pilot and study the deployment of the Single Stop model at five institutions of higher education in Colorado. This model will better connect students to public benefits and assess the impact of those public benefits on postsecondary student success. Additionally, CDHE is working with our partners to develop checklists of best practices for institutions of higher education around food insecurity and mental health needs of students. These efforts create a thought leadership community in Colorado around ways for all partners to support students and elevate this important work.

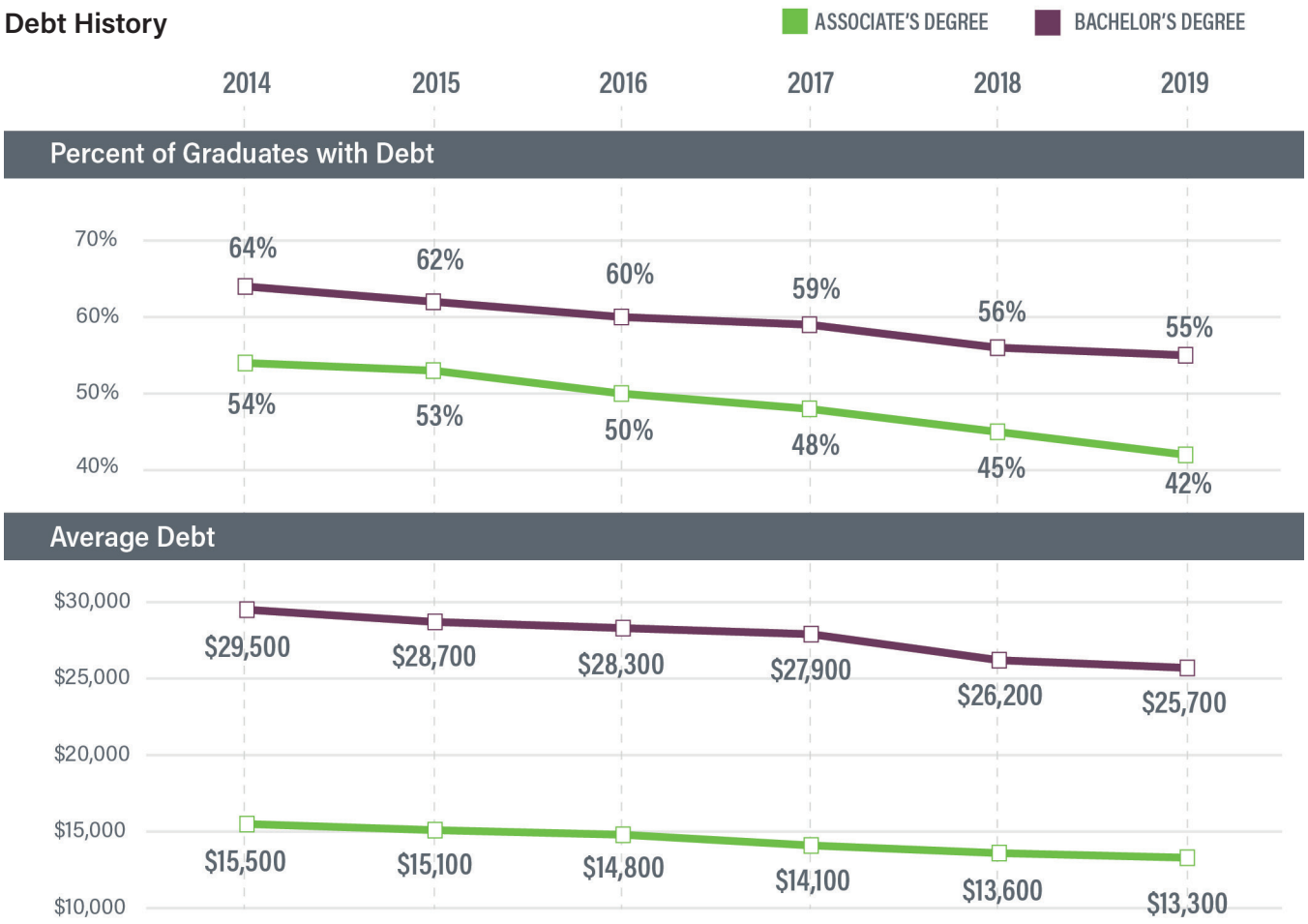
Student Debt

To pay for college, families and students depend on private scholarships, savings, income earned while a student is enrolled in school and, increasingly, student loan debt. Recent reports by the New York Federal Reserve show that student debt is one of the fastest-growing forms of debt nationally.[24]

Bucking these trends, debt among Colorado residents graduating from the state's public institutions has been on a steady downward trend since 2014. In 2019, 55 percent of resident students graduating from a four-year institution and 42 percent of resident students graduating from a two-year institution accrued student loan debt. Statewide at all institution types, 52 percent of students graduated with loan debt—which means that **48 percent of resident students graduated with no loan debt at all.** In 2019, the average student loan debt for a Colorado student graduating with a bachelor's degree was approximately $25,700.

Debt among Colorado residents graduating from the state's public institutions has been on a steady downward trend since 2014

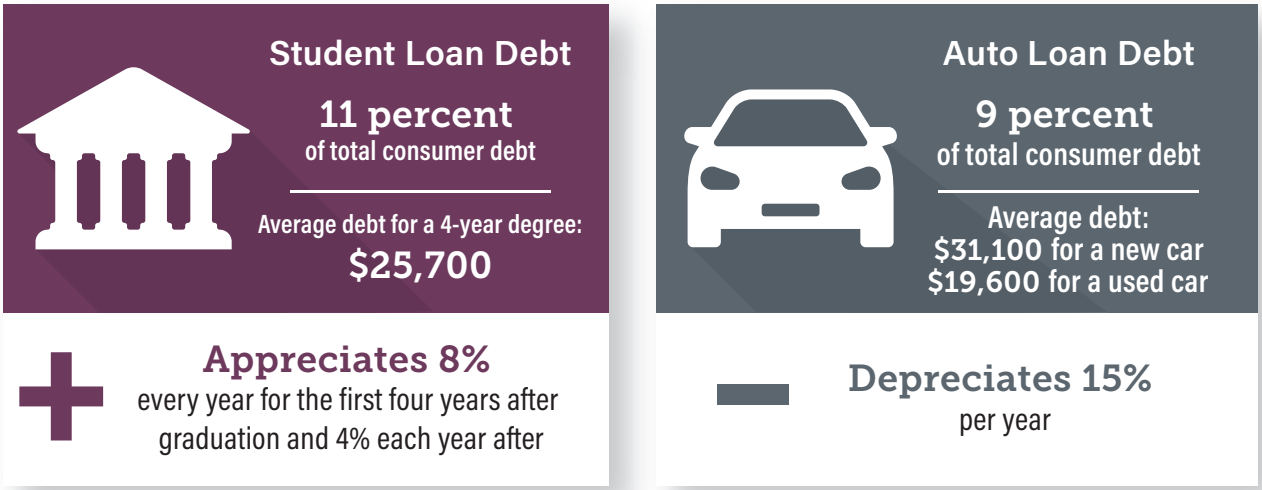
Debt History



Source: Student Unit Record Data System (SURDS) data linked to Colorado Department of Labor and Employment Unemployment Insurance (UI) Wage Records

*Tables include inflation-adjusted numbers for students graduating with debt who were classified as resident students at the time of their graduation.

To put this debt in context, consider a similar investment: buying a new car. Automobile debt makes up almost the same level of consumer debt as student loan debt. A loan for a new car averages to more than $31,000, and cars depreciate 15 percent a year. A postsecondary credential, in comparison, appreciates more than 4 percent each year over more than 10 years.



When including graduate student debt and debt brought to the state after attending private nonprofit, for-profit and out-of-state public institutions, more than 700,000 Coloradans owe a collective $26.4 billion in outstanding student debt. While these numbers may be shocking at first sight, it is important to recognize a few important distinctions. First, not all this debt was accumulated by undergraduate students at Colorado public institutions. As was noted previously, about 40 percent of federal student loans go to graduate students, most of whom receive significantly higher returns for their degrees. Additionally, these figures include people who move to Colorado from out of state and Colorado students who pursue degrees at higher-cost private institutions. Finally, it is important to keep in mind that **not all debt is problematic.** Debt is a helpful tool for completion since it allows students to enroll in more credits and improves their likelihood of success.[25] While it's true that the collective loan burden of Coloradans is a large figure, just 10 percent of bachelor's degree graduates and less than one percent of community college students acquired more than $40,000 in debt after graduating from a Colorado public institution.

By the numbers

Associate Degree Graduates

42 percent graduated with debt for an average of $13,300.

Only 2 percent of graduates accrued debt greater than $30,000.

Bachelor's Degree Graduates

55 percent graduated with debt for an average of $25,700.

Just 10 percent of graduates accrued debt greater than $40,000.

Debt can be an important tool to achieve affordability, if students finish what they start.

Students who do not graduate are more likely to default than completers—24 percent versus 9 percent, respectively.[26] Among those who default, two-thirds default on less than $10,000.[27]

Encouraging timely completion, providing more intensive wraparound services, and building targeted loan forgiveness programs will help more Coloradans meet their obligations, avoid default and benefit from credential completion. To stave off default risk, Colorado leaders and policymakers should continue to discuss stronger protections for student borrowers at both the state and federal levels. And since the riskiest type of loan debt to have is debt without a degree, policymakers should continue to focus on methods to improve graduation rates in Colorado.

Just **9%** of college graduates default on their loans[1]

compared to

24% of students who don't complete their degree

Two-thirds of people who default on their student loan debt accrue less than $10,000.

There are also several programs that can help reduce graduates' debt burden once they begin working:

Income-Driven Repayment (IDR): These plans make payments manageable by basing them on a borrower's ability to pay. Graduates pay lower amounts over a longer period and may qualify for loan forgiveness at the end of the loan term (typically after 15 to 25 years). Approximately 30 percent of borrowers in repayment of federal Direct loans participated in income-driven repayment in 2019. While this number is an increase (in 2013, just 11 percent of borrowers were enrolled in an IDR plan), the administrative complexity of enrolling in IDR plans is currently a barrier for even greater participation.[28]

Student Loan Forgiveness: The federal government allows teachers in high-need areas and individuals who work in public service for more than 10 years to have their student loans forgiven after a shorter time frame if they meet the program requirements.

Why does the average debt seem less than what's often reported nationally?
These data reflect federal undergraduate debt taken on by resident students attending Colorado public institutions. Debt accrued while attending graduate school, private schools, for-profit educational institutions or out-of-state institutions inflates averages reported in other sources. These data also do not include private loans students may have taken out to finance their education.

Value of Postsecondary Education to Students and the State

This report has focused on the ROI of a postsecondary credential primarily from a wage standpoint. However, the individual value of higher education extends beyond wage outcomes.

The previous section notes the financial rewards of investing in a postsecondary credential, including an example of the ROI of higher education compared to the purchase of a car. Higher education appreciates financially whereas a car depreciates.

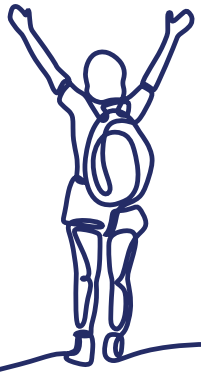
Similarly, when we buy and later sell a home, we often look at the money in our pocket after we close the sale compared to the amount of money we spent up front to buy the property. But a home has much more value than the financial profit it generates down the road. Homes provide immense value—a safe space and a comfortable place in which to build relationships and perhaps watch children grow. Many people would argue that these "psychic benefits" are worth much more than the equity that accrues from our financial investment.

Homeownership leads to putting down roots. Whole neighborhoods benefit when residents devote time to improving local schools, holding local officials accountable, starting small businesses, and getting involved in community and civic organizations. In this sense homeownership is both a private and a public good, which is why homebuying (and home construction) is incentivized through tax policy.

Higher education is similar to homeownership in that it is both a public and private benefit, and the ROI results from both private investments and public subsidies. Economists and other social scientists have been studying the ROI question for decades. In landmark work for the Carnegie Commission on Higher Education, Howard Bowen asserted that with the substantial nonmonetary returns from higher education, "individual and social decisions about the future of higher education should be made primarily on the basis of nonmonetary considerations."[29]

"Individual and social decisions about the future of higher education should be made primarily on the basis of nonmonetary considerations."

There are numerous economic/monetary, social and cultural benefits from higher education that accrue to individual degree recipients and that spill over to the larger society. Many of these benefits accrue independent of the monetary payoff of a particular academic program. We educate not just for job and career but also for growth and development, for responsible citizenship, and for the strength and well-being of society.[30]



Public economic benefits include increased tax revenues, greater workplace productivity, increased workforce flexibility, and a decreased reliance on government financial support.

Public social benefits include reduced crime rates, increased charitable giving, increased investment in civic institutions (including voting), and improved social cohesion.

Individual (private) economic benefits include a higher lifetime earning capacity, shorter periods of unemployment, increased personal and professional mobility, and higher savings levels.

Private social benefits include improved overall health and increased longevity, improved quality of life for children, additional time for leisure and recreational activities, and increased general happiness.

We educate not just for job and career but also for growth and development, for responsible citizenship, and for the strength and well-being of society

It is important to consider the range and scope of private and public benefits in any discussion of higher education ROI. This includes benefits to local economies and regional communities from the presence of a local college or university. It also includes the short- and long-term ROI from academic research to improve health, safety and the well-being of families and communities.

Alignment with State Industry Needs

In 2011, Colorado identified 14 major industries that drive the state's economy. Most nonfarm payroll jobs in Colorado are encompassed in the key industries, and these jobs are growing faster than those not included in these industries. The number of jobs and the growth associated with these jobs highlights the importance of the role Colorado's institutions of higher education play to educate and train individuals to fill the talent pipeline within these industries.

Connecting instructional programs to occupation and industry was done using the Classification of Instructional Programs (CIP) to Standard Occupational Classification (SOC) Crosswalk, developed by the National Center for Education Statistics at the Department of Education. Within the key industries in 2019, the median hourly wage associated with the occupations that require a postsecondary credential was $32.83. The median hourly wage for the occupations that do not require a postsecondary credential was $21.54, a difference of $11.29. Similarly, in 2019 the occupations that require a postsecondary credential had an average of 13,689 projected annual job openings, compared to an average of 9,681 annual openings for the occupations that do not require a postsecondary credential. With this information, it can be inferred that there is a significant demand for postsecondary education within the key industries in Colorado. Additionally, the jobs that require a postsecondary credential have a higher median hourly wage than those that do not require a credential.

The programs aligned with the 14 major industries aligned to the six of the degree groupings used in this report: arts, humanities, and communication; business; health; science, technology, engineering and math; social and behavioral sciences and human services; and trades. A similar pattern emerges when comparing occupations that require a postsecondary credential versus those that do not; occupations that require a credential are typically associated with a higher wage.

Program Type	Median Hourly Wage for Occupations that Require a Postsecondary Credential	Median Hourly Wage for Occupations that Do Not Require a Postsecondary Credential
Trades	**$35.81**	**$21.07**
Health	**$35.59**	**$23.04**
Science, Technology, Engineering and Math	**$33.13**	**$22.59**
Business	**$32.52**	**$18.61**
Social and Behavorial Sciences	**$29.24**	**$21.81**
Arts, Humanities and Communication	**$26.03**	**$19.24**

The Role of Higher Education as an Industry

Institutions of higher education not only educate and train individuals to fill Colorado's talent pipeline with a qualified workforce; they also provide jobs for the people who reside in that community. When institutions of higher education are viewed through an industry lens, it is apparent they have a significant economic impact on Colorado's communities as well.

In 2019, private-sector colleges, universities and professional schools provided 17,654 full- and part-time jobs in Colorado. These jobs are projected to grow by 10.4 percent between 2019 and 2029. These private-sector institutions paid almost $37 million in taxes and had $1.1 billion in gross regional product (GRP) in 2019. (GRP provides a measure of the size, income and productivity of a regional economy as it is the market value of all goods and services produced.) Looking at the industry supply chain, these establishments had over $364 million in-state purchases (e.g., real estate, electric power distribution, natural gas distribution).

When institutions of higher education are looked at through an industry lens, it is apparent they have a significant economic impact on Colorado's communities as well.

Institutions of Higher Education Economic Impact Reports

Colorado's public institutions of higher education have developed their own economic impact reports or studies to communicate their value to the community. These are two examples:

The Economic Value of the University of Northern Colorado Executive Summary
In fiscal year 2017-2018, the University of Northern Colorado (UNC) employed 1,792 full- and part-time faculty and staff (excluding research employees) and had $237.9 million in operations spending.

Every other year, Colorado Mesa University produces a Regional Impact Study. The 2019 Regional Impact Study indicates that Colorado Mesa University's expenditures (e.g., college, employees, students, visitors, capital) exceeded $260 million in fiscal year 2017-2018. These are just two examples of how institutions of higher education are contributing to Colorado and their local economies. See the Economic Impact Studies Folder for similar reports from multiple institutions in Colorado.

Conclusion and Next Steps

Earning a postsecondary credential positively impacts the lives of students and improves Colorado's society more broadly.

For the individual, improved earning potential and employability are tied directly to postsecondary credential completion. At the state level, increased wages among postsecondary graduates enhance Colorado's labor market, which provides more opportunities to support families across the state. Additionally, societal benefits beyond economic gains, such as greater social mobility, higher likelihood of civic engagement, and reduced likelihood of individuals being involved with the criminal justice system, benefit all Coloradans.[31]

Following the 2019 version of this report, Governor Polis, in partnership with CDHE and CCHE, released the *Roadmap to Containing Costs and Making College Affordable.* The roadmap lays out a bold agenda for Colorado's system of higher education to make postsecondary education more accessible to Colorado residents. Implementing the strategies in the roadmap will reduce the time and resources that students dedicate to a degree, thereby increasing their ROI.

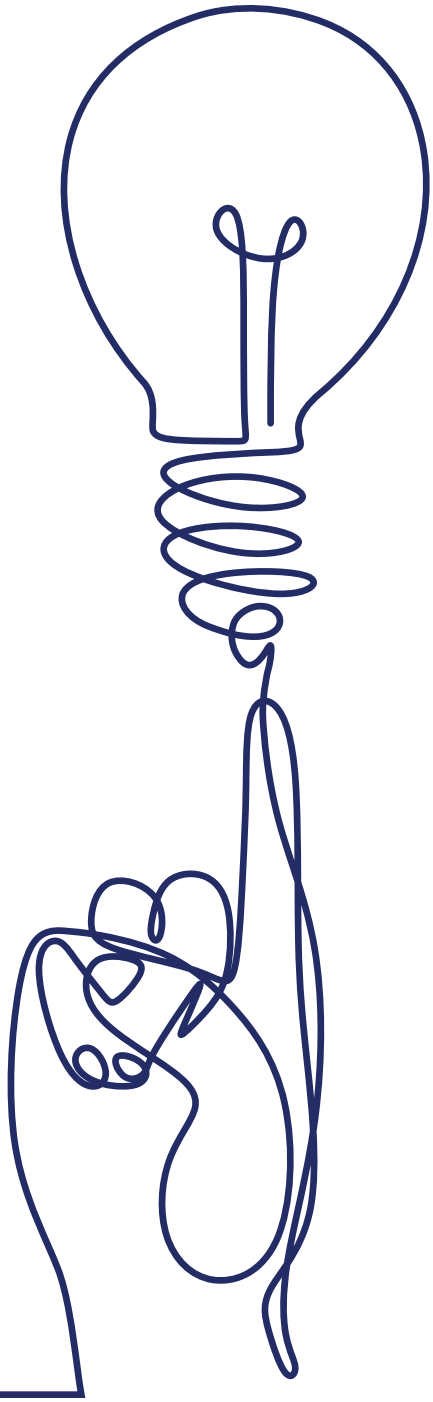
The pathways that students choose, including the degree and program they pursue, and the amount of time and number of credits it takes them to complete a degree, can have a significant impact on future earnings.

Higher levels of postsecondary education are associated with higher wages. However, students cannot control their wages through their pathway decisions alone. Societal factors such as systemic racism and gaps in opportunity do exist. Equity gaps by gender and race/ethnicity exist both in the types of degrees students pursue and the wages they receive after completing their degree.

Costs play a role in the ultimate return to students, and institutions must prioritize making postsecondary education affordable. Institutions should focus on helping students leverage all the resources available to them to contain costs. Some areas of opportunity to cut costs are embracing Concurrent Enrollment and Prior Learning Assessments to shorten the time to credential completion. Another opportunity lies in completing the FAFSA as the first step in accessing a variety of student financial aid. Further, in broadening awareness of existing social benefit programs, individuals may find supplemental support that allows them to finish what they have started.

The results of the Department's analyses with regard to race/ethnicity and gender point to an additional necessary focus for the state: committing to closing equity gaps and reducing systemic inequities in both the higher education system and the workplace. In addition to hiring a chief educational equity officer to drive change and focus on the strategies outlined in the *Roadmap to Containing Costs and Making College Affordable*, CDHE should work with the Statewide Equity Coalition to identify additional opportunities for eliminating equity gaps. Strategies to consider are:

- A dashboard that tracks leading indicators for all Colorado higher education institutions and allows students to assess the best institutions for Asian, Black or African American, Hispanic or Latinx, American Indian or Alaska Native, Hawaiian or Pacific Islander and white students.
- Differential tuition for low-cost, high-social-value degrees, especially teaching and human services, so that more Colorado children see people like them reflected in the public servants they interact with; more students can affordably pursue a degree, limiting cost barriers to high social value credentials.
- Develop and expand the number of bilingual postsecondary pathways available to students so that language acquisition is not a barrier to postsecondary success through a statewide challenge similar to the state's challenge for institutions to offer "Z-Degrees," degrees that can be achieved with zero textbook costs using Open Education Resources (OER).
- Create industry partnerships to provide more high-quality, paid internship or apprenticeship opportunities early in a program of study within a given profession to reduce barriers for underrepresented groups and expand exposure and opportunities to students who may not have them otherwise.
- Leverage My Colorado Journey, a multi-agency online personalization and content delivery system, to help empower all students to make informed choices about their postsecondary decisions.



Data and Methodology

To calculate the various metrics outlined in this report, CDHE receives data from several sources, including Colorado public postsecondary institutions of higher education (IHEs) via the department's SURDS (Student Unit Record Data System) and unemployment insurance (UI) wage data from the Colorado Department of Labor and Employment. The sharing of data among IHEs and CDHE, as well as data sharing between CDHE and other state agencies, has allowed CDHE to provide valuable insights into student postsecondary success. Following is a breakdown of several of the metrics outlined in this report and the methods used to calculate those metrics.

Program Groupings: Degree programs were grouped into categories using two-digit CIP codes and the Complete College America Meta Major framework that has been adopted by the Bill and Melinda Gates Foundation, SHEEO, NCHEMS and other foundations. Grouping programs provides higher match rates (by overarching program) and more aggregated counts of students (to address data privacy concerns).

Cost Data: To allow for national comparisons, state-level published tuition and fees estimates were taken from the College Board's Trends in College Pricing report. These data are closely aligned with the numbers reported in the department's annual Tuition and Fees report. Institutional and program data on tuition and fees in this report come from the CDHE Tuition and Fees report. Estimates for housing, food, books and other expenses used to calculate cost of attendance are from the CCHE's approved student budget parameters. Finally, average financial aid data is derived from data reported on the Financial Aid portion of the Integrated Postsecondary Data System (IPEDS).

Debt: State- and institutional-level debt was calculated using the 2017-18 SURDS Financial Aid file. It includes students who completed a degree at a Colorado institution of higher education and were classified as resident students at the time of graduation. For graduates of four-year institutions, it includes debt that they incurred up to six years before graduation; for graduates of two-year institutions, it includes debt that was incurred up to three years before graduation.

Time to Credential and Credits at Credential: *Time to credential* was calculated using completion data from the 2017-18 SURDS Degree file. Of those who completed a degree at a Colorado public institution of higher education (IHE), the student's first-time enrollment at that same Colorado IHE was found. Additionally, a student's first-time enrollment was matched to the type of credential the student was seeking. For example, if a student received a bachelor's degree, the student's first-time, bachelor's-degree-seeking status entry was used. Based on these data, a time to credential (in years) was calculated. Calculations for associate degrees and certificates used a similar method. Students receiving a credential via the state's Reverse Transfer process were removed from the calculations. *Credits at credential* data was calculated using the maximum cumulative credits hours accumulated by a student at the time of their credential completion.

Median Earnings: CDHE's work over several years to link credential completion and UI wage data has resulted in the ability to provide valuable insights into actual wage outcomes for students who complete and credential in Colorado and stay in Colorado after graduation to work. Median one-, five- and 10-year earnings data were calculated, matching degree completion and UI wage data. A detailed methodology for these calculations as well as median wage outcomes by IHE, program grouping (2-digit CIP) and program (4-digit CIP) can be found via CDHE's Postsecondary Degree Earnings Outcomes Tool.

North American Industry Classification System (NAICS): The North American Industry Classification System (NAICS) represents a continuing cooperative effort among Statistics Canada, Mexico's Instituto Nacional de Estadística y Geografía (INEGI) and the Economic Classification Policy Committee (ECPC) of the United States, acting on behalf of the Office of Management and Budget, to create and maintain a common industry classification system. NAICS was originally developed to provide a consistent framework for the collection, analysis and dissemination of industrial statistics used by government policy analysts, academics and researchers, the business community and the public. See the 2017 North American Industry Classification System (NAICS) Manual for more information on structure and industry classifications.

Education as an Industry: Colleges, Universities and Professional Schools (NAICS 611310)
This industry is composed of establishments primarily engaged in furnishing academic courses and granting degrees at baccalaureate or graduate levels. The requirement for admission is at least a high school diploma or equivalent general academic training. Instruction may be provided in diverse settings, such as the establishment's or client's training facilities, educational institutions, the workplace or the home, and through diverse means, such as correspondence, television, the internet, or other electronic and distance-learning methods. The training provided by these establishments may include the use of simulators and simulation methods.

(*Note: in EMSI data, this industry includes private-sector establishments only.*)

MIT Living Wage Calculator: The living wage calculator estimates the living wage needed to support families of 12 different compositions in various geographical areas. See the MIT Living Wage Calculator Technical Documentation for full methodology and definitions.

EMSI: EMSI provides traditional labor market data, job posting analytics and compensation data using data from the U.S. Bureau of Labor Statistics, U.S. Census Bureau, online profiles and resumes, online job postings and other government sources. See EMSI Data Release Notes for a full list of data sources.

CIP/SOC Crosswalk: The purpose of the Classification of Instructional Programs (CIP) to Standard Occupational Classification (SOC) Crosswalk is to provide data users with a resource for relating CIP and SOC. A CIP-SOC relationship indicates that postsecondary instructional programs classified in the CIP category typically prepare individuals directly for jobs classified in the SOC category. See the guidelines for using the CIP to SOC Crosswalk for more information.

Endnotes

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