



COLORADO

Department of
Higher Education

2022 Higher Education Return on Investment Report



2022

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 (CDHE)**

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<https://highered.colorado.gov/Data/Workforce/ROI.html>

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COLORADO

Department of
Higher Education

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Jared Polis
Governor

Dr. Angie Paccione
Executive Director

As Colorado continues to build back stronger from the COVID-19 pandemic, the importance of education and training in ensuring a vibrant Colorado economy remains paramount. Coloradans need a variety of ways to develop their skills and navigate various workforce opportunities. The completion of postsecondary education continues to provide individuals with avenues to maximize their earning potential and support our communities across the state.

However, in the face of declining enrollment many have questioned the value of a college degree especially given the time, money, and effort required to complete college. The Colorado Department of Higher Education's annual report on the return on investment (ROI) of postsecondary education continues to show that completion of postsecondary education yields significant benefits for individuals and families in Colorado. These benefits become even more important in times of economic hardship and recovery as completion of more education leads to higher workforce participation rates and lower unemployment.

This report provides a detailed analysis of various ROI measures and recommendations around time and credits to completion, average cost and debt for completion, and wage data. These measures help Coloradans maximize their college investment, enable them to make the best decisions aligned to their goals and needs, and help us achieve our objectives around affordability and cost containment.

With continued collaboration from legislators as well as business and education leaders, we can create a Colorado that works for everyone and prioritizes making college affordable. Armed with these robust data, we hope that individuals—and our state—can make pursuing a college degree affordable while making the most of our investment in higher education.

Sincerely,

Jared Polis
Governor

Dr. Angie Paccione
Executive Director, Colorado Department of Higher Education



Table of Contents

6	Introduction
10	Value
16	Choice
21	Price
24	Debt
27	Appendix



Introduction

Colorado continues to recover economically from the 2020 recession. After an increase of more than 14,000 nonfarm payroll jobs across the state, Colorado's job recovery has fully rebounded and surpassed total jobs lost in early 2020 with a rate of 101.9%, exceeding the national rate by a notable 11.5%. At the same time, statewide unemployment decreased to 4%, reaching its lowest level since the pandemic's onset roughly two years prior.¹ Still, the importance of educational attainment in the state remains a critical factor in employment status. Findings from the [2021 Talent Pipeline Report](#) show that in the current economy, just more than **73% of Tier 1 Top Jobs² require at least a four-year degree** for eligibility, and approximately **91% require some type of credential past high school**.

As of February 2022, Coloradans who completed a bachelor's degree or higher had the lowest unemployment rate in the state at 2.2%, while Coloradans with less than a high school diploma had an unemployment rate nearly two times higher, at 4.3%³. This is one indication that the return on investment for students who complete postsecondary education remains strong – an outcome reflected not only by increases in workforce participation levels but additionally by higher lifetime earning potential, annual wages, and arguably invaluable life experiences.

While the pandemic tested an individual's career satisfaction, the Great Reconsideration has additionally brought many new perspectives to the future of higher education in Colorado. Elevated departures, retirements, and job switching have bolstered the need for transferable skills and career pathways building to upskill, reskill, or retool via attainment channels. According to the [2022 State of the Hourly Workforce Report](#), 42.4% of hourly employees plan to leave their current role in the next 12 months to explore new opportunities and increase their levels of overall wellbeing. As Colorado's workforce continues to evolve for the greater good, institutions of higher education are doing the same by implementing strategies to close equity gaps, strengthen enrollment and completion rates, provide diverse options to fortify attainment, and support wellbeing across student populations. Colorado's IHEs have managed the challenges brought on by or exposed through the pandemic by creating new legislation and developing/expanding programs and resources that support affordability and equitable opportunities for educational advancement, building resiliency.

Tier 1 Top Jobs are defined by the Colorado Workforce Development Council (CWDC) as those with projected high net annual openings, above average growth rates over time, and a livable wage capable of covering life's necessary expenses.

¹ Colorado Department of Labor and Employment (CDLE), Office of Labor Market Information (LMI)

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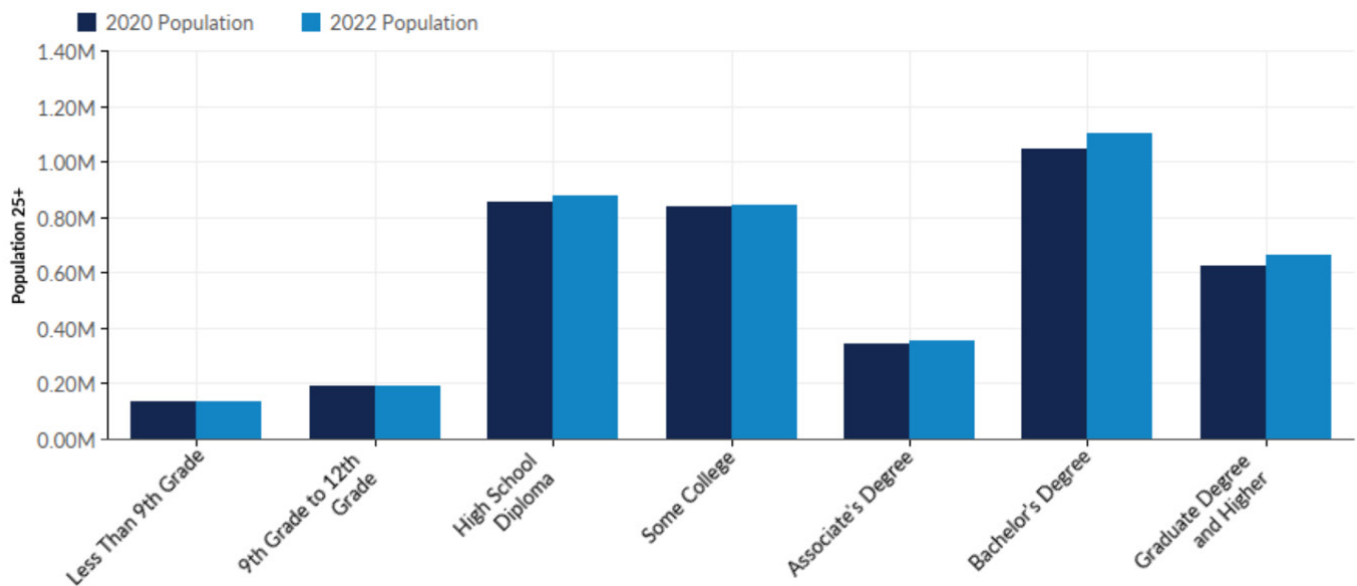
³ U.S. Bureau of Labor Statistics

The need for attainable, relevant, and affordable postsecondary attainment has never been greater as the demand for knowledgeable workers is at an all-time high. No longer will a high school diploma serve as a ticket to acquire quality jobs that pay livable wages and offer opportunities for growth. As our economy continues to evolve, the importance for workers to earn postsecondary credentials continues to grow, largely because they boost economic mobility. New pathways for student success outlined by [HB21-1330](#) legislation and its task force have reverse engineered the structure of traditional three- and four-year degrees to reengage students statewide. Strategies to dramatically expand career pathways that directly lead to advancing opportunities (in both the short and long term) have progressed the framework of what lifelong

learning means and looks like for every type of learner – at every point in their career – no matter their background, culture, or socioeconomic standing. The interconnected set of initiatives presented through this legislation forms the basis of a purposeful and promising approach to long-needed improvements in the structure of higher education for all Coloradans while aligning with the Department’s core goals which help the state reach 66% educational attainment by 2025.

Despite the hurdles present in recent years, since the pandemic’s onset in 2020, postsecondary attainment levels have been increasing marginally across the state’s population, making Colorado that much closer to achieving and surpassing this target.

FIGURE 1: Educational Attainment by Level in Colorado: 2020-2022



Source: Lightcast Econometric Modeling, Quarter III 2022

CDHE's mission is to drive innovative initiatives that increase college completion rates and enrich learners' prospects for career success. Current efforts involve strategies to:

- Reorganize support systems and credit-earning options that serve learners and bolster student success.
- Collaborate with workforce development groups and employers to offer work-based earn while you learn opportunities.
- Erase equity gaps.
- Stay committed to affordability frameworks and cost containment.

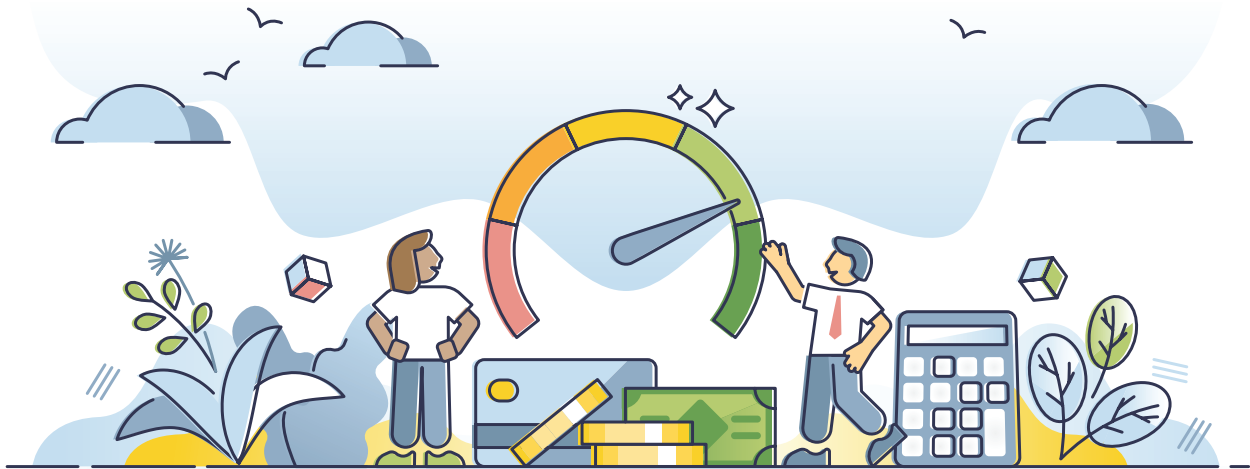
With each strategy playing a driving force shaping this narrative, the 2022 ROI report is largely intended to serve three core functions:



- 1** Help students and policymakers better understand the impact of postsecondary attainment at an individual level.
- 2** Provide an analysis on state efforts currently expanding opportunities for learners that:
 - Empower career pathways to weave education and training credentials with Colorado's workforce; and
 - Encourage educational "on-ramps" and "off-ramps" for lifelong learners by:
 - Offering faster time to credential completion programs; and/or
 - Enable learning while earning opportunities.
- 3** Discuss what's on the horizon for Colorado in terms of potential, new ROI measurements and methodologies.



BOTTOM LINE: Learning connects job seekers to the workplace and equips individuals with the skills and training they need to thrive. Recognizing the new strategies and initiatives that are beginning to be implemented, Coloradans can expect postsecondary education to provide distinct opportunities and resources tailored to student's unique wants, needs, and career goals while increasing their return on investment and overall quality of life.

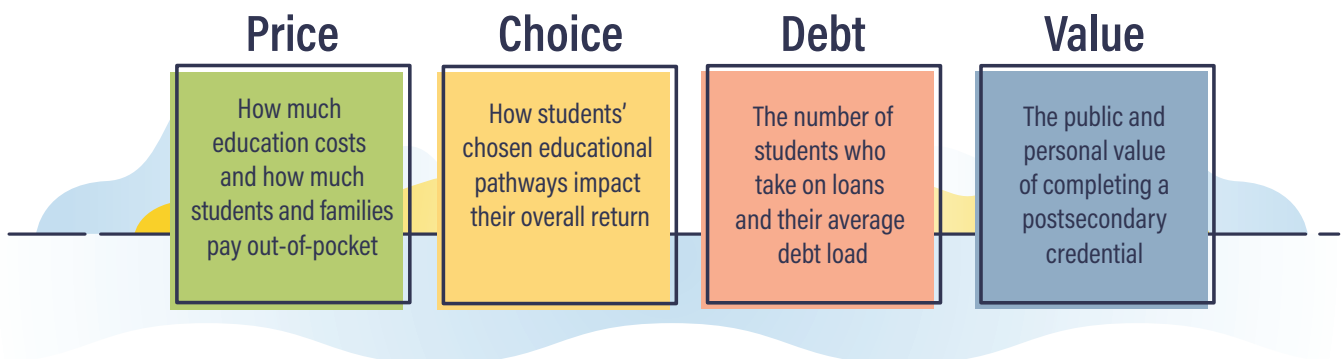


Return on Investment’s Explanatory Factors

Return on investment varies by the individual student. The actual price of attendance goes beyond tuition costs, including fees, room and board and other costs associated with being a successful college attendee. While most students receive some type of financial aid (causing less to pay the published cost of attendance) more students in Colorado and across the U.S. are graduating with debt to finance their education. Debt and price are also influenced by choices available to and made by students and families along their credential pathway, including academic program, career opportunities, living arrangements and more.

At the same time, the post-pandemic economy has changed typical strategies to economic prosperity – with some remaining more unwavering than others.

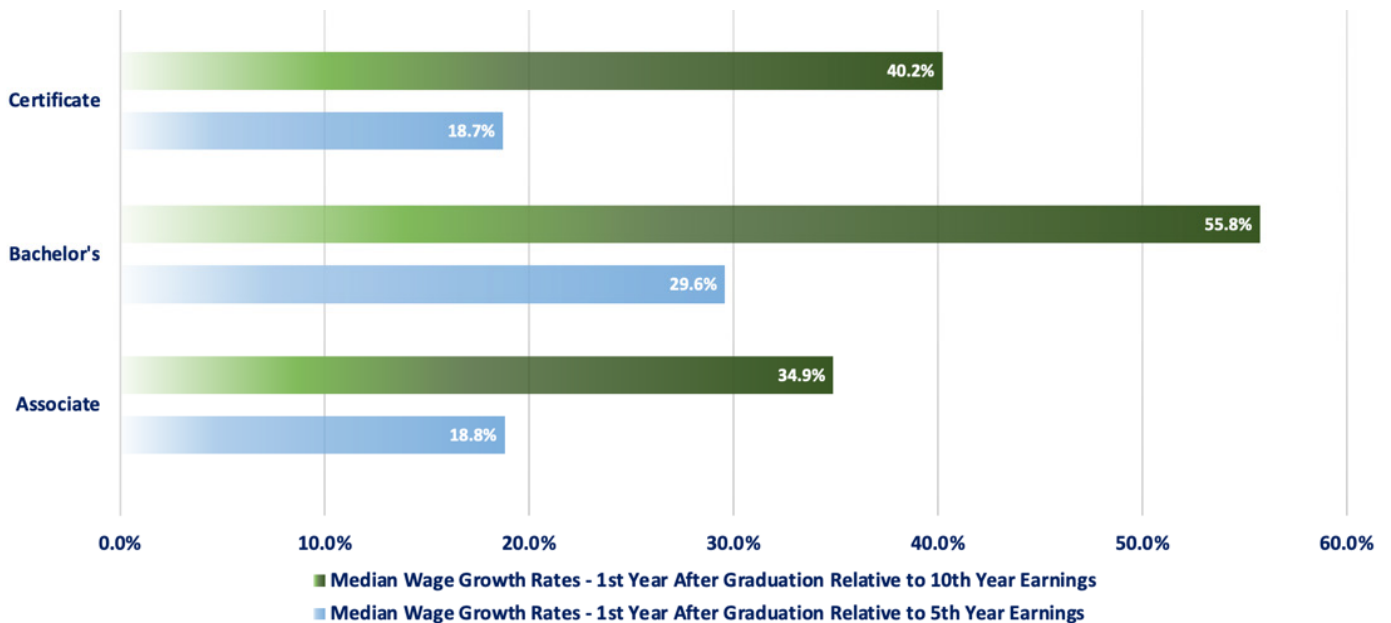
According to a recent [Georgetown University study](#) on possible pathways to reaching a good job, to meet employer demand in the workforce, having a postsecondary degree is still one of the most reliable. As of the second quarter of 2022, 80% of 35-year-olds with a four-year-degree or higher have a job that is classified as a “good” job based on its wage rate and openings. This employment probability quickly dissipates for 35-year-olds with less educational attainment. Only 56% of young workers with some college or an associate degree, 42% with a high school degree or equivalent, and 26% without a high school completion are associated with landing good jobs by this age. Taken together, these elements help students and families understand the value of their credential.





With nearly 91% of Top Jobs in the state requiring further education and training after high school completion (or equivalent), it is easy to understand how some form of postsecondary education can have a dramatic impact on an individual’s earning potential over the course of one’s career. This theory is supported through the state’s robust history of measuring wage outcomes for individual credential programs. Through collaboration between state agencies, CDHE calculates the median one-year, five-year and 10-year earnings outcomes for completers of postsecondary credentials in Colorado. CDHE’s [Postsecondary Degree Earnings Outcomes Tool](#) provides an interactive way for individuals to view these earnings outcomes by institution of higher education, academic program, and credential type. These calculations show the impact that higher education can have on earnings and are reported in the table below.

FIGURE 2: Return on Wages Over Time

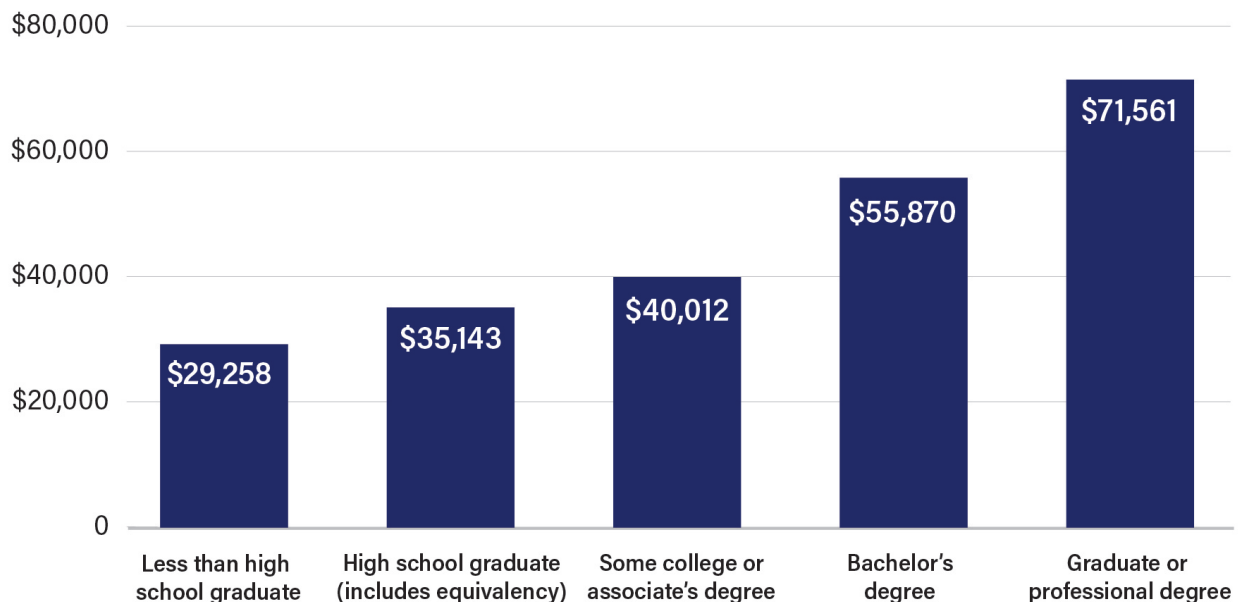


Source: [Supporting wage outcomes data on CDHE's ROI page](#)

Utilizing these numbers, Figure 3 below displays growth rates in earnings over time by attainment levels. This visualization provides an easily digestible way of understanding the significant increases in average wages across all completions between the first, fifth-, and tenth year earning levels. While four-year degrees deliver the highest returns in the long-run, it is interesting to highlight that medial one-year earnings are higher for some associate degree programs relative to bachelor's degree programs.

To compare wage outcomes relative to those with a high school diploma or less, the Figure 3 below displays the mean annual salaries of Coloradan adults earning above minimum wage broken out by attainment levels. Higher earnings are associated with higher education, as wages increases tend to follow growing credentials. Those with a bachelor's degree far exceed those with only a high school degree or equivalent in terms of annual earnings, with an average salary gap of **\$20,727** per year. Graduate or professional degrees are associated with the highest average annual wage at \$71,561, earning \$36,418 more per year on average, relative to those with a high school diploma or equivalent.

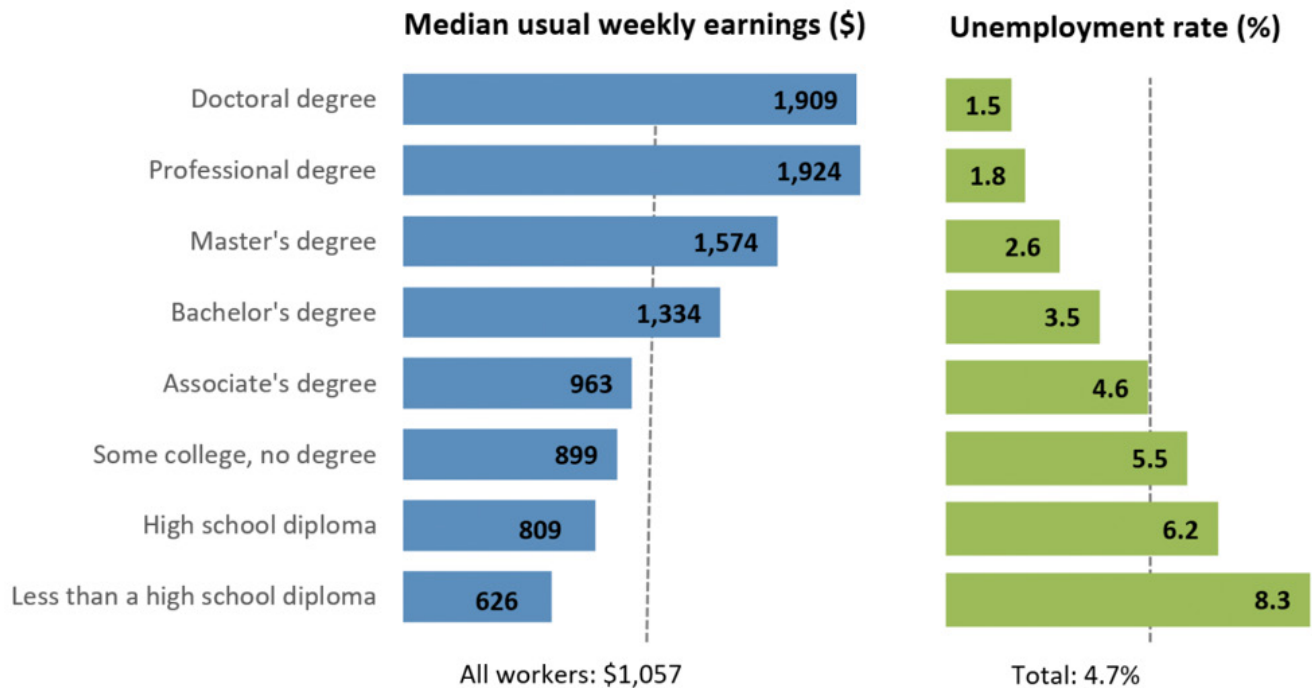
FIGURE 3: Colorado Mean Annual Wage by Educational Level



Source: American Community Survey Public Use Microdata Set 2016-2020

The Relationship Between Educational Attainment and the Labor Force

FIGURE 4: Earnings and Unemployment Rates by Educational Attainment, 2021



Note: Data are for persons age 25 and over. Earnings are for full-time wage and salary workers.

Source: U.S. Bureau of Labor Statistics, Current Population Survey.

Employment

Higher education and the workforce are often conditional to one another. The on-ramps and off-ramps to advancement through postsecondary education and training correlates significantly with an individual's career pathway and a population's labor force participation. Consequently, those with higher levels of education are associated with arguably more favorable employment outcomes while the less educational attainment associated with an individual, the more likely they are to face unemployment. This is true at both national and state levels. Figure 5 on page 13 embodies the negative correlation in the U.S. between the Bureau of Labor Statistics (BLS) employment projections in relation to credential attainment and expected weekly earnings.

Similarly, statewide data collected from the 2022 Current Population Survey (reflected in Figure 4 above) aligns with national data trends and illustrates a homogenous relationship between employment and education level. The figure above showcases a similar inverses correlation between education and unemployment – **as education increases, employment rates also increase while unemployment decreases.**

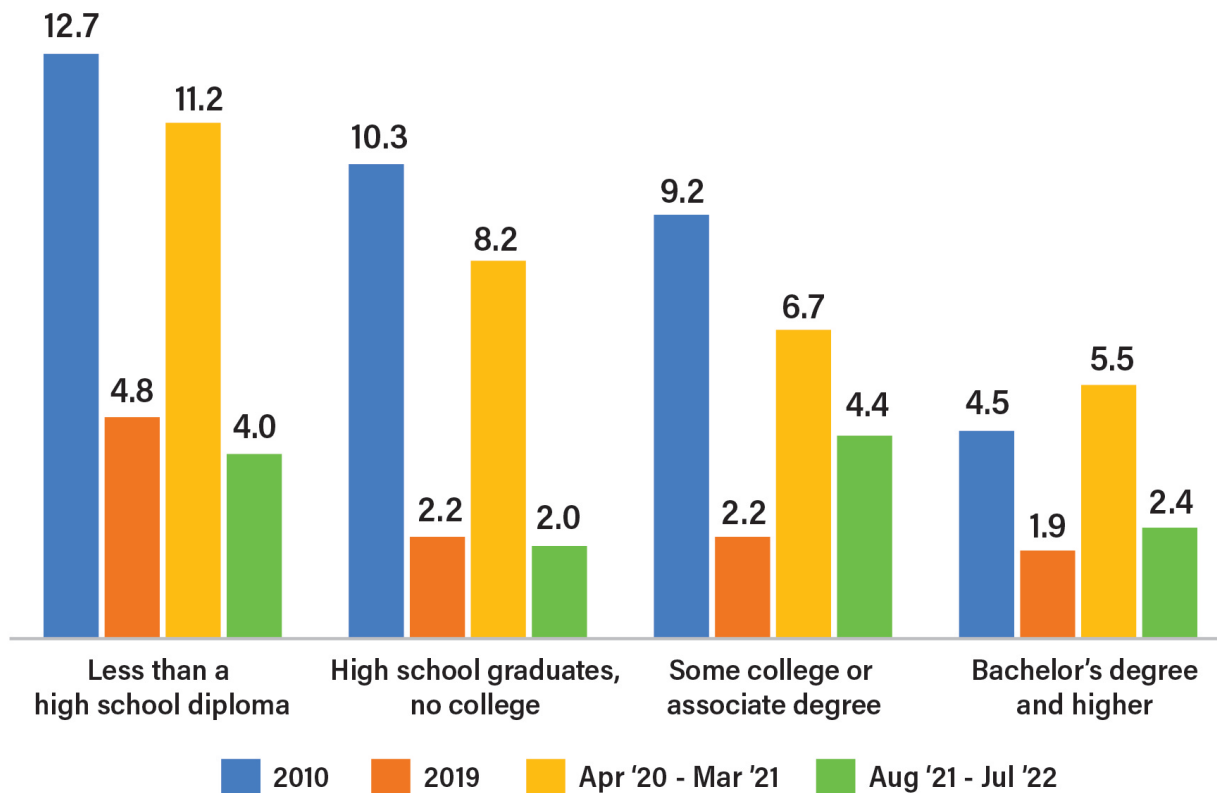
Figure 5 shows the consistency of employment for individuals with postsecondary credentials, regardless of the period. Thus, not only do those with higher education have a lower unemployment rate in times of economic prosperity, but education is also resilient in times of economic contraction and recession. Looking across each period, those with a bachelor's degree or higher had the lowest unemployment rates during the peak of the Great Recession in 2010 and during the COVID-19 pandemic in 2020. This aligns with recent wage outcomes as well, as during the pandemic, high- and medium-wage earners saw the least disruption in employment, with occupations bolstered by credentials earned. Reversely, low-paying jobs experienced the most volatility in terms of unemployment numbers, particularly from service jobs where working from home was not a feasible option.



As education increases, employment rates also increase while unemployment decreases.

While these measures help show the benefits of higher education, various factors may limit the value of higher education realized by groups from various gender and race/ethnic backgrounds. Information and analyses of these equity gaps can be found in [last year's ROI report](#) (pages 32-37). All Coloradans should realize the full benefits of completing higher education to pursue their dreams and improve our communities.

FIGURE 5: Unemployment Rates by Educational Attainment (Most recent 12-month period available vs. select periods)



Note: Data not seasonally adjusted. Unemployment rates by educational attainment for individuals 25 years and over.
Source: Current Population Survey

The Impacts of Higher Education on the Economy

Institutions of Higher Education play an important role in local communities, acting as a robust economic engine in Colorado. Higher education systems support their respective communities by employing thousands of workers, importing investment, educating and training the current workforce, and launching hundreds of new start-up companies across the nation. At a global level, these systems have become major exporters of research and innovation to the world. At a statewide level, IHEs attract and foster workforce talent in Colorado.

Driven by the opportunity to provide more diverse education and training options to bolster the growth of Colorado's talent pipeline, IHEs cultivate workforce retention and human capital returns in the state.

Since 2005, approximately **50%** of out-of-state students who moved to Colorado to attend one of the three Colorado State University System campuses have remained in the state after graduating – contributing to the more than **112,250** CSU alumni who are employed and working in the state in 2022. Currently, an estimated one in 25 workers in Colorado have a degree from CSU.



Metropolitan State University of Denver (MSU-D) generated \$703.4 million in economic impact in 2020 all while supporting and sustaining 7,250 jobs. \$6.5 million was additionally given back to the area's local community through donations and volunteer hours. Out of approximately 95,000 national alumni across the U.S., nearly **80% of MSU-D students advanced their attainment while participating in the workforce and remained in Colorado after completion.** Thus, an estimated 76,000 completers with a degree from MSU-D are continuing to contribute to Colorado's economy.

Last year, the Colorado Community College System – the largest higher education system in the state – helped drive Colorado's labor force participation rate to pre-pandemic levels by providing more than **450 customized training opportunities for Coloradans to upskill and reskill.** This led to more than 4,000 new and incumbent workers in the state⁴. Overall, the economic impact of CCCS is approximately \$5.8 billion per year, equivalent to the creation of 98,100 jobs globally.

The University of Colorado generates an average annual economic impact of \$13.3 billion for the state. The associated campuses directly employed nearly 40,000 Coloradans in 2022, collectively awarding the CU system the title of the fifth largest employer in the state. Last year alone, the CU system **fueled nearly 58,000** jobs in Colorado. Most of these occupations are located within the Boulder, Denver, and Colorado Springs areas.



⁴ It is worth noting that each year, CCCS's Skill Advance Colorado Program - in partnership with Governor Polis' Office of Economic Development and International Trade (OEDIT), saves businesses \$4 million in employee training costs.

Value Added through Higher Education

CDHE realizes that a student's total return on investment per completion is a lot more than estimated numbers associated with wage outcomes. A student's value added can be defined at individual, societal, economic, and non-economic levels. Students experience postsecondary value when provided equitable access and support to complete quality credentials that offer economic mobility and preparation to enter the workforce. When this occurs, it builds an environment that advocates for tangible and intangible personal growth – one that bolsters the ability to collaborate, take direction, speak to an audience, and become a leader.

Two- and four-year degrees – as well as quality non-degree credentials – offer life experiences that arguably can't be taught anywhere else. Colorado's higher education ecosystem is student-focused and encourages students to think critically, build problem solving skills, and ultimately, become champions of their best selves. While some of these learned attributes are not feasibly measurable in theory, they tend to be compensated for in the workforce and help advance social and economic justice in society.

Colorado's institutional leaders, faculty and staff intentionally construct invaluable training that ensures all students develop the knowledge, skills, and networks necessary to be successful in both work and life. Diverse campus cultures revealed to newly enrolled students aim to promote equity, individualism, and teamwork. Both institutions and programs continually change to create efficient workforce pathways with employers and enhance the quality of life for learners at all stages of life and at every "on-ramp" and "off-ramp" of their educational advancement.

CDHE is committed to providing learners with postsecondary experiences rooted in equity and culture with the intention to impact positive spillovers on students in terms of both social and capital benefits. With the ever-changing economy and workforce, higher education continues to revolutionize policies and practices to ensure that every student is given the opportunity to grow on both personal and professional levels. Frequent career connected work experiences provide students with a robust path toward employment and advancement. CDHE encourages Coloradans to continue to add value to themselves as lifelong learners, and in turn, pledges postsecondary experiences that add value at both the individual and societal level.



*"Learning is worth it.
It is work, but the work is
its own reward."*

Chris Kolakowski Arapahoe
Community College Student



*"You are never too old
to go back to school."*

Donna McGee
Colorado Mesa University Student

Choice

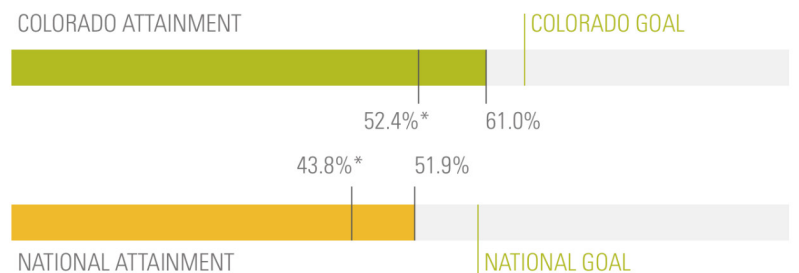


The demand for improved education-to-career pathways has long been clear. Now, higher education and workforce development are at the center of the recovery agenda for Colorado. According to 2021 findings from the [Bridging the Talent Gap 2021 Colorado Labor Market Survey](#), Colorado employers statewide voiced the importance of their workforce seizing additional professional development opportunities to accelerate attainment of top-ranked skills. Aggregately, responses reported roughly half of employers stating that apprenticeship programs (58%) and non-degree credentials (46%) take a priority when screening applications.

Micro Credentials: Leading Change and Expanding Opportunities for Success

One way Colorado is addressing these needs is through building out multiple and linked pathways with shorter-term postsecondary credentials opportunities. CDHE believes credentials will be a major driver of student success and complement degree completion in the rapidly evolving global workforce and economy. Short-term credentials have pushed Colorado towards the finish line in reaching the statewide postsecondary credential attainment goal of 66% for all residents within the age group of 25-64. With the inclusion of workforce-relevant certificates and industry-recognized certifications, attainment levels have increased significantly since 2009.

FIGURE 6: Colorado Attainment Levels & Statewide Goals with National Comparison



*without short-term credentials

Source: [Lumina Foundation's Stronger Nation Report for Colorado](#)

Colorado plans to reach the 66% statewide attainment level goal by 2025 through expanding equitable and diverse pathways for student success. This includes increasing the number of affordable options for quality educational and training programs to earn various credentials past (or while completing) high school. CDHE intends these efforts not only to help accomplish the statewide attainment goal of 66% for all Coloradans, but equally address closing the credential gaps across different demographic groups in the state. Figure 7 below reports these disparities across Colorado disaggregated by race and ethnicities; however, it is important to know these inequalities in attainment were significant problems before the pandemic and since have further been exasperated. For too long, students of color have had limited access to these pathways or have been placed into pathways with few opportunities for long-term academic and workforce success. CDHE strives to intentionally remove structural barriers, providing all students with the specific supports they need to succeed.

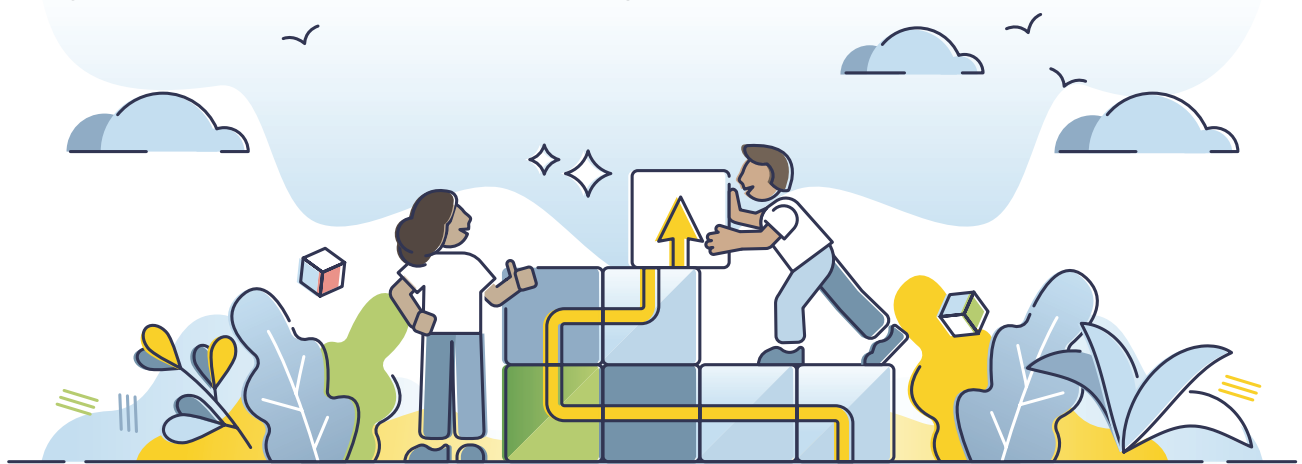
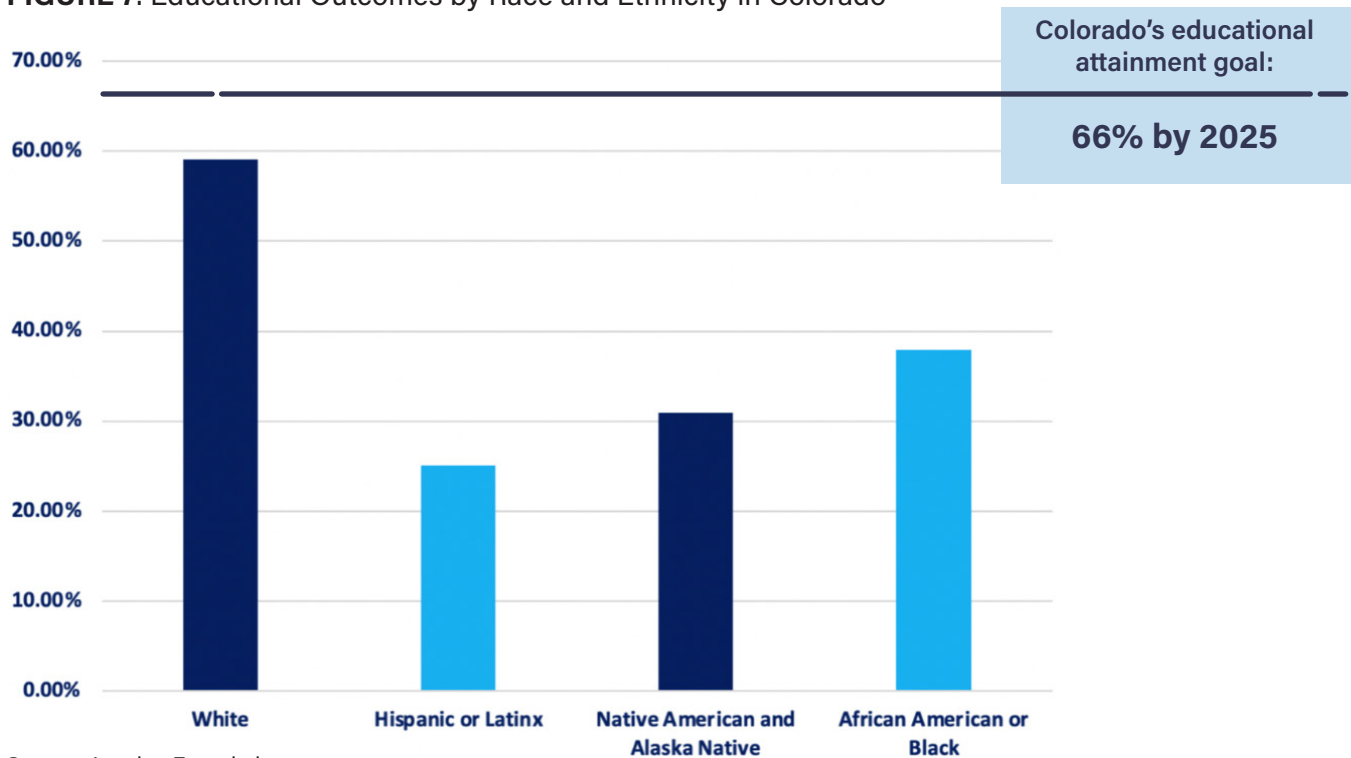


FIGURE 7: Educational Outcomes by Race and Ethnicity in Colorado



Source: Lumina Foundation

Addressing Gap Issues in Student-to-Career Pipelines

Seeking to address where barriers exist in student-to-career pipelines – through funding from the American Rescue Plan – Colorado has allocated **\$51 million** towards programs that foster credential attainment and are targeted towards students who have disengaged from the postsecondary system.

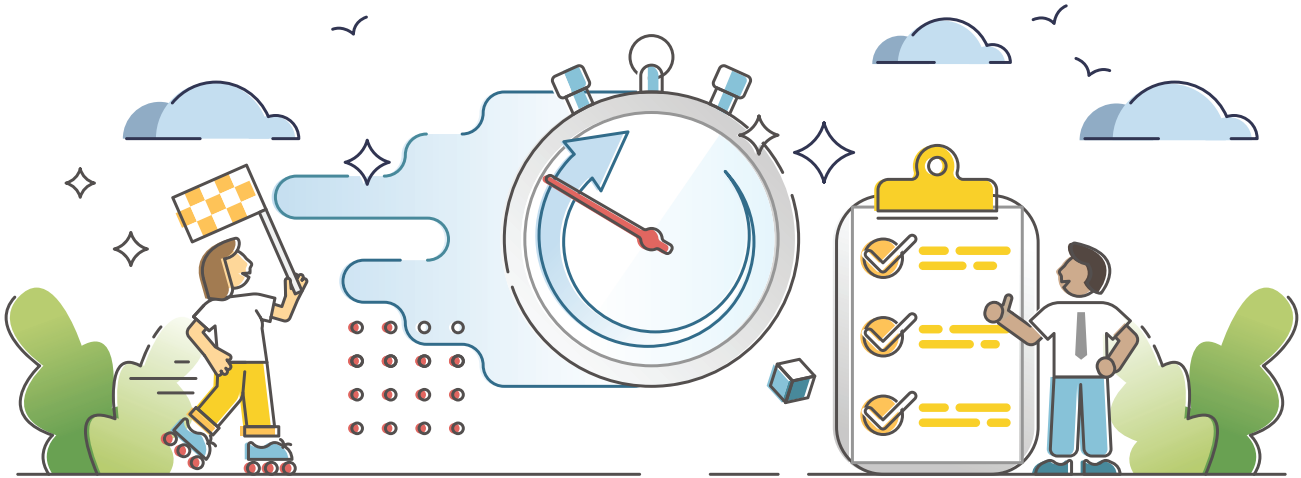
The **Colorado Re-Engaged Initiative (CORE)** enables Colorado’s four-year institutions to award associate degrees to eligible students who have stopped-out from a baccalaureate program after earning at least 70 credits. The program also incentivizes students to re-enroll and complete the remaining credits needed to earn their bachelor’s degree. CDHE data indicates over 25,000 former baccalaureate students who stopped out over the last ten years may already be eligible for an associate degree under the CORE Initiative. In addition to enabling associate degree recipients to obtain higher paying jobs and more secure employment, CORE will strengthen the state’s workforce by increasing the number of Coloradoans with an academic credential.

The **Colorado Opportunity Scholarship Initiative (COSI)** is providing financial assistance and wraparound services to learners as a part of larger efforts to support students who were negatively impacted by the COVID-19 pandemic.

- **Finish What You Started** - The program prioritizes individuals who have experienced economic loss due to the pandemic and have some college, no degree, or first-time students admitted in 2019-2020/2020-2021 but did not enroll. Participants are provided wraparound student support services and direct financial assistance to support continued persistence and certificate or degree completion.
- **Back to Work** -The grant prioritizes individuals whose employment was impacted due to the pandemic and provides participants wraparound and financial support to access and complete their credentials or degree. The participants have an incentive to reskill, upskill, or complete industry-recognized credentials aligned with Colorado Top Jobs, and prioritizes health care, education, information technology, and jobs with the most significant projected annual opportunities.
- **Fund My Future** -The grant provides funds to local education providers to implement strategies to increase the number of students who complete the FAFSA/CASFA before high school graduation. The local education provider must require students to complete a student aid application before graduation unless the student is eligible to waive the requirement.

To strategically address labor shortages while meeting statewide public health goals, Colorado is also allocating millions towards tuition support through the state’s **Behavioral Health Incentive Program**. This program provides financial incentives to rural and low-income Colorado students to obtain a credential in certain behavioral health programs of study. Implemented by [SB21-137](#), \$9 million was dedicated for this effort from the federal American Rescue Plan Act. The program covers an eligible student’s in-state tuition in approved programs at Colorado institutions of higher education.

This year, the Colorado Department of Higher Education [approved \\$5 million in grants](#) to five universities that will provide tuition to students pursuing select degrees and certificates in behavioral health. The state estimates the program will serve nearly 400 students in the first two years with the program lasting four years.



Skills Builders in Colorado: A Fasttrack Way to Upskill and Reskill

Skills builders refers to a subset student population who attend community college for a short period, take courses typically centered in career and technical education (CTE) fields, and complete their course(s) with both a high rate of success and GPAs. Of special interest to this report, this study showed skills builders acquired significant earnings gain following their time as a student, despite leaving without completion of a traditional degree and without transferring to a different institution. These findings report a pattern of behavior consistent with a strategic use of community college institutions in which students are able to realize immediate workforce goals. In doing so, educational pathways are bolstered by aligning with labor market demand from employers. This subgroup of learners seeking short-term workforce credentials and/or in need of rapid reskill for employment identified a competitive edge through postsecondary learning.

A [new study](#) published by the Journal of Higher Education showcases Colorado's national success in community college skills builders. Motivated by educational and labor market outcomes, the paper's research analyzes a distinct group of skills builders across four states: Colorado, Ohio, Michigan, and California.

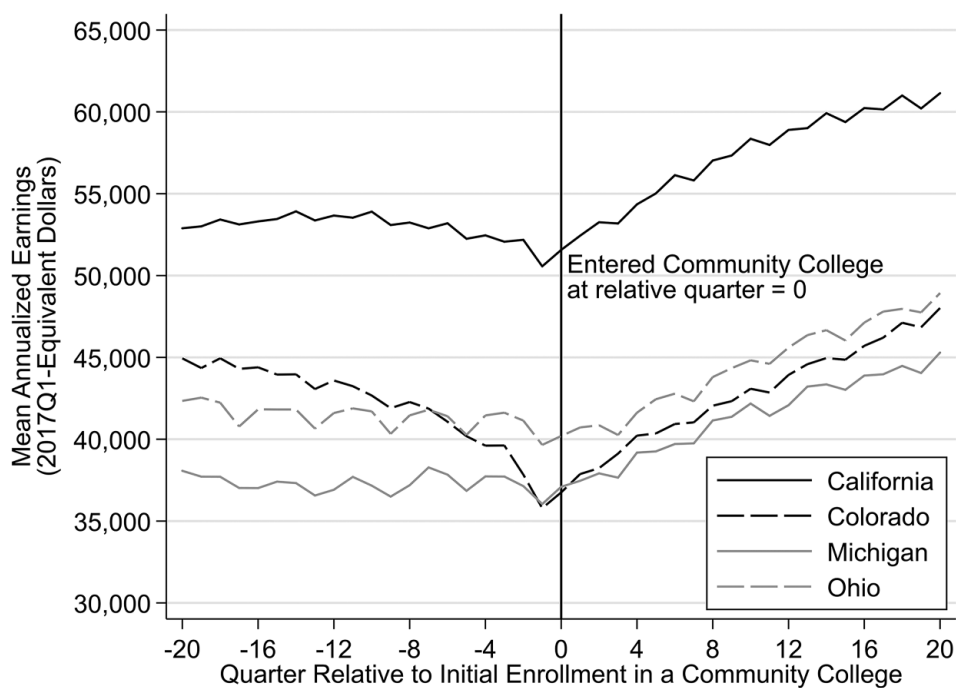
In Colorado, a sample size of 86,442 new community college students were observed. Most attended their institutions for approximately two terms, took an average of three courses, and attained about eight credits. Across Colorado's distribution of credits attempted by program of study for this subgroup, the top five included:

- Health Professions & Related Programs (22%)
- Computer & Information Sciences (13%)
- Business, Management, Marketing (13%)
- Homeland Security, Law Enforcement, Firefighting (12%)
- Mechanical & Repair Technologies (7%)

In terms of attainment outcomes, the study found that Colorado's skills builder population were substantially more likely than non-skills builders to attain a postsecondary certificate (18% versus 10%). Twenty-one percent of the total 86,442 Coloradans decided to enroll in a four-year institution after attending community college, boosting enrollment levels by 18,153 degree-seeking students. This demonstrates opportunistic and diverse pathways for lifelong learners who choose to earn while learning for advancement.

Figure 8 below displays earning outcomes of skills builders before and after entering community college across the sample of states analyzed. Like Ohio and California, Colorado skills builders experienced a modest decline in earning levels prior to enrollment. In the quarter after entering community college, we see trends reverse across all states, with Colorado's earning levels rising at an average rate of \$509 per quarter. Compared to other state's average quarterly gains, Colorado's skills builder wage outcomes outpace California by \$49, Michigan by \$104, and Ohio by \$60 per quarter.

FIGURE 8: Unadjusted Mean Annualized Earnings of Employed Skills Builder Learners Before & After Enrollment by State



Source: *Journal of Higher Education*, 2022

The Colorado Community College System (CCCS) has been on the national forefront in terms of bolstering enrollment levels across skills builder learners and connecting these learners to quality training and jobs. By providing a platform for students to choose their own educational pathway while providing quality courses, CCCS has created successful shortcuts linking economic mobility with short-term student advancement. This research can be utilized as a tool to align stackable credentials, work-based learning, and learning while earning opportunities. Currently, about one in eight students (or 13%) enrolled in a community college system in Colorado fall into the skills builder definition of learners. Skill builders' emergent paths can guide institutional work to create:

- Quick and economically fruitful paths to reskilling and upskilling.
- Stackable credential pathways informed by high-return workforce opportunities.



Tiered Tuition for Equitable Investment Across Students

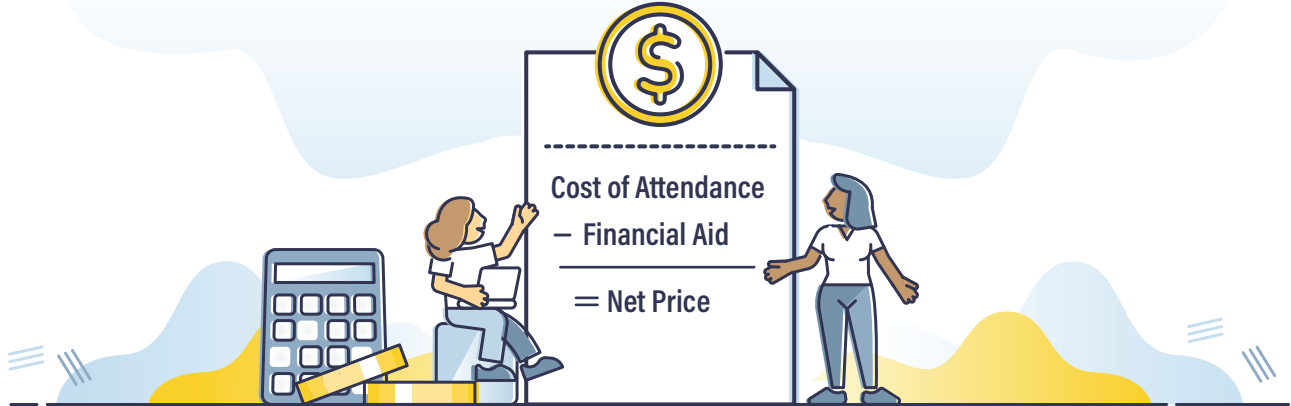
CDHE continues to prioritize affordability, cost containment, and associated returns on investment for students. When considering innovative options for student success in the state, reinventing the (what is frequently referred to as) differential tuition wheelhouse would likely incentivize more learners to enroll and graduate with majors that drive their individual interests and passions. This proposal would be channeled through the side of the equation impacting costs and affordability for students.

CDHE has been considering ways to improve common differential tuition frameworks in pursuit of driving down costs for students in Colorado. Typically, this type of cost structure charges learners a higher rate for programs, in excess of regular tuition rates. Inflated rates are often charged for high-cost programs or programs that are in excess of core requirements. For example, [Colorado State University](#) charges differential tuition for programs that are high-cost, high demand, or high return. The [University of Northern Colorado](#) assesses additional tuition costs for non-liberal arts courses, as well as arts, business, and nursing credits. The [Colorado Community College System Colleges](#) typically charge more for online or health programs.

Rises in cost for students based on courses and programs offered is not unusual in other states either. According to a [study by PEW Charitable Trusts](#), about 60% of public research universities now assess tuition levels based on a student's year of study, major, student demand, or all three. For instance, starting in 2017, art students at the University of Illinois at Urbana-Champaign pay an additional \$1,600 annually to cover the cost of art supplies while undergraduates in business majors are charged just over 40% higher in-state tuition per year (or roughly \$5,000 more in additional costs). Similarly, in 2015, the University of Maryland increased tuition rates for students enrolled in engineering, business, and computer science programs.

To the best of our knowledge, differential tuition, in practice, has consistently meant higher costs at the student level. As advocates for students, CDHE is concerned these types of surcharges will drive potential learners away or shut out low-income students from majors important to the state economy and/or subjects that drive their interests. For more equitable and inclusionary returns across all learners, CDHE recommends adjusting the commonly utilized differential tuition model to strategically reduce tuition levels for learners with typically lower future earning power based on job placement by discipline.

Cost of Attending College



Tuition and Fees

In 2020-21, published in-state tuition and fees at Colorado's four-year institutions are about \$10,500 per year, and tuition at two-year institutions are \$4,000.

Living Expenses

Where a student lives makes a difference. At Colorado's four-year institutions, cost estimates for students who choose to live on campus (reported cost of \$11,700) or independently (\$11,100) are higher than room and board for students living at home. At two-year institutions, reported housing costs are, on average, \$7,900 on campus and \$11,600 independently. Living at home can significantly reduce a student's housing costs.

Books and Supplies

Colorado's four-year institutions reported average books and supplies costs of \$1,500, and two-year institutions reported average books and supplies costs of \$1,700.

Other Costs

There are other costs that students incur while pursuing their education, including but not limited to expenses on transportation, furnishings, laundry, and entertainment. Estimated other expenses vary by living situation but range from \$3,800 to \$5,800.

Total cost of attendance

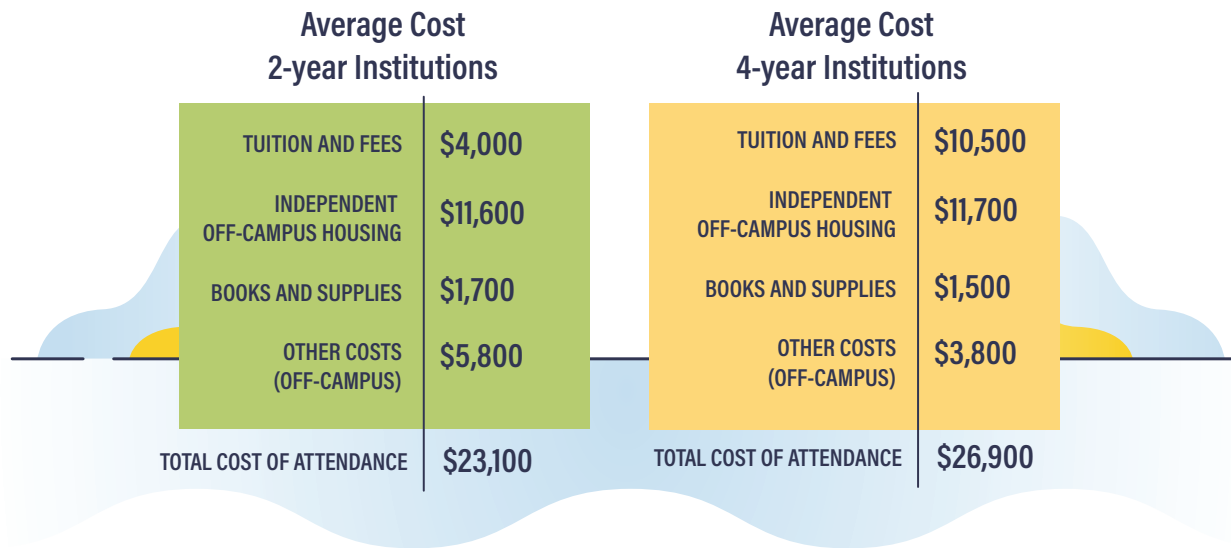
Collectively these costs are added together as the Total Cost of Attendance. Institutions use this cost as well as a student's family income to determine financial aid levels. Very few students pay the total cost of attendance; almost all receive a mix of federal, state and college-funded grants and scholarships, otherwise known as financial aid.

Net price

The total cost of attendance, subtracting financial aid, is referred to as a student's net price. The net price is what a student and their family pay of-out-of-pocket using savings, income from work, and in some cases student loans.

Because the state and its institutions are committed to affordability for in-state students, many students—particularly those from low-income families—pay little, if no tuition, and end up with a significantly lower net price overall. To ensure affordability, institutions in Colorado should 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 9: Average Yearly Cost Based on Posted Net Price



Source: Integrated Postsecondary Education Data System Student Charges Survey 2020-21

TABLE 10: Average Aid Received by Students Receiving Title IV Federal Funds and Federal, State, or Institutional Aid by Income

	2-Year Institutions		4-Year Institution	
	% Receiving Aid	Average \$ Awarded	% Receiving Aid	Average \$ Awarded
\$0-30,000	99%	\$8,200	100%	\$12,500
\$30,001-\$48,000	97%	\$7,700	100%	\$12,500
\$48-001-\$75,000	92%	\$5,900	95%	\$10,600
\$75,001-\$110,000	51%	\$3,900	82%	\$6,900
\$110,000 or more	33%	\$1,500	60%	\$4,300

Source: Integrated Postsecondary Education Data System Student Financial aid and Net Price Survey 2020-21

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, with the national share of borrowers with flat or growing balances increasing from 48 percent in 2019 to 66 percent at the end of 2021.⁵

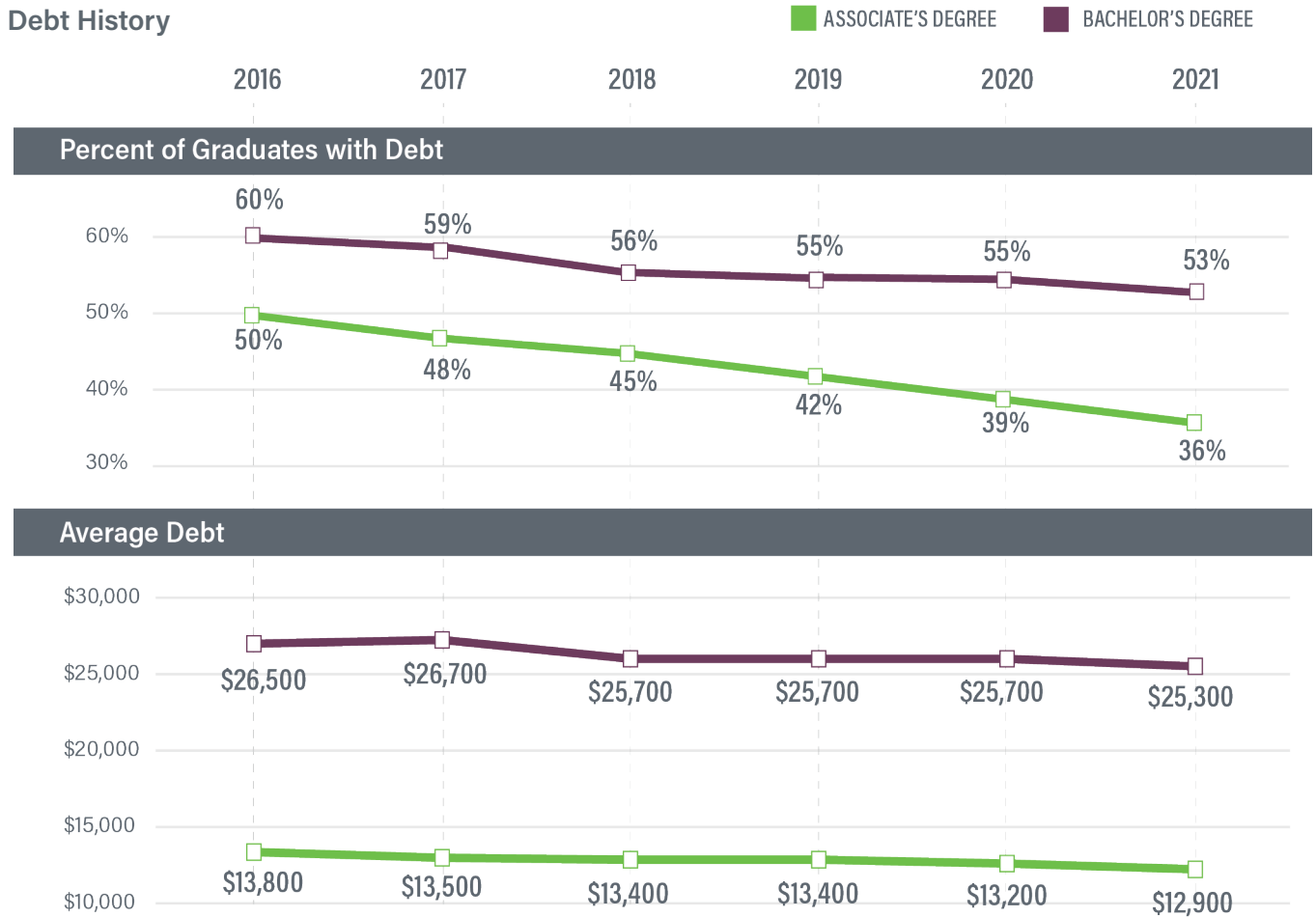
Bucking these trends, debt among Colorado residents graduating from the state's public institutions continues to be on a steady

downward trend since 2014. In 2021, 52.9% of resident students graduating from a four-year institution and 38.1% of resident students graduating from a two-year institution accrued student loan debt. Statewide at all institution types, 45% of students graduated with loan debt in 2021—which means that 55% of resident students graduated with no loan debt at all. In 2021, the average student loan debt for a Colorado student graduating with a bachelor's degree was approximately \$22,533.47.

Debt among Colorado residents graduating from the state's public institutions continues to be on a steady downward trend since 2014.

⁵ <https://libertystreeteconomics.newyorkfed.org/2022/08/three-key-facts-from-the-center-for-microeconomic-datas-2022-student-loan-update/>

FIGURE 11: Debt by Program Type



Source: [Supporting wage outcomes data on CDHE's ROI page](#)

2021 Associate Degree Graduates

- 36% of graduates graduated with debt
- Average debt - \$12,900
- Just 1.8% of graduates accrued debt greater than \$30,000

2021 Bachelor's Degree Graduates

- 53% of graduates graduated with debt
- Average debt - \$25,300
- Just 8% of graduates accrued debt greater than \$40,000



Continuing Work and Options for ROI Methodology Calculations

Being better positioned financially and professionally for having made the decision to invest in postsecondary education is a minimum value that learners expect; and only by meeting this minimum threshold can learners, institutions, and the state expect to reap the many further benefits of postsecondary education. To accelerate a systemic renewal that better meets the needs of an efficient education-to-workforce system in Colorado (and aligns the work outlined in HB22-1349), CDHE is working on creating new metrics that will estimate returns on investment for quality non-degree and degree credentials.

Various national organizations have worked to calculate ROI for postsecondary education. These groups have used available data within the postsecondary and workforce spaces to better define the value of completing a postsecondary credential. Each method has a variety of unique characteristics. For example:

- The Postsecondary Value Commission's framework creates a series of thresholds from 0-5 that incorporate earnings, equity, and wealth calculations.
- Georgetown Center on Education and the Workforce uses net present value calculations at 10, 15, 20, 30, and 40 years. Calculations include cost, future earnings, and length of time it takes to earn money over a fixed time.
- Thirdway measures the amount of time it takes a student on average to recoup the costs associated with college.
- Research Improving People's Lives' (RIPL) calculations take into account students' expected earnings depending on characteristics and compares them to actual earnings to get the value added of the program. This value added is then compared to the cost of education to calculate ROI.

Each of these methods has benefits and limitations. Each method also requires specific data in order to calculate the necessary fields. Building on the work that CDHE has done over the past several years as part of this report, CDHE and the Colorado Commission on Higher Education (CCHE) were tasked by the Colorado General Assembly to set new measures for postsecondary and workforce success (as part of HB22-1349). In tandem with CCHE's new Strategic Plan (set to be released by the end of 2022) and with significant stakeholder input, CDHE will work to better define and calculate the value of postsecondary education completion for students and the state. Updates on this work will be provided in next year's report.

Appendix A

Understanding the ROI Dataset

The ROI dataset is created by linking CDHE's Student Unit Record Data System (SURDS) dataset to CDLE's Unemployment Insurance (UI) dataset through social security numbers (SSN). Although the dataset includes graduates from public institutions in Colorado, it excludes those meeting certain criteria: Graduates who do not have a SSN, who work outside of Colorado, who are federal employees or self-employed, and who meet the minimum wage threshold.

The ROI dataset has enabled Colorado to form a lasting partnership with the U.S. Census Bureau to spearhead a pilot project that involves nationwide degree completion datasets. The Postsecondary Employment Outcomes (PSEO) project leverages federal data linkages facilitated by the Census Bureau to provide national UI wage datasets on individuals who completed a degree program in Colorado, but who have left the state after graduation. This project allows Colorado to leverage an expanded data source to better inform students when they are making their education decisions.

Table 1. Postsecondary Top Jobs: Highest Earning Occupations vs. Lowest

Rank in Wage Outcomes	Occupation Title	Median Hourly Wages	Projected % Change 2020-2030	Annual Openings	Typically Required Attainment Level
Highest Earners Amongst Top Jobs in 2021					
1	Architectural and Engineering Managers	\$85.63	21.16	303	Bachelor's degree
2	Computer and Information Systems Managers	\$83.68	30.41	887	Bachelor's degree
3	Financial Managers	\$82.89	29.75	809	Bachelor's degree
4	Marketing Managers	\$82.76	25.48	455	Bachelor's degree
5	Sales Managers	\$81.97	20.89	576	Bachelor's degree
6	Advertising and Promotions Managers	\$78.39	24.31	62	Bachelor's degree
7	Petroleum Engineers	\$77.00	25.33	108	Bachelor's degree
8	Human Resources Managers	\$72.33	24.48	208	Bachelor's degree
9	General and Operations Managers	\$69.42	23.34	4065	Bachelor's degree
10	Sales Engineers	\$66.15	22.97	286	Bachelor's degree
11	Training and Development Managers	\$62.33	26.47	61	Bachelor's degree
12	Aerospace Engineers	\$61.26	25.15	201	Bachelor's degree
13	Computer Network Architects	\$60.11	23.97	621	Bachelor's degree
14	Medical and Health Services Managers	\$58.70	31.02	666	Bachelor's degree
15	Computer Hardware Engineers	\$57.32	32.08	543	Bachelor's degree
16	Electronics Engineers, Except Computer	\$57.04	20.62	558	Bachelor's degree
17	Software Developers and Software Quality Assurance Analysts and Testers	\$54.18	27.36	4528	Bachelor's degree
18	Computer Occupations, All Other	\$53.30	22.3	1468	Bachelor's degree
19	Atmospheric and Space Scientists	\$51.86	32.16	124	Bachelor's degree
20	Chemical Engineers	\$51.76	22.51	67	Bachelor's degree
Lowest Earners Amongst Top Jobs in 2021					
1	Drafters, All Other	\$29.20	25.61	45	Postsecondary non-degree award
2	Film and Video Editors	\$28.94	48.12	60	Bachelor's degree
3	Clinical Laboratory Technologists and Technicians	\$28.45	26.98	445	Bachelor's degree
4	Education Administrators, Preschool and Childcare Center/Program	\$28.21	22.18	73	Bachelor's degree
5	Skincare Specialists	\$28.11	28.44	277	Postsecondary non-degree award
6	Clergy	\$27.98	32.43	74	Bachelor's degree
7	Chemical Technicians	\$27.88	23.4	127	Associate's degree
8	Occupational Therapy Assistants	\$27.75	36.46	103	Associate's degree
9	Surgical Technologists	\$27.44	25.51	188	Postsecondary non-degree award
10	Camera Operators, Television, Video, and Motion Picture	\$27.14	30.43	59	Bachelor's degree
11	Physical Therapist Assistants	\$26.83	38.47	242	Associate's degree
12	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	\$26.75	30.08	1032	Postsecondary non-degree award
13	Civil Engineering Technicians	\$26.63	27.66	177	Associate's degree
14	Environmental Science and Protection Technicians, Including Health	\$26.56	25.65	97	Associate's degree
15	Life, Physical, and Social Science Technicians, All Other	\$26.52	24.98	195	Associate's degree
16	Environmental Engineering Technicians	\$26.14	29.1	47	Associate's degree
17	Licensed Practical and Licensed Vocational Nurses	\$26.11	21.4	522	Postsecondary non-degree award
18	Child, Family, and School Social Workers	\$26.06	20.75	841	Bachelor's degree
19	Substance Abuse, Behavioral Disorder, and Mental Health Counselors	\$25.85	35.64	1259	Bachelor's degree
20	Meeting, Convention, and Event Planners	\$25.29	24.03	538	Bachelor's degree

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