



2023 Higher Education Return on Investment Report



2023

The Colorado Department of Higher Education
Annual Return on Investment Report

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COLORADO

**Department of
Higher Education**

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Jared Polis
Governor

Dr. Angie Paccione
Executive Director

Colorado has seeded the national landscape with promising programs and pilots, but the state recognizes that it must achieve permanency and consistency to scale across all systems, sizes, and geographies. Indeed, it is imperative that Colorado grows its talent and addresses its talent pipeline. In July of 2022, **CNBC ranked Colorado the number four top state in the country to do business, and number one in the nation for workforce.** Further examining the talent pipeline data and honing strategies across the talent development network is essential for Colorado to continue as a leader in these areas. Yet with unemployment rates almost a percentage point lower than the national average (2.8% in March 2023 compared with 3.5% nationally), Colorado struggles to fill many jobs, with two available jobs for every unemployed person.

To address these economic development issues and systemic silos across education and workforce sectors, Colorado made a historic **\$85 million investment** in the Opportunity Now grant program, providing incentives for innovation between education and employers to grow the state's talent pool. With so many programs and policies in the works that have the potential to blur the lines across sectors, keeping employers engaged, positioning career pathways earlier, and scaling programs statewide will help sustain the most promising innovations and inform systems of change.

Today, learners demand more from the value proposition of college. In light of this, Colorado recognizes that skills and degrees are not mutually exclusive. Skills-based hiring alone won't advance racial equity or get us to the pace and scale of change we need. Colorado graduates benefit not only through completion and advancement but also from readiness to join the labor market equipped with the high-demand, highly competitive skills required for them to thrive in their unique career pathways. This is how Colorado can assure learners they have the training they need to reach their dreams and continue to optimize their quality of life.

The state strives to provide all its learners with quality degrees and credential programs that include skills training to ready individuals for the workforce and signal to employers the completer holds that in-demand skill. Recognizing the economic factors that drive postsecondary enrollment decisions for many learners is key to making education more accessible. A minimum economic value threshold is particularly critical for African American or Black, Hispanic or Latinx, and American Indian or Alaska Native learners, along with learners from lower-economic means, rural, and other historically disadvantaged backgrounds.

Many students face systemic barriers to college access, lower completion rates, and affordability challenges. Giving learners as many options and affordable opportunities to personalize their journey provides Coloradans with the resources and social capital they need to succeed and advance throughout their lives. To maximize the economy, the state must meet these marks and put a postsecondary credential of value in reach for every student, encouraging each Coloradan to pursue their dreams and continue to learn and advance themselves throughout their lives.

Sincerely,

Jared Polis
Governor.

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



Introduction

In 2023, more and more individuals are stepping out of their current work to retrain into high-demand, often better-paying, quality jobs. Colorado's economy is exceptionally strong, but over the past year, Colorado has had two job openings for every available worker.¹ This robust job market has a direct downside for employers, as many continue to struggle to find workers with the skills they need. While the state has historically had more open jobs than available skilled talent, this challenge presents the opportunity to think differently about how education and training (the supply side of our economy) are meeting the needs of employers, businesses, and industry (the demand side of our economy).

The state recognizes that the traditional way of thinking about education as supply and industry as demand is outdated. Learners will often choose not to enroll or fail to persist in postsecondary education if minimum economic viability conditions are not satisfied. The investment that learners make in obtaining career skills must at a minimum enable additional lifetime earnings greater than the cost of attendance inclusive of foregone wages.

To help Coloradans earn a good living and simultaneously power the labor market, more learners and workers must have the chance to develop new career skills at all stages of life. For this reason, the state is taking action to guarantee that every student will have the opportunity to experience the world of work while advancing their skills and professional development with credentials. This allows students to maximize

their earning potential and get a head start in the job market. This will also be a crucial element in changing how Colorado's higher education operates across the state.

Moreover, to ensure Colorado continues to be an attractive place to live, work, as well as conduct business, the state must empower and educate the workforce and meet the demands of employers. Increasingly, that means expanding opportunities to earn a postsecondary credential. Data findings from the [2022 Colorado Talent Pipeline Report](#) show that approximately **91.4%** of Tier Top Jobs² and **70.4%** of Tier 2 Top Jobs³ require some type of postsecondary education past a high school diploma or equivalent. These are jobs that are in high demand, with strong projections to grow in the state over the next 10 years and provide employees with [a livable wage](#) specific to the state.

Colorado's public system of higher education educates and trains most of our citizens to meet industry demands. This year, recognizing that career skills are the key to economic mobility, the Colorado Department of Higher Education (CDHE) and the Colorado Commission on Higher Education (CCHE) released a statewide [strategic plan](#) focused on advancing the ability of Colorado's learners and earners by aligning postsecondary talent development with industry and statewide needs. This plan prioritizes educational pathways that are economically viable – those that lower costs for students, invest in proven learner support programs and increase collaboration with employers.

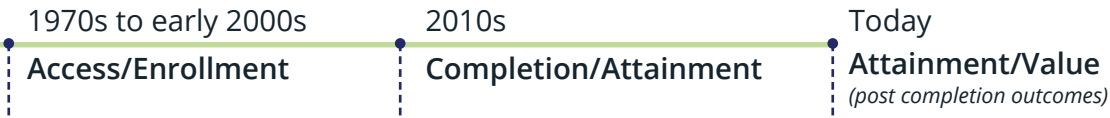
¹ Colorado Talent Pipeline Report, Colorado Workforce Development Council, CDLE, 2022.

² Estimated to be sufficient in supporting a family of three in Colorado, assuming sole provider is working full time (e.g., 2,080 hours per week).

³ Estimated to be sufficient in supporting a family of one in Colorado, assuming sole provider is working full time (e.g., 2,080 hours per week).

In the last half a century, Colorado and the nation have seen major evolutionary changes in terms of postsecondary policies surrounding how to measure and define success. Today, the new wave of postsecondary policy development is focused on ensuring that meaningful value is provided to all learners. Previous national measurements lacked making noteworthy progress towards reducing the gaps in credential attainment. This “new wave” of today recognizes that for learners, credential attainment is the start of a journey, not the end.

The evolution of postsecondary success measures



Source: Colorado Department of Higher Education, 2023.

As we strive to increase the number of Coloradans benefiting from postsecondary education, it is important to recognize that a focus on volume without a corresponding focus on value does little to materially meet the needs of learners or our state. The total monetary assessment of postsecondary education is not in the credential itself but in the doors it opens to career advancement, as well as economic, and social mobility.

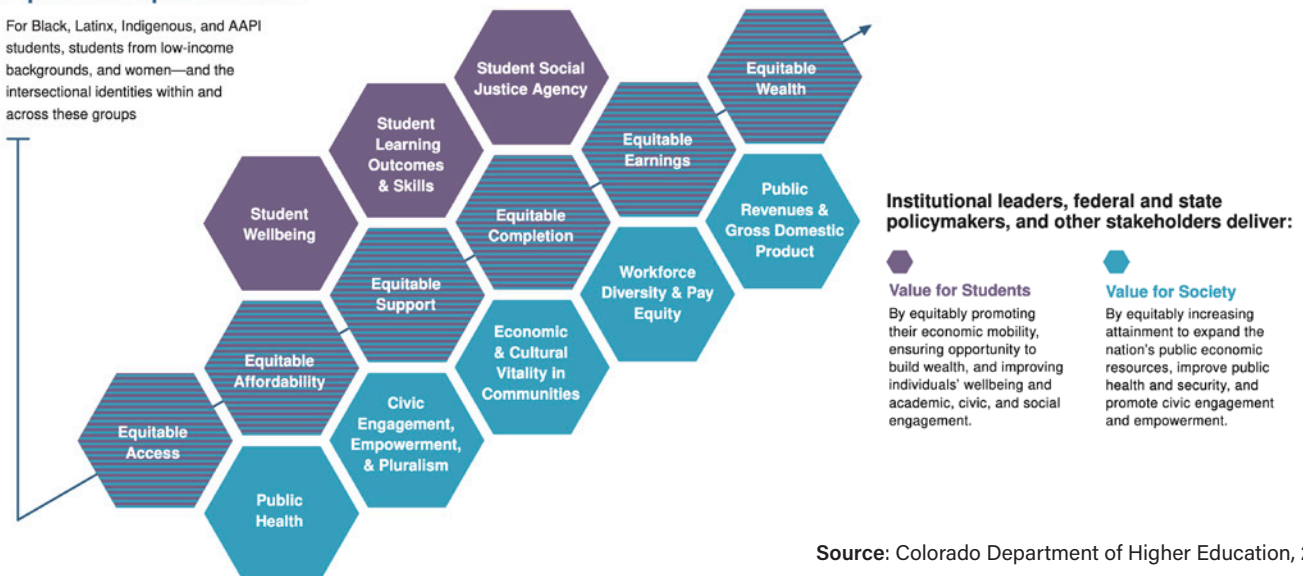
We can improve the financial value of postsecondary education for learners by enhancing benefits, increasing affordability, or decreasing the amount of time needed to complete postsecondary education. Colorado considers the unique policy environment within our state to define our value measures in this rapidly changing environment. Institutional leaders, policymakers, and other stakeholders can deliver meaningful value to students and society through promoting and increasing equitable practices.

Equity will be a key driver in ensuring that access to valuable career skills is economically viable for all Colorado learners.

FIGURE I: Colorado’s Postsecondary Value Framework

Pipeline to Equitable Value

For Black, Latinx, Indigenous, and AAPI students, students from low-income backgrounds, and women—and the intersectional identities within and across these groups



Source: Colorado Department of Higher Education, 2023.

Colorado acknowledges the great need to establish and guarantee learning environments that address equity in a meaningful manner, enable an increase in lifetime earnings and advancement, and ensure all students are better off for having chosen to invest in postsecondary education. With this in mind, the following guiding principles serve as the North Star of our strategic plan.

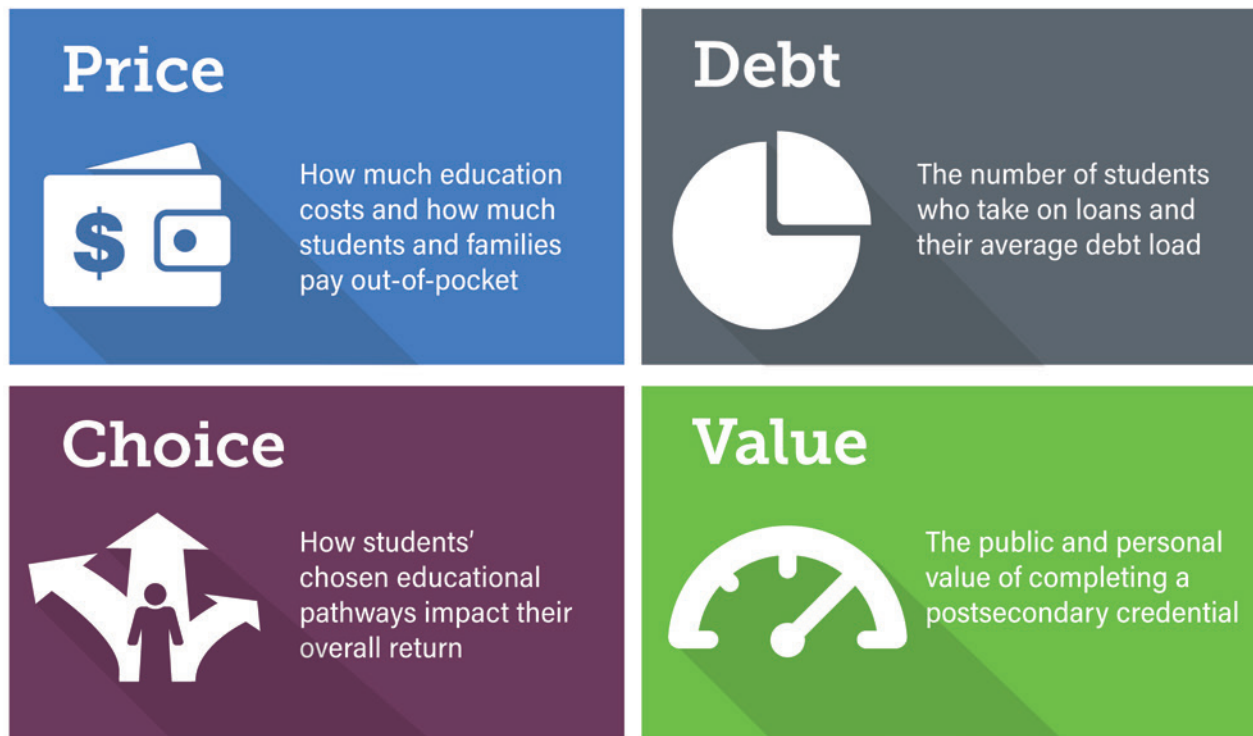
Colorado will have:

- A comprehensive postsecondary educational ecosystem that provides more Colorado citizens with improved access to professional opportunities and career mobility.
- A postsecondary ecosystem designed to meet the needs of all learners with an intentional focus on erasing educational equity gaps among African American or Black, Hispanic, and American Indian or Alaska Native people.
- An aligned ecosystem that supports all learners throughout their lifetimes, enabling seamless progression through a diversity of learning pathways and credentials that help them advance their careers and grow.
- A robust data system and a culture of data use throughout the ecosystem, leading to better data-informed policy to best meet the needs of learners.
- A forward-focused ecosystem that drives the economic vitality of the state and a healthy democracy by preparing an educated and engaged citizenry.

The future for Colorado's learners is bright. Transformation is already happening in the workforce, in business & industry, in technology, and education. Skills and accumulation of skills transcend legacy barriers, such as age, income, and geography to support a person's educational journey. Now, learning is lifelong, available online and in the classroom, and constantly renewing itself in myriad ways as Coloradans seek to upskill, reskill, and broaden perspectives and understandings to meet the ever-changing needs of these dynamic times.

Return on Investment Factors

To assist lawmakers, taxpayers, students, and families in understanding the value of postsecondary education in Colorado, HB18-1226, directed CDHE to publish an annual return on investment report. This volume explores four key factors that, in concert, describe return on investment at the individual level: price, debt, choice, and value. Equally important to the individual return on investment from higher education is the return on investment provided to the state. Postsecondary education provides essential contributions to the state's workforce, helping to meet our workforce shortage and ensuring Coloradans have the skills and credentials necessary to meet the state's workforce needs.



As the report explains, return on investment varies by individual. The actual price of attendance goes beyond tuition costs, including fees, room and board and other costs associated with being a successful college student. Since most students receive financial aid, few pay the published cost of attendance; however, students in Colorado and nationally are continuing to graduate 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 programs, career opportunities, living arrangements and more. Taken together, these elements help students and families understand the value of their credentials.

Data in this report show that higher education costs overall have been increasing for more than a decade. Although this report focuses on the costs and benefits to individuals, it's also important to understand the factors driving increased expenses of higher education—one of which is personnel. Personnel are essential to providing quality education services, and institutions must employ many highly educated faculty and staff to serve students well. As in other industries, the cost to employ such individuals has risen in the modern economy; personnel costs are also driving increases in industries like medicine, legal services, banking, and engineering. In general, service industries like higher education see costs rising above inflation due to their reliance on personnel. Another factor is the growing need for high-cost equipment and technology to deliver educational services.

As the cost of college rises and more postsecondary students with limited economic means enroll in college, Coloradans must have access to information on the economic returns of different credential paths. This report aims to improve overall student success, erase equity gaps and maximize the return on higher education investments by helping individuals and policymakers better understand the individual economic value of the postsecondary education system. For institutions, this report underscores the importance of making higher education more affordable and innovative to contain costs.



This report provides an in-depth analysis of how well we as a state are doing to increase the number of Coloradans benefiting from valuable career skills – obtained while in high school or postsecondary education – that enable economic mobility, open doors to more opportunities, and provide additional lifetime earnings greater than the cost of attendance. It also details strategies that maximize the value of Colorado's postsecondary education system, empower student choices, and allow all learners to advance along their unique career pathways. Finally, it ensures that every Coloradan has access to education beyond high school to pursue their dreams and improve our communities.

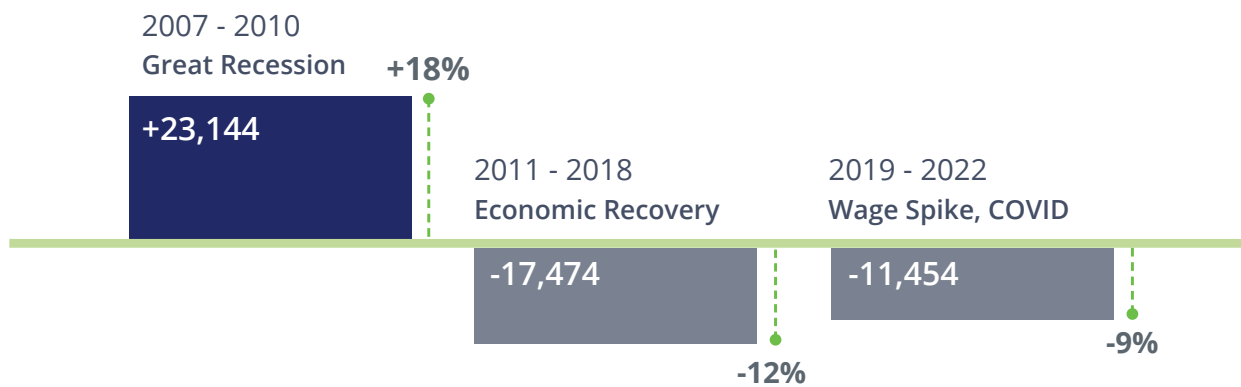
*To sustain the talent needs of Colorado businesses,
more learners must have the opportunity to
earn credentials and degrees at any stage of life.*



Trends in Enrollment

The past 15 years have offered an important lesson regarding building out a robust talent pipeline for the state, recognizing that economic factors drive postsecondary enrollment decisions for many learners. As our economy traveled through the Great Recession, recovery, COVID-19, and the COVID-induced spike in entry wages, we have seen postsecondary enrollment levels respond. Generally, outcomes reflect how lower wages and job availability drive higher postsecondary enrollment while higher wages lure more potential learners into the workforce.

FIGURE II: Changes in Total Colorado Resident Undergraduate Enrollment 2007-2022 (FTE Basis)



Source: Colorado Department of Higher Education, 2023.

While there still is much room for growth, relative to the Economic Recovery period between 2011 and 2018, Colorado has seen **less** of a decline in enrollment levels (Figure II). The expected contributing factors to the rising number of enrolled Coloradans include wages unable to catch up with surging inflation rates, and the high demand across employers for upskilling, reskilling, and new skilling in the labor force.

Workforce Demand

Recent [job report findings](#) suggest that the demand for more qualified workers will not decrease anytime soon. While 60% of businesses reported they were hiring (or trying to hire) during the first quarter of 2023,

- Nearly **half** of employers have job openings they currently cannot fill (47%),
- **90%** of employers stated they could not find the skills they need across job seekers, and
- **88%** of employers have job openings that are seeking skilled workers (relative to 19% of openings seeking unskilled talent).⁴

These statistics are powerful, as they are associated with small business employers, which represent **99.5% of all businesses in Colorado's economy, employing 1.2 million people in the state during 2022.**⁵ With nearly **90%** of these types of employers seeking skilled talent, acquiring postsecondary attainment that allows individuals to gain knowledge and experience in their field of choice has never been more critical to the success of Coloradans.

Comparatively, these shared challenges for employers amplify the importance of providing diverse postsecondary advancement opportunities for upskilling and reskilling – ones that are in reach for every Coloradan and allow students to feel confident that their credentials will procure quality jobs or keep them on their career path leading to a positive ROI.

Accelerating the need for credential completion and skill advancement (and recognizing these two items are not mutually exclusive), it is



Teaching our learners the transferable skills they need to move into a different type of career or industry will amplify Coloradan's workforce significance now and for the foreseeable future.

projected that **85% of jobs that will be available to the 2035 graduating class have not been invented yet.**⁶ Thus, the continued creation of attainment programs to fill in-demand jobs helps strengthen Colorado's talent pool on the front end of the economy, while job creation and skilled worker demand keep a curricular training model progressing forward. Building strong partnerships between postsecondary institutions and employers is a key factor in this model's continued success – one that ensures completers have the skills they need for the jobs of the future.

Return on investment for postsecondary education is a central pillar to help combat recent enrollment declines and ensure we have enough Coloradans with degrees and credentials to fill the state's need for an educated workforce. Teaching our learners the transferable skills they need to move into a different type of career or industry will amplify Coloradan's workforce significance now and for the foreseeable future.

⁴ NFIB Small Business Jobs Report, March 2023

⁵ Lincoln Business Guides, Colorado Small Business Statistics (2022)

⁶ Institute for the Future (ITF), "Emerging Technologies' Impact on Society and Work in 2030." Retrieved at: https://www.delltechnologies.com/content/dam/delltechnologies/assets/perspectives/2030/pdf/SR1940_ITFforDellTechnologies_Human-Machine_070517_readerhigh-res.pdf

Price

How much education costs and how much students and families pay out-of-pocket



To incentivize investments that learners make to obtain career skills through postsecondary education, the total price of attendance must be less than additional lifetime earning outcomes. This is especially true for learners with fewer economic resources who cannot afford to suffer financially from their education. While affordability challenges can cause systematic barriers to college access, the value of **postsecondary attainment offers the surest way for students to achieve economic and career mobility** without being burdened by unaffordable debt.⁷

⁷ *Building Skills for an Evolving Economy*, Colorado Commission on Higher Education, 2023

Cost of Attending College

Institutions of higher education calculate a student's total cost of attendance based on the student's living situation and determine financial aid levels based on the student's family income. **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 pay out-of-pocket.



The cost of attendance has several components, each of which varies across institutions and, often, degree programs within institutions. The major determinants associated with the price of postsecondary education – along with the most recent data point reflections – are broken down below.

Tuition and Fees

In 2021-22, published in-state tuition and fees at Colorado's four-year institutions are about \$10,900 per year, and tuition at two-year institutions are \$4,050. This is a slight increase from last year with growth rates of approximately 4% and 1%, respectively.

Living Expenses

Where a student lives makes a difference. At Colorado's four-year institutions, cost estimates for students who choose to live independently (\$11,500) are higher than room and board for students living at home. At two-year institutions, reported housing costs are, on average, \$11,900 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 \$1,460 and two-year institutions reported average books and supplies costs of \$1,680.

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 \$3,870 to \$6,000.

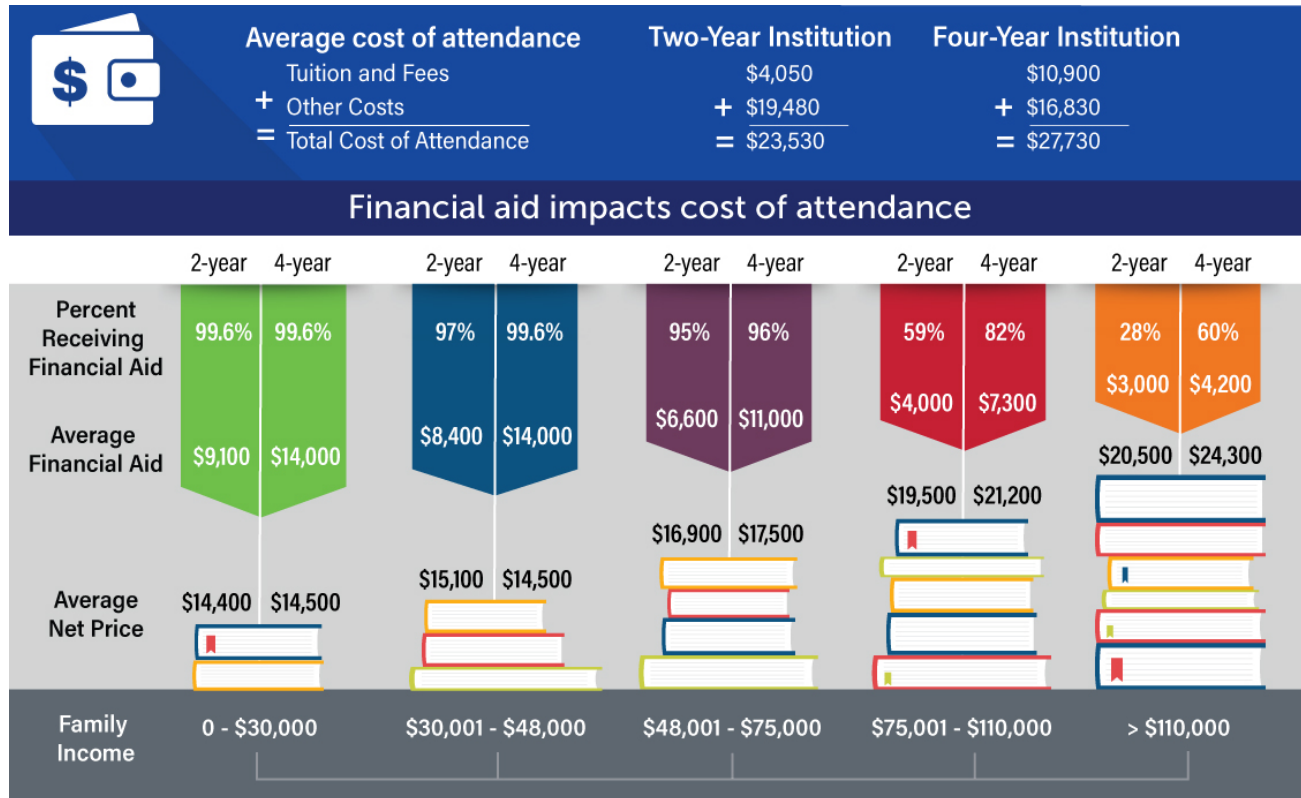
TABLE I: Average Yearly Cost Based on Posted Net Price

Average Cost 2-year Institutions		Average Cost 4-year Institutions	
TUITION AND FEES	\$4,050	TUITION AND FEES	\$10,900
INDEPENDENT OFF-CAMPUS HOUSING	\$11,900	INDEPENDENT OFF-CAMPUS HOUSING	\$11,500
BOOKS AND SUPPLIES	\$1,580	BOOKS AND SUPPLIES	\$1,460
OTHER COSTS (OFF-CAMPUS)	\$6,000	OTHER COSTS (OFF-CAMPUS)	\$3,870
TOTAL COST OF ATTENDANCE	\$23,530	TOTAL COST OF ATTENDANCE	\$27,730

Source: Integrated Postsecondary Education Data System Student Charges Survey, 2021-22

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 annual family income is less than \$75,000 and who apply for aid receive some type of financial aid from the federal government, the state, or the institution (Table II).

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



Source: Integrated Postsecondary Education Data System Student Charges Survey, 2021-22

Time to Degree

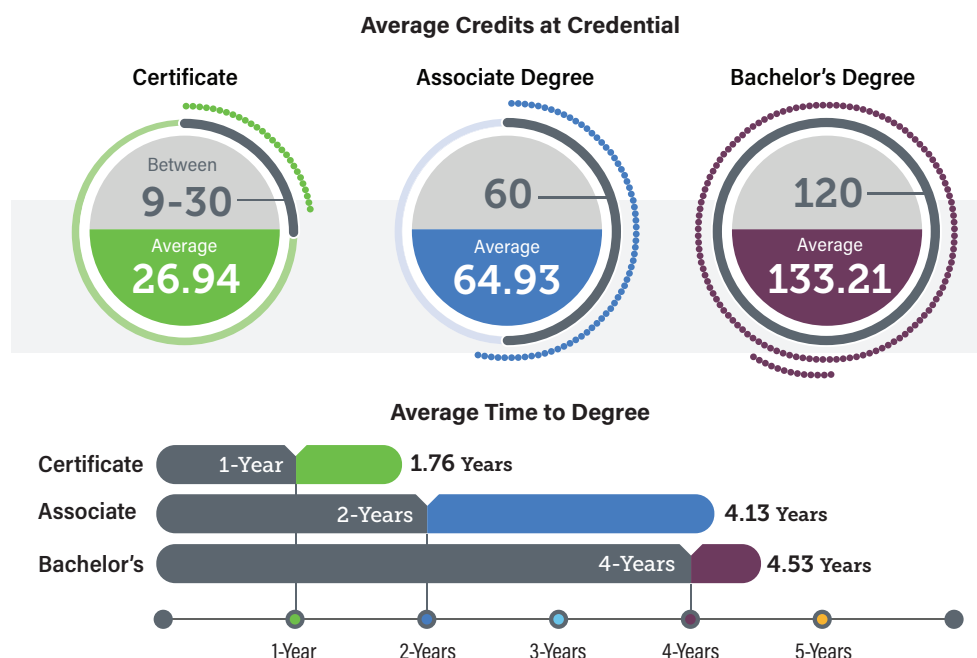
Reducing Time to Completion Reduces Opportunity Costs of Attendance. A key driver of the cost of attendance for learners is the opportunity cost of foregone wages. Even for learners who pay little, if any, tuition due to federal- and state-provided financial assistance, the full cost of attendance can be a challenge, and the time they spend in the classroom is time they otherwise could be spending in the workforce earning wages to provide for themselves and their families.

The time it takes students to complete a degree or credential is often longer than what students expect. On average, students take 1.76 years to earn a one-year certificate, 4.13 years to earn a two-year associate degree, and 4.53 years to earn a four-year bachelor's degree (Figure III). In addition, students on average complete more credits than necessary for their degree or credential, which can impact a student's ROI through both additional costs for credits and additional foregone wages while completing the credits (Figure III). While the average time to complete an associate degree is similar to a bachelor's degree, it should be noted that different types of associate degrees (such as an Associate of Applied Science or AAS, and Associate in General Studies or AGS) may take longer to complete compared to other associate degrees. Further, part-time students may be more likely to enroll in associate degree programs thereby extending the time it takes them to complete.

The Colorado Department for Higher Education (CDHE) and the Colorado Commission on Higher Education (CCHE) advocate for an intentional focus on expanding opportunities that reduce the time needed to learn in-demand career skills and thereby reduce the opportunity cost of foregone wages.

To maximize the return on investment of a credential, students and institutions should act to reduce the time it takes to and minimize the number of credits accumulated en route to a credential. This mitigates opportunity costs while lowering the net price.

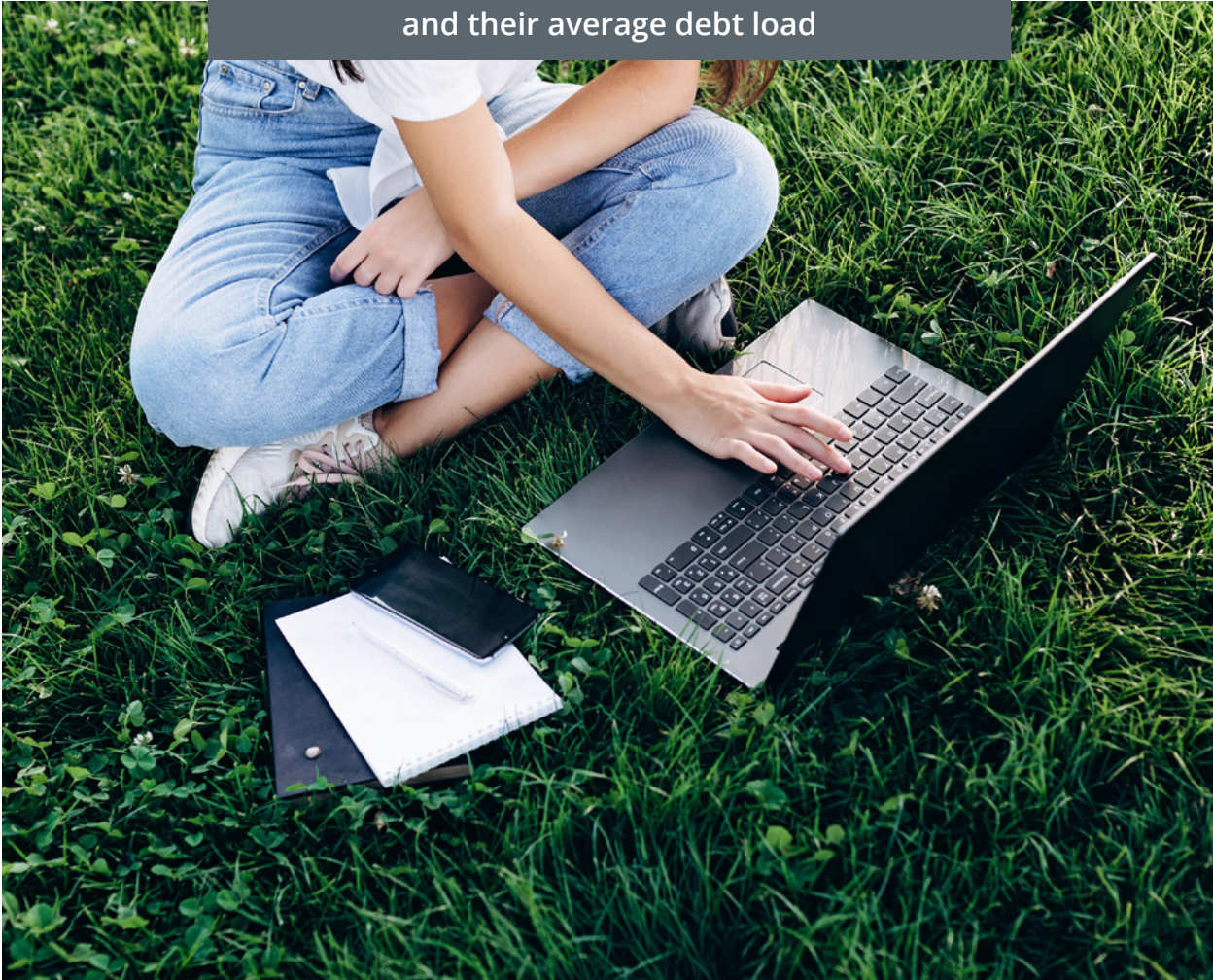
FIGURE III: Average Time to Earn Credits or Credential



Source: SURDS Time to Degree Data, 2022

Debt

The number of students who take on loans
and their average debt load



To remove barriers to success and strengthen Colorado's talent pool, ensuring that all students have access to financial resources and funding opportunities that allow them to attain postsecondary credentials is vital. On top of options associated with federal, state, and institutional aid, resources may include student and family contributions, such as savings; private grants and scholarships; income from earn and learn opportunities; and a manageable debt load relative to the value of the student's course of study and overall higher education experience. While students and families can make choices that impact what they pay, the decisions and policies of institutions, the state, and federal government have a responsibility to contain costs.

Guiding Principles



Cost Containment

To reduce the burden on students, Colorado institutions commit to containing costs and operating as efficiently as possible while maintaining quality.

Equal Opportunity

Multiple postsecondary pathways should be accessible to all Coloradans regardless of age, income, race and zip code.

Reasonable Debt

Student debt can be a tool to achieve affordability, depending on total cost of credential, student loan terms and potential future earnings.

Accelerating Time

Student's educational choices—such as course selection in college, prior learning, and participation in precollegiate programs like Concurrent Enrollment, Advanced Placement and International Baccalaureate—can reduce the cost and time it takes to earn a credential.

Public Investment

State investments in higher education provides Coloradans access to the skills and knowledge they need to thrive, yielding social, civic and economic returns for our state and advancing the public good.

DEFINITIONS

Cost: The listed cost to attend a higher education program, commonly referred to as the “sticker price.” This includes tuition and fees as well as room and board, books and other education related expenses.

Price: The final amount paid by the student, subtracting financial aid, scholarships and additional resources.

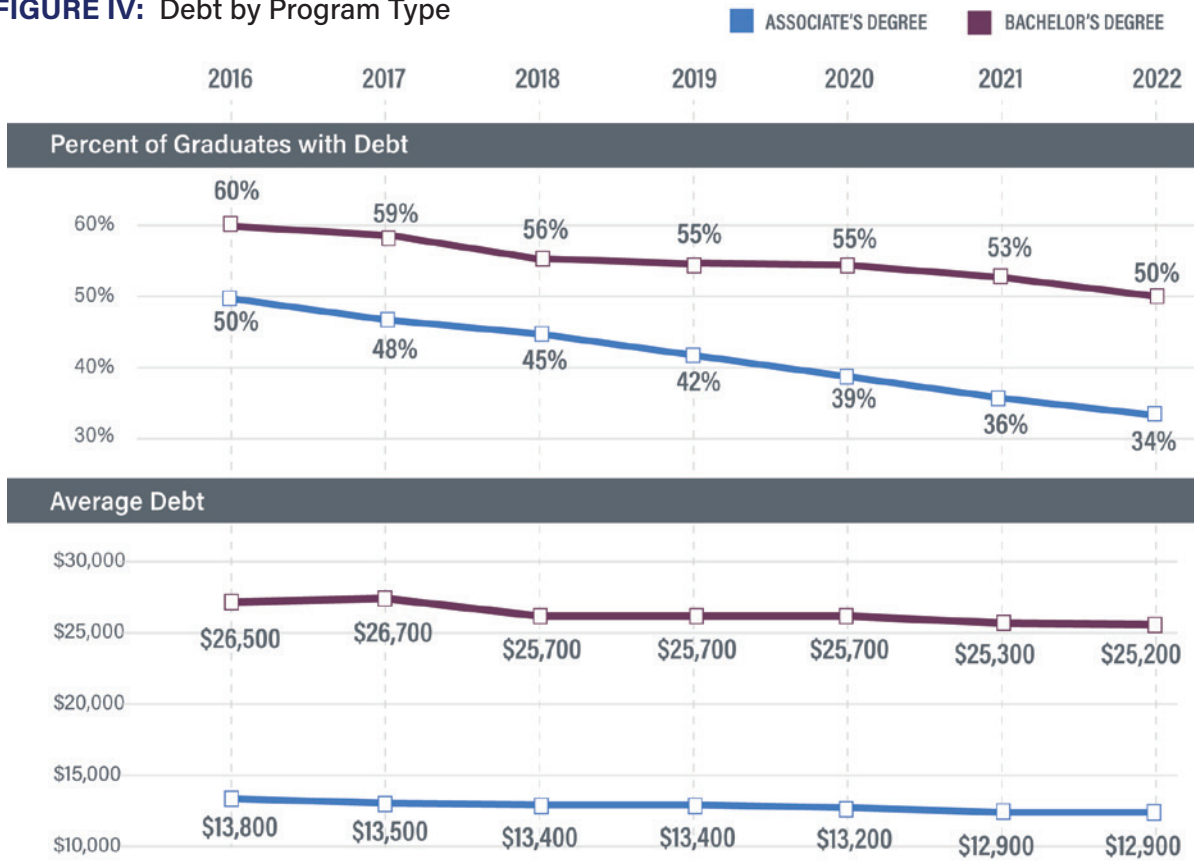
Reasonable Debt: Students can repay the debt they must incur to complete their educational programs within a 10-year period based on a reasonable expectation of earnings they receive from completing their program without undue burden or hardship.

Average debt for students attending public colleges and universities has leveled off and even declined recently

Debt among graduates of Colorado's public institutions has declined by approximately 5% among those who attended four-year schools and 10% for those who attended two-year schools since 2014. The percentage of graduates with debt has also decreased in recent years. In 2022, about half of bachelor's degree graduates and 34% of two-year college graduates accrued student loan debt, with the associated student loan debts in the state amounting to \$25,200 and \$12,900, respectively.



FIGURE IV: Debt by Program Type



Source: SURDS Financial Aid Data, 2022

2022 Associate Degree Graduates

- 34% of graduates graduated with debt
- Average debt - \$12,900
- Just 2% of graduates accrued debt greater than \$30,000

2022 Bachelor's Degree Graduates

- 50% of graduates graduated with debt
- Average debt - \$25,200
- Just 9% of graduates accrued debt greater than \$40,000

How to make the most of student loans?

Although taking on debt feels daunting for many, it is a tool to make college affordable—as long as students finish what they start.

Income Driven Repayment

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*).

Student Loan Forgiveness

The federal government allows teachers in high-needs areas and individuals who have worked 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.

Affordability for All

The increasing cost of higher education means that to escalate educational attainment statewide, college must be more affordable, making higher education within reach of all households regardless of income. Higher education institutions are heavily reliant on personnel, the costs of which do not tend to decrease over time. Colorado has long had high tuition and low state funding. Together, this means that significant decreases in tuition and fees in the near term are unlikely. Open educational resources and other approaches to reducing learner costs are gaining ground and should be expanded, however, they alone are not enough to ensure affordability for all learners.

Institutions and policymakers have two primary levers to increase the ROI and economic viability of their programs: 1) enhance lifetime earnings through tighter alignment and collaboration with employers, and 2) increase affordability.

Colorado institutions recognize this need for change and continue to expand affordable options



to our learners. This year, many have adopted [pre-college programs](#) to provide postsecondary credentials for free to high school students. This way, even before they graduate high school, they have earned college credit and become more competitive in the labor market.

In addition, for students from families below a certain income threshold or who come from certain areas, several Colorado public institutions guarantee zero-cost tuition and fees. These programs are listed in detail below.

Colorado's Promising Practices

- Adams State San Luis Valley Promise covers tuition and fees and offers a room and board discount to students who complete the FAFSA and enroll full-time from Alamosa and neighboring San Luis Valley counties.
- Colorado Mountain College Promise covers tuition and fees for certificates and associate resident students taking at least six credits per semester for residents earning less than \$70,000 (dependents) or \$50,000 (independents).
- CSU Tuition Grant covers tuition and fees, plus additional support for room and board, for resident full-time students who are eligible for a federal Pell Grant.
- CSU Pueblo Colorado Promise covers tuition (not fees) for full-time resident students earning less than \$70,000 who maintain a 3.0 GPA.
- Fort Lewis Tuition Promise covers tuition and fees for full-time resident students earning less than \$70,000.
- CU Boulder Promise covers tuition and fees for resident full-time students with a federally defined expected family contribution (EFC) of zero.
- CU Promise at the University of Colorado Denver covers tuition and fees for full-time resident students at or below the federal poverty level who are also eligible for a federal Pell Grant.
- Pikes Peak State College has two programs for recent high school graduates who meet a GPA and attendance requirement from specific districts which cover tuition, fees, books, and academic support.
- MSU Denver's Roadrunner Promise covers tuition and mandatory fees for resident full-time students with an income of \$60,000 or less or an EFC of 2400 or less.
- Colorado Mesa University Promise guarantees that qualified undergraduate students from the 22 counties of the Western Slope can attend Colorado Mesa University and CMU Tech tuition free starting in Fall 2024.

Choice

How students' chosen educational pathways
impact their overall return



The choices students make often affect their return on investments linked to higher education. The [Postsecondary Degree Earnings Outcomes Tool](#) on the CDHE website allows students to explore economic outcomes for degrees that can be earned at Colorado universities.



Colorado's higher education institutions recognize the importance of expanding the pathways of choice for learners. Today, the state is enhancing and continuing to provide additional opportunities to receive credits for prior learning, college credits earned in high school, credit for industry credentials, as well as stackable credentials.⁸

Through options made available to students, like short-term credentials and certificates, unique educational opportunities can meet individual needs at different times throughout a Colorado learner's lifespan. With this idea in hand moving forward, Colorado intends to further develop our stackable credential pathways, building on what students have not only earned but have also obtained previously. In this way, Colorado's higher education institutions can continue contributing to the in-demand skills of the future by building on credentials that lead to success in finding a quality job in the shorter term.

Additionally, like individual career pathways, Colorado appreciates that not all postsecondary advancement looks the same for students. Learners may consider a myriad of factors when deciding what their postsecondary pathway looks like to maximize ROI. Factors such as household income, industry demand, and the economy are outside of students' immediate control. However, students do have a choice over the pathways they choose. As the state continues to build out more opportunities for Coloradans to advance themselves through short-term credentials in their chosen field learners can strategically

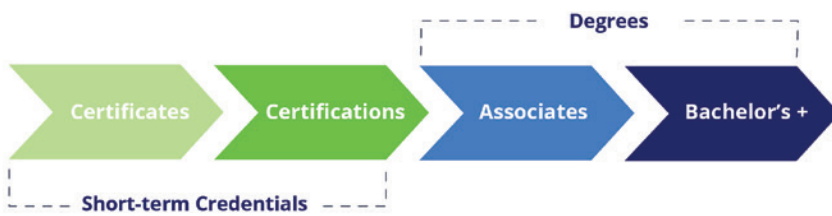
- Reduce the cost of their education;
- Decrease time to completion; through choosing a pathway that includes postsecondary short-term credentials.

Colorado's higher education institutions recognize the importance of expanding the pathways of choice for learners.

⁸ *Building Skills for an Evolving Economy*, Colorado Commission on Higher Education, 2023

Spotlight on Short-term and Stackable Credentials

Data from the latest [Talent Pipeline Report](#) shows Colorado has two job openings for every trained worker. This statistic drives the need for expanded access to quality short-term credentials in high-value, in-demand industries. Short-term credentials can be classified as a certificate or certifications awarded to completers that are industry-recognized and can also often be strategically utilized by a learner to “stack” on top of each other for further future career and professional advancement. According to new [research](#) from the Lumina Foundation, these types of postsecondary credentials serve as a stepping-stone to career advancement, higher pay, and open the door to future opportunities.



Source: Lumina Foundation, 2023

Trends in time to degree across the state report how Coloradans are advancing in short-term credential attainment completion in less time. In 2023, learners earn short-term certificates in 1.76 years on average. This is about a 14% decrease in the average length of time relative to pre-pandemic numbers. This reflects the growth of industry-recognized micro-credentials of value offered to learners and statewide efforts towards providing an enabling environment for success to all Coloradans – no matter their field of interest.

In addition, learners who choose to complete short-term credentials are provided with a pathway to continued education training and lifelong learning. This last part is especially true if one chooses to complete a short-term credential that can be stackable – offering flexible pathways that allow students to earn credentials incrementally and work as they earn – removing financial barricades to accomplishing a professional milestone or getting a head start on a degree.

Short-term Credentials

The Lumina Foundation defines short-term credentials as those that generally take less time and money to earn than degrees and include college-level certificates and industry-recognized certifications.

Stackable Credentials

The U.S. Department of Labor defines stackable credentials as a “sequence of credentials that can be accumulated over time to build up an individual’s qualifications and help that individual move along a career pathway to further education and different responsibilities, and potentially higher-paying jobs.” These structured education and training pathways — in fields such as health care, information technology, and manufacturing — provide individuals with opportunities to earn certificates (e.g., shorter-term credentials) that require between several weeks and more than a year of coursework and training to complete.

Colorado's Stackable Credential Pipelines

Colorado has been a trailblazer in building stackable credential pipelines at the state, system, and institutional levels.

While this bolsters statewide talent, the workforce, and wages in the state, it also provides positive spillover effects in terms of equity and affordability. In a [2023 ROI RAND Corp. study](#), key findings show how Colorado's state-specific stackable credential pipeline has helped alleviate potential systematic barriers to stackable credential equity by:

- Streaming and scaling information systems/resources while boosting outreach efforts for non-traditional pathways.
- Expanding opportunities to stack credentials in the workforce (largely driven by strengthening coordination across industries and campuses).
- Removing challenges for Colorado learners to move from noncredit to credit programs by strengthening coordination between noncredit and credit departments and institutions and investing in outreach to improve awareness.

Colorado's actions to bolster stackable credential development across fields and institutions have further narrowed the gap between low-income students and middle- and high-income certificate earners by providing lower-earning vertical stackers with high economic returns. This is highlighted by research finding that Colorado low-income certificate-earners are more likely to earn multiple credentials and go on to earn longer-term credentials (credentials capable of being stacked vertically) at higher rates than middle- and high-income certificate-earners. This suggests that stackable credential pipelines help to advance equity across the state.

Over the last two years, Colorado has dedicated record levels of funding to bolster workforce development initiatives across the state and expand access to short-term credentials in high-need areas. With an investment of more than **\$65 million**, and through a strategic partnership with the state's community college system, Colorado's community and technical colleges are

offering **free training for students pursuing in-demand jobs**.

Launched in August 2022, the [Care Forward Colorado](#) program covers all tuition, fees, and course materials for short-term healthcare programs. More than **3,000** Coloradans have already completed programs in nurse assisting, phlebotomy, emergency medical services, and other desperately needed professions in the healthcare sector.

Building on this model, Governor Polis signed [House Bill 23-1246](#), which expands zero-cost training into additional in-demand fields: construction, education, early childhood education, firefighting, forestry, law enforcement, and nursing. The program, called Career Advance Colorado, launched in July 2023. Together, these initiatives aim to train more than 20,000 Coloradans for high-skill careers while responding to the state's most critical workforce shortages.

Key Strategies for Leveraging Data

Under the leadership of Governor Polis, the Colorado General Assembly, CCHE, and CDHE, the state of Colorado has begun work to reimagine how data are used to elevate student experiences and show the value of higher education. [HB22-1349](#) directs CCHE and CDHE to accomplish a variety of tasks related to better use of data to support student postsecondary and workforce success.

To further support the work of CCHE's updated [strategic plan](#) and HB22-1349, CCHE has convened a Technical Working Group comprised of local stakeholders and national experts to work throughout 2023 to determine and define:

1. Colorado-specific measures of postsecondary value, including a "minimum economic viability threshold" focused on ensuring that Colorado learners, at a minimum, can count on their investment in postsecondary education enabling an increase in their lifetime earnings (over what they would have made had they not pursued postsecondary education) to exceed their cost of attendance (inclusive of the opportunity cost of foregone wages).
 2. Student success measures that analyze the progression of students through postsecondary education and the impact of postsecondary pathways on a student's career opportunities and success. The student success measures must include postsecondary success measures and workforce success measures.
-

To support these efforts, CDHE collaborated with a master of public policy student (Rebecca Tyus) to assess various national ROI approaches, conduct interviews with individuals at each organization, and summarize some pros/cons (as well as data availability) for Colorado's efforts. Tyus' findings and final report can be found [here](#).

To achieve these goals, data on postsecondary programs and workforce outcomes will be critical. The well-governed, responsible sharing of data between state agencies will enable Colorado to tell a more holistic story of student experiences in higher education and the returns gained to the individual, to communities, and the state. Per HB22-1349, CDHE completed a report on the current longitudinal data landscape in Colorado (specifically the K-12, postsecondary education, and workforce continuum). The report includes recommendations on ways to deliver a statewide longitudinal data system that connects K-12, postsecondary education, and workforce information.

Community College Skills Builders: Outcomes Across Non-Degree-Completing Students in Colorado

This section revisits the [2022 ROI Report's](#) section covering Skills Builders in Colorado and provides updates on this particular student pool's success. First published in November 2020, this research examined four U.S. states, including Colorado, to shed light on the return for learners seeking to strategically complete short-term courses at community colleges without completing a degree.

Last year's report showed that Colorado Skills Builders acquired significant earnings gains following their time as a student, despite leaving without completing a postsecondary credential or transferring to a different institution.

New findings out of The Journal of Higher Education strengthen this narrative, showing that compared to other states, Colorado Skills Builders continue to complete credentials faster and have higher returns after entering community colleges. Specifically, findings from this quantitative analysis show that, in **Colorado, Skills Builders added an average of \$938 in quarterly earnings to their income four months after entering community college. This is about \$430 dollars higher than the average quarterly earnings outcomes from other states in the study (Table III).**

Skill Builders

Skills Builders are comprised of learners who intentionally attend a community college for a short period of time, take courses typically centered in career and technical education (CTE) fields, and complete their courses with high rates of success as well as high associated Grade Point Averages (GPA).

In addition, Colorado Skills Builders are more likely to complete certificates relative to non-skill builders. One probable driver contributing to this result is the density of short-term certificate offerings in Colorado compared with other states.

TABLE III: Skill Builders Average Rate of Earnings Before and After Entering Community College

Average Rate of Change of Earnings¹

State	N ²	Difference
California	168,822	\$571***
Colorado	11,012	\$938***
Michigan	7,125	\$425***
Ohio	22,704	\$527***

Notes: 1. Earnings data were drawn from state unemployment insurance records, as reported by employers, and adjusted for inflation to 2017Q1 dollars. Quarterly earnings of less than \$100 (2017Q1 dollars) were excluded from the analysis.

2. Students who had less than two-quarters of earnings \geq \$100 before entering community college or less than two quarters of earnings \geq \$100 after entering community college were excluded from the analysis.

Short-term credentials (completed in 12 months or less) have recently been the most common type of credential conferred across the 13 Colorado community colleges, with institutions offering more programs that better align with Skills Builders educational needs likely driving the result of high certificate completion rates - resulting in less time and financial burden on learners while significantly boosting wages.

TABLE IV: Postsecondary Outcomes for Skills Builders vs. Degree Seekers in Colorado

	Skill Builders	Degree Seekers
Percentage who received a credential from their home community college system¹		
Postsecondary certificate	18%	10%
Association degree	<1%	11%
Percentage who enrolled in a four-year institution after attending community college²		
Enrolled in a four-year institution	21%	43%
Percentage who received a credential during or after attending a community college³		
Postsecondary certificate	19%	11%
Associate degree	2%	14%
Baccalaureate degree	7%	20%
Graduation degree	2%	4%
Any postsecondary credential	27%	38%

Notes:

1. These figures were based on information about students' awards from the community college system in which they were enrolled.

2. These figures were based on information from a National Student Clearinghouse match to determine the overall percentage of students who were awarded a certificate, associate degree, baccalaureate degree, advanced degree, or postsecondary credential of any kind.

Students completed an average of 1.5 to 1.8 terms and took an average of 2.9 to 3.2 courses during that time frame, attaining a total of 6.6 to 9.1 credits. Out of this pool, 97-99% successfully advanced in CTE fields of study and earned an average GPA of 3.3 to 3.4. Table V reports these findings, highlighting the likelihood that Skills Builder learners will complete a course linked to CTE relative to a degree-seeking community college student.

TABLE V: Percentage of Credits Attempted by Field of Study for Skills Builders and Degree Seekers

	Skill Builders	Degree Seekers
Computer & Information Sciences	5%	11%
Personal & Culinary Services	1%	3%
Engineering Technologies	1%	9%
Family & Consumer Sciences/Human Sciences	1%	1%
English Language & Literature/Letters	11%	3%
Biological & Biomedical Sciences	7%	1%
Mathematics & Statistics	9%	3%
Basic Skills & Developmental/Remediation Education	11%	1%
Psychology	5%	1%
Homeland Security, Law Enforcement, Firefighting	2%	4%
Social Sciences	4%	1%
Construction Trades	0%	15%
Mechanic & Repair Technologies	2%	10%
Precision Production	1%	3%
Visual & Performing Arts	5%	1%
Health Professions & Related Programs	8%	11%
Business, Management, Marketing	5%	15%
Total of the seventeen most popular programs	91%	77%

Notes: To calculate the figures for each state, the total number of credits attempted by skills builders across all fields of study and the total number of credits attempted by skills builders in each CIP field of study were first calculated. The percentage of the total credits attempted by skills builders that were accounted for by each field of study was then calculated. Both estimates were repeated for non-skills builders. Fields that accounted for less than 5% of credits attempted by skills builders and by non-skills builders in all four states were suppressed.

While degree-seeking community college students are more evenly distributed across genders (Table VI), Skill Builders are more likely to be male (at 62%). In addition, Skill Builders are in general older than degree-seeking students at two-year institutions. This result could play a strategic role in the state's labor market, given Colorado's rapidly aging population, and suggests more individuals are choosing to be life-long learners.⁹

TABLE VI: Selected Demographic Characteristics of Colorado Skills Builders

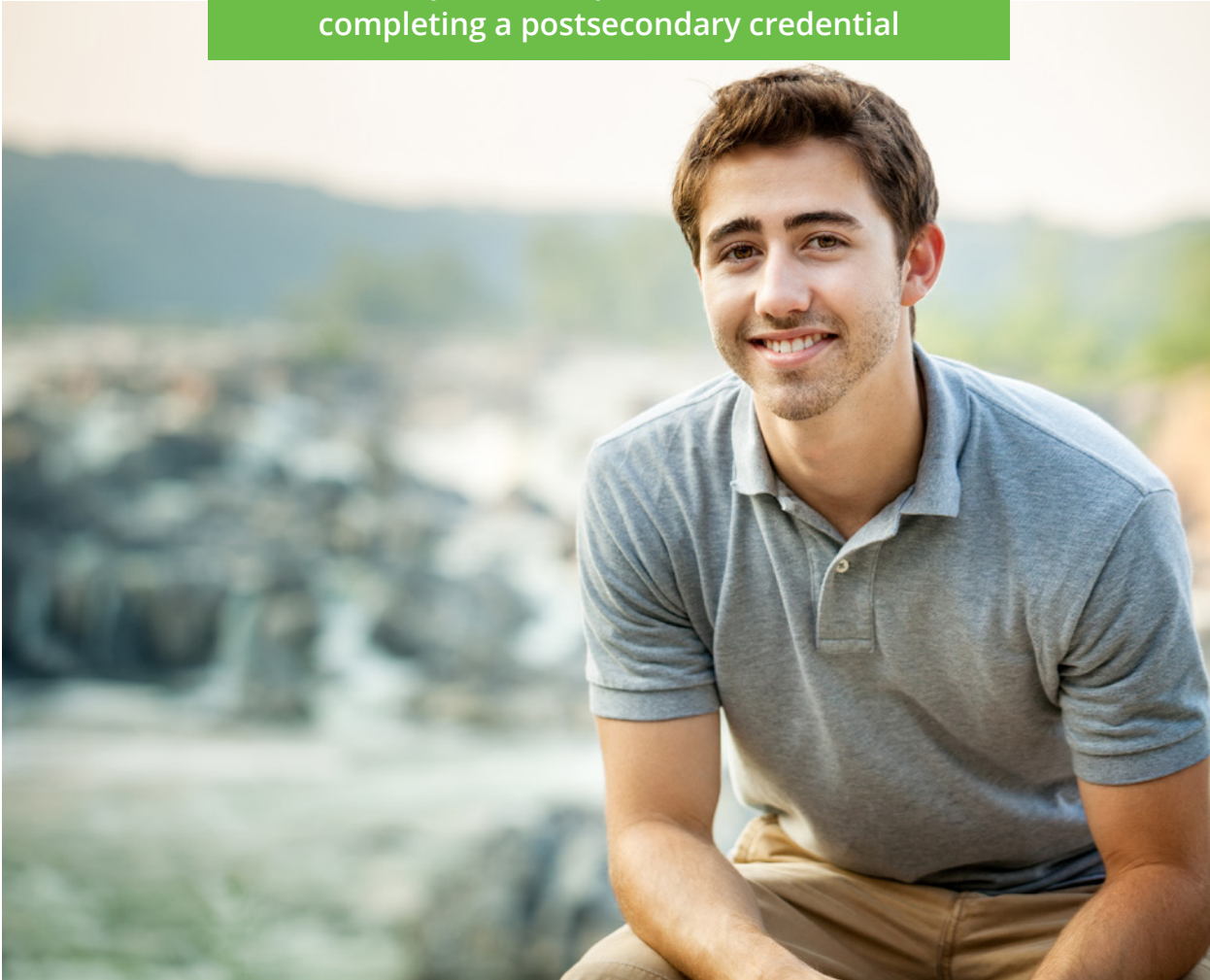
	Skill Builders	Degree Seekers	State Population
Age at Entry (in years)			
Mean Age	33	26	-
Median Age	31	22	-
25 th Percentile of Age	20	18	-
75 th Percentile of Age	44	31	-
Gender			
Male	62%	48%	50%
Race/Ethnicity			
American Indian/Alaskan	1%	1%	2%
Asian/Hawaiian/Pacific Islander	3%	3%	4%
Black or African American	4%	8%	5%
Hispanic	15%	19%	22%
Multiple races/ethnicities	1%	2%	3%
White	75%	65%	68%

Notes: State population figures were drawn from US census data.

⁹ Demographers Office at DOLA, 2023

Value

The public and personal value of completing a postsecondary credential



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 easily measurable, they tend to be compensated for in the workforce and help advance social and economic justice in society.

Traditional measures of individual economic value are explored in this section and include:

- Providing all learners with a positive return on earnings that are greater than financial investments in postsecondary attainment; and
- Allowing learners to acquire high-demand, high-paying jobs.

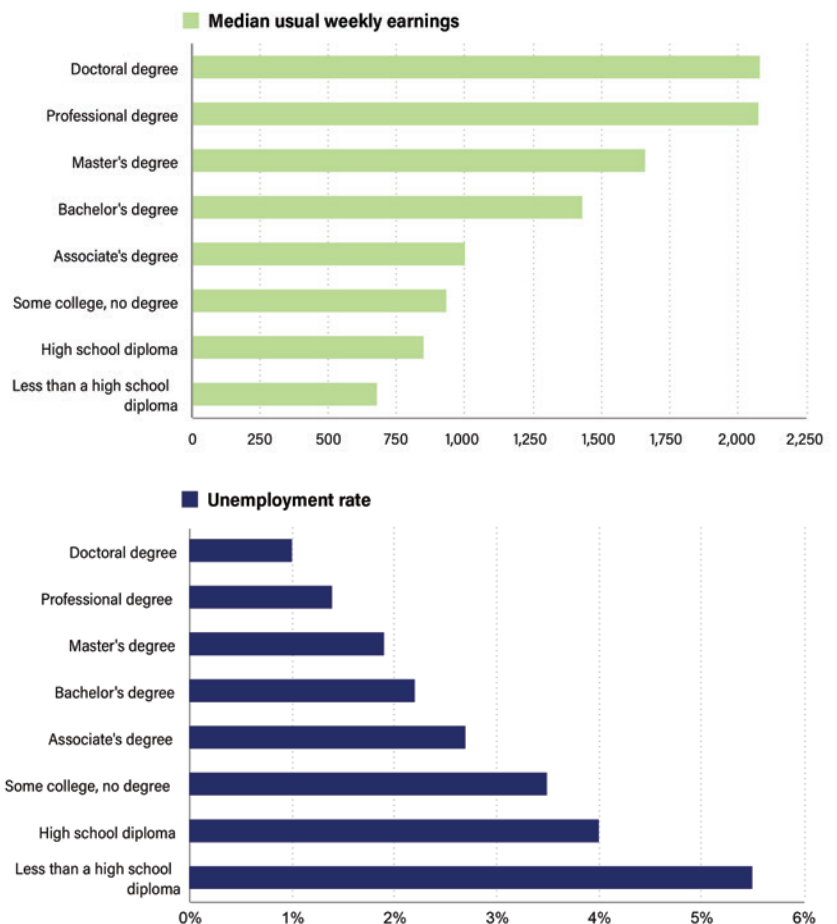
Education Pays in the Workforce

While wages depend on many factors, such as an individual’s occupation or field of degree, the more educational advancement a learner completes, the more likely that individual is to develop the skills needed to qualify for a high-demand, high-paying job. According to the most recent from the Bureau of Labor Statistics (BLS), earnings for workers ages 25 and over continue to increase as educational attainment rises.

In 2022, those in the labor force without a high school diploma earned 25% less than those who completed, and the outcomes continue to improve with every level of education completed (Figure IV).

BLS data also show that more education means less unemployment. Last year, individuals without a diploma had the highest unemployment rate (5.5%) among those at all education levels, with unemployment rates decreasing as education increased (Figure IV).

FIGURE IV: Earnings and Unemployment Rate by U.S. Educational Attainment, 2022



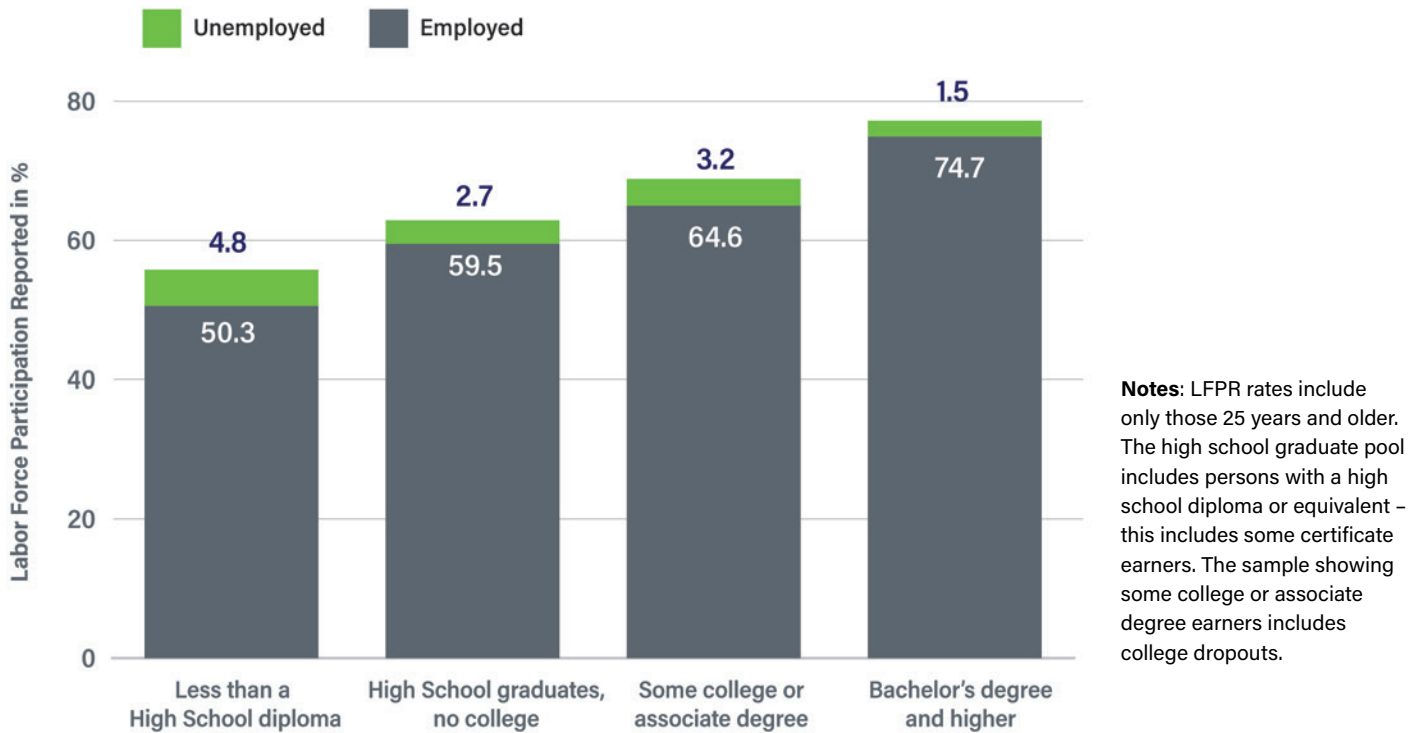
Source: Bureau of Labor Statistics; Career Outlook Report, 2022

Similar to national trends, statewide data collected from the Colorado Department of Labor and Employment (CDLE) [Office of Labor Market Information \(LMI\)](#) illustrates a heterogeneous relationship between employment and education level. Figure V shows the Colorado employment rate by education level. Here, we see a mostly inverse correlation between education and unemployment in Colorado during 2022 and 2023 – thus, as attainment increases, a higher percentage of the educated population is currently employed in the state.

Labor force participation rate (LFPR)

The LFPR is the percentage of the civilian noninstitutional population 16 years and older that is working or actively looking for work. In looking at the intersectionality of education and LFPR, the rate includes only those 25 and older.

FIGURE V: Labor Force Participation Rates in Colorado by Education Level: July 2022-June 2023



Source: Colorado Department of Labor and Employment: Office of Labor Market Information Data; Current Population Survey, 2023.

Figure V also reports the unemployment rate for each educational level included in the Current Population Survey (CPS). Outside of the third column reporting on Coloradans who have attained some college or associate degree, results show that as Coloradans receive more education, employment rates increase and unemployment decreases. This suggests that the more educational experiences a Coloradan gains, the more likely they are to participate in the labor force (e.g., find a quality job) and the less likely they are to be unemployed. The reason for a slightly higher unemployment percentage reported in column three is likely due to the “some college or associate degree” sample including college dropouts, creating an upward bias linked to unemployment for those who achieved an associate degree in the workforce.



Top Jobs

Overall, there are more opportunities for those with postsecondary education to occupy in-demand jobs with higher earnings than those without postsecondary education. The [2022 Colorado Talent Pipeline Report](#) utilizes labor market projections provided by the Colorado Department of Labor and Employment (CDLE) Office of Labor Market Information to identify top jobs in Colorado if they meet the following three criteria:

- **Projected high net annual openings (>40 annual openings)**
- **Above average growth rate over 10 years (>15%)**
- **A good (livable) wage¹⁰**

As mentioned previously, in 2022, **91.4%** of Tier 1 Top Jobs and 70.4% of Tier 2 Top Jobs required some type of postsecondary education past a high school diploma or equivalent (Figure VI). In addition, 76.5% of Tier 1 Top Jobs required at least a bachelor's degree for eligibility. This is a 3.4% increase from the previous year.

While degree attainment requirements could deter some individuals from seeking a Top Job, Colorado employers are increasingly diversifying the type of completion or training required for these jobs. Shorter-term credentials are becoming more prevalent in the state and are likely to become more popular in upcoming years across employers as the Colorado Department of Higher Education finalizes standardized statewide return on investment for quality, non-degree credentials. This year, **11.5%** of Tier 1 Top Jobs and **19.4%** of Tier 2 Top Jobs were linked to postsecondary attainment requirements of an associate degree or less (e.g., a postsecondary non-degree award) to be eligible for a particular role. These are slight increases from previous years.

The lower the educational attainment requirements for entry, the more likely a Top Job employer is to require some type of training to prepare job seekers for the workforce. This is especially true for Tier 2 Top Jobs in 2022, as **47.6%** required some type of job training. Of all Tier 2 Top Jobs, **11.4%** were linked to apprenticeships, displaying the relevance these opportunities have in landing a good job. In 2022, apprenticeships were associated with **6,907** annual openings in the state.

¹⁰ To view the most updated livable wages for Colorado by state and region, please refer to this [link](#).

Colorado's In-Demand Sectors with High>Returns

To meet workforce demand and address our workforce shortage, we need to increase the number of Coloradans with postsecondary skills and credentials. Based on the most recent Bureau of Labor Statistics (BLS) estimates, education and training requirements for any job across the state are expected to increase over the next five years by 1.3%, with short-term credentials rising by 1.5%, bachelor's degrees by 1.5%, and postgraduate degrees increasing by 1.8%.¹¹

Table VII below reports Colorado's industry sectors, ranked by current employment levels. Based on employment growth projections, the industries we can expect to have the highest need for postsecondary attainment over the next five years include **Health Care and Social Assistance (+35,378 new jobs)**, **Accommodation and Food Services (+30,598 new jobs)**, and **Professional, Scientific, and Technical Services (+26,645 new jobs)**.

TABLE VII: Top In-Demand Industries in Colorado

Industry	Current		5-Year Forecast	
	Employment	Avg. Annual Wages	Employment Growth	Annual % Growth
Health Care and Social Assistance	377,324	\$65,721	35,378	1.80%
Professional, Scientific, and Technical Services	312,348	\$117,534	26,645	1.70%
Retail Trade	286,433	\$42,395	6,925	0.50%
Accommodation and Food Services	286,282	\$31,620	30,598	2.10%
Educational Services	232,216	\$70,730	13,870	1.20%
Construction	224,094	\$70,730	12,244	1.10%
Administrative and Support Waste Management and Remediation Services	174,893	\$58,047	10,152	1.10%
Manufacturing	159,654	\$82,840	5,743	0.70%
Public Administration	151,958	\$77,401	4,048	0.50%
Other Services (except Public Administration)	134,790	\$43,945	10,639	1.50%
Transportation and Warehousing	124,419	\$66,613	9,818	1.50%
Finance and Insurance	120,819	\$122,819	7,325	1.20%
Wholesale Trade	116,997	\$107,008	6,427	1.10%
Information	84,047	\$130,152	6,648	1.50%
Arts, Entertainment, and Recreation	73,967	\$43,661	6,890	1.80%
Real Estate and Rental Leasing	69,204	\$78,445	2,729	0.80%
Management of Companies and Enterprises	45,455	\$164,336	2,602	1.10%
Agriculture, Forestry, Fishing and Hunting	36,673	\$45,333	1,114	0.60%
Mining, Quarrying, and Oil and Gas Extraction	20,935	\$162,631	2,118	1.90%
Utilities	14,910	\$109,136	246	0.30%
Unclassified	1,292	\$82,546	111	1.70%
Total - All Industries	3,048,711	\$72,865	203,260	1.30%

Sources: Integrated Postsecondary Data System (IPEDS); Colorado Department of Higher Education; Office of Labor Market Information, CDLE, 2023

Notes: Employment by occupation data are estimates as of 2022Q4. Education levels of occupations are based on Bureau of Labor Statistics (BLS) assignments. Forecast employment growth uses national projections from the BLS adapted for regional growth patterns. These are per capita estimates.

¹¹ Source: JobsEQ

Job growth creation is expected to surge across all industry sectors in Colorado, increasing by an additional 203,260 new jobs during the next five years. This provides abundant opportunities for learners to transfer their skills or reskill/upskill/new skills to move to a new industry sector with higher paying wages and quality factors. With an average amounting to nearly 81% associated with Top Jobs requiring a postsecondary degree or credential across the state, the state will need to increase the number of completers to ensure job seekers possess the skills they need to acquire good jobs in these fields.

Colorado students who complete credentials in the following industries are likely to have the highest returns in upcoming years, given the projected growth in these fields and the average annual wage levels:

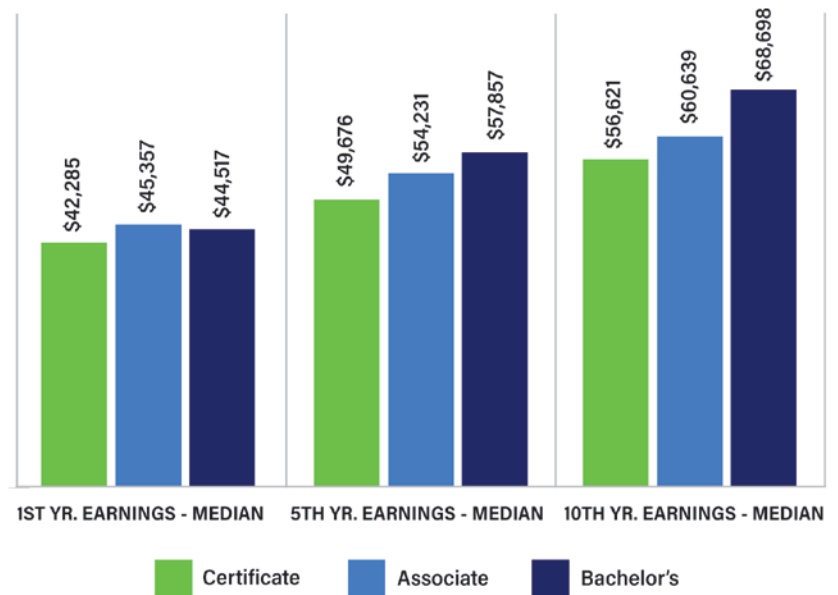
- Professional, scientific, and technical services
- Wholesale trade
- Mining, quarrying, and oil and gas extraction
- Finance and insurance
- Information Management of companies and enterprises
- Utilities

Wages

Individual returns for those who complete postsecondary education are significant. In addition to the favorable employment outcomes, **higher mean annual wages are associated with higher education.** This section of the report details median annual wages for individuals who have earned each credential type. It also includes demographic breakouts of wage outcomes by race/ethnicity and gender.

Figure VIII reports the median annual wages of Coloradans broken down by educational attainment over time. These data points show the overarching impact that postsecondary education can have on an individual's earning potential.

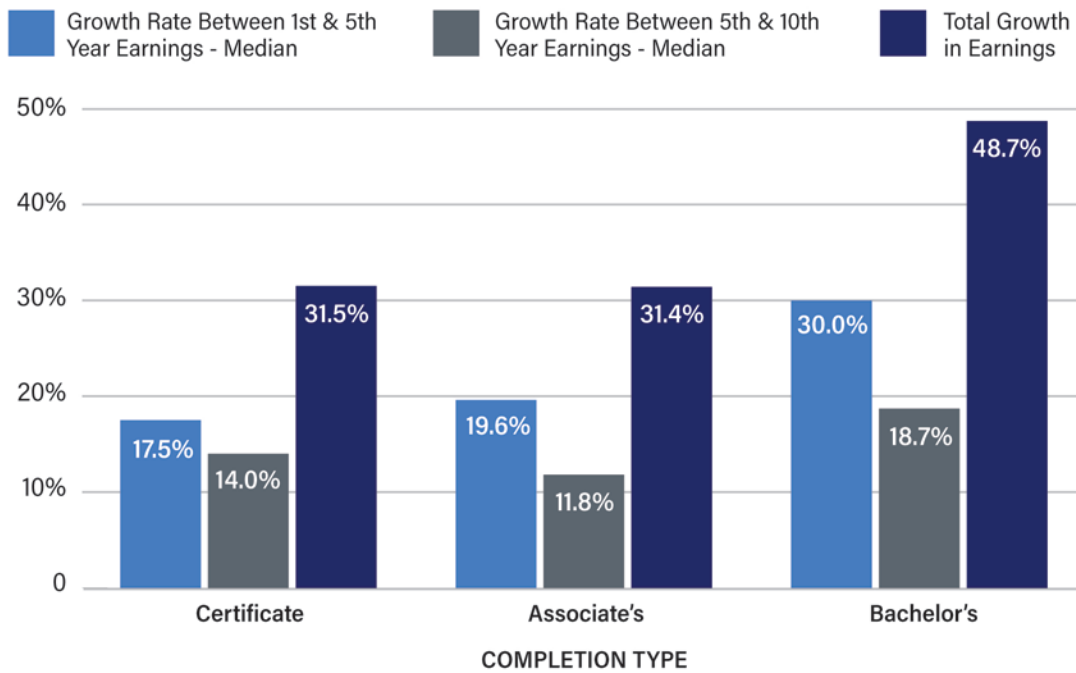
FIGURE VIII: Median Wage Outcomes for Graduates Over 10 Years



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

While wage growth continues to increase over time - no matter the credential type - associate degrees and short-term credential attainment have roughly the same long-term workforce returns (both around a **31.5%** increase in earnings) while bachelor’s degrees provide an increase in total median wage levels of nearly **50%**.

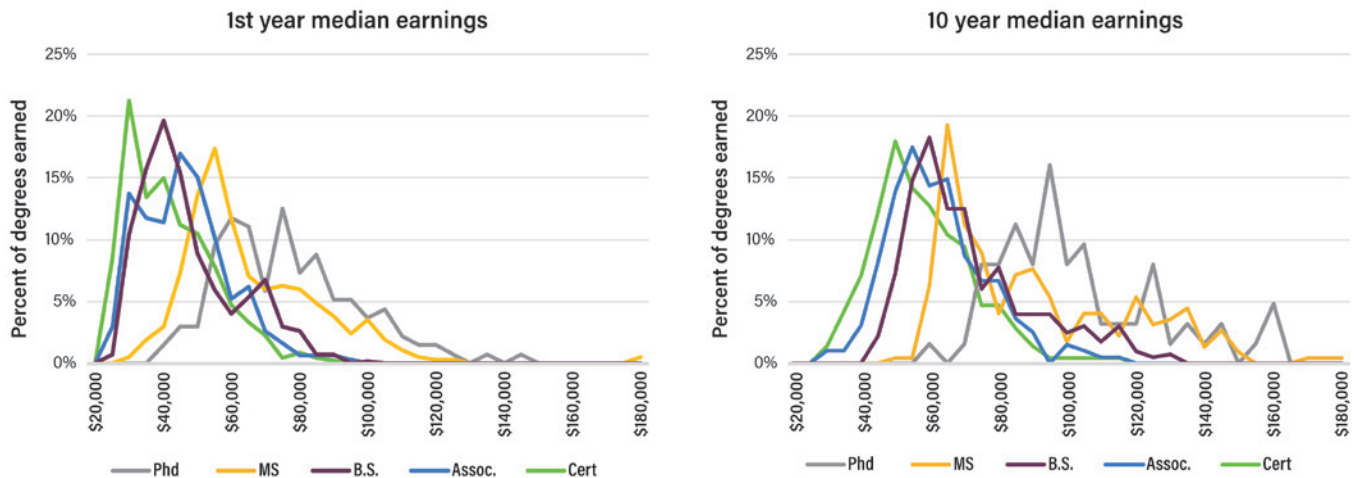
FIGURE IX: Growth in Wage Outcomes by Colorado’s Completers Over Time



Sources: Integrated Postsecondary Data System (IPEDS); Colorado Department of Higher Education; Office of Labor Market Information, CDLE, 2023

These impacts can be further analyzed by breaking out the median annual earnings over time by percent of degree earned shown in Figure X. The shape of the curve tells the story that there are significant earnings overlap between different degree levels and that the program of study is just as important as degree level when aspiring to a well-paying career.

The peak (highest point) for each credential in Figure X shows the most common median earnings after the 1st and 10th years of employment. The vertical axis represents the percentage of degrees earned by Coloradans during 2022. For all degree types, median earnings increase substantially between the 1st and 10th year.

FIGURE X: Short-term and Long-term Earnings by Percent of Degrees Earned in Colorado

Sources: SURDS AY2015-2022 Degree

Bachelor's degrees are associated with the highest diversity of programs offered in the state, with roughly 150 programs leading to expected median wage outcomes of \$50,000 the first year after completion, and over 80 programs that provide median earnings of just over \$65,000 after 10 years in the workforce. The majority of certificate programs earn completers about \$50,000 after 10 years. Master's degrees provide learners with some of the highest wage outcomes after graduation, with over 60 programs earning more than \$60,000 in the labor market during their first year after completion.

Each degree line displays the income distribution of returns to degree type, with a few earning more than \$130,000 at the first-year mark and \$160,000 at the tenth year. Master's degrees and Ph.D.s both have higher earnings than other degrees. **Choosing in-demand certificates can also lead to high earning outcomes with a portion of Coloradans earning between \$80,000-100,000 annually in the first year and \$100,000-120,000 per year by the 10th year.**

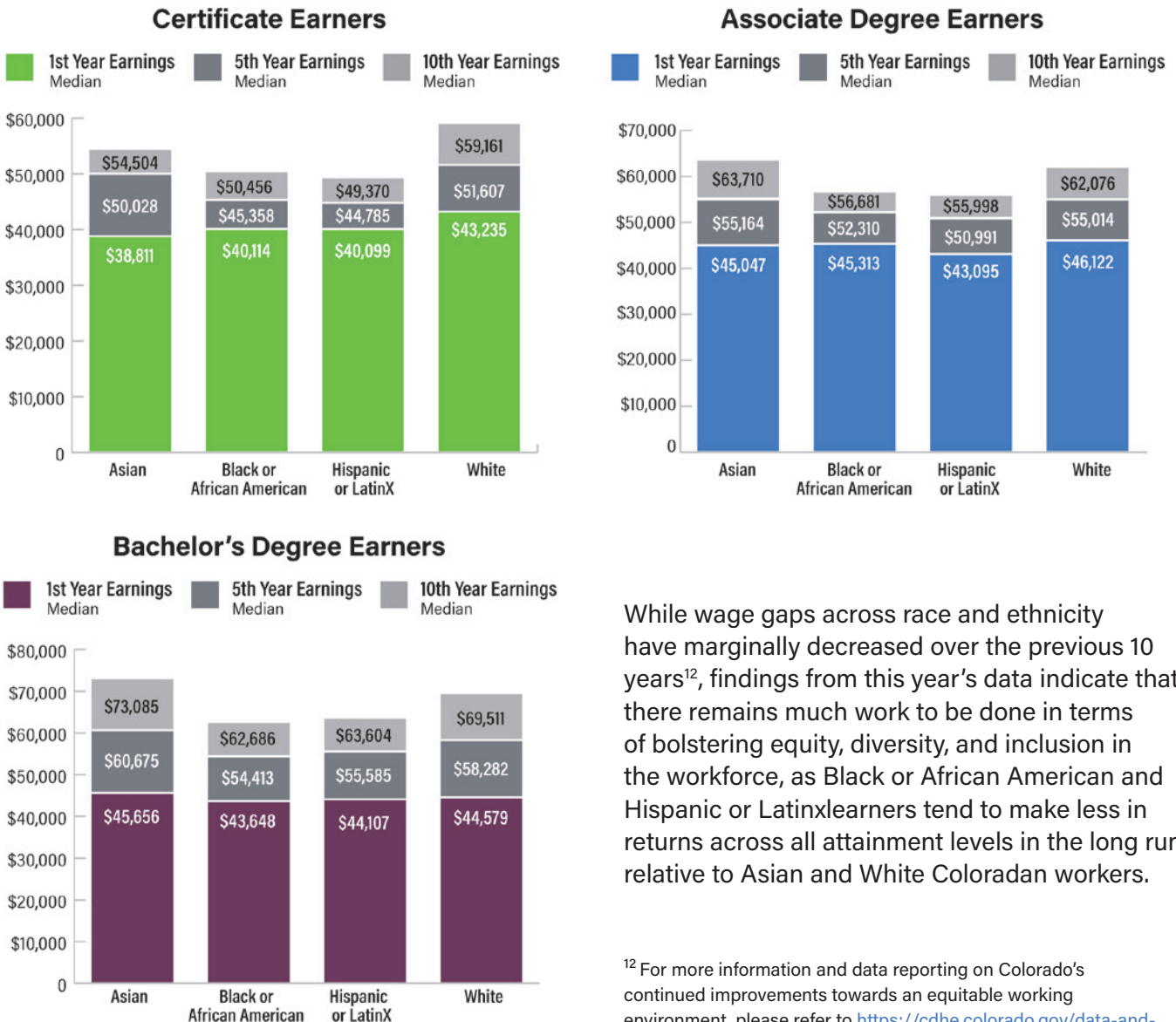
Learners should keep in mind that there is a large overlap in earnings between degrees. Selection of a program of study is just as important as degree level when aspiring to a well-paying career.

Equity in Wage Outcomes by Race and Ethnicity

To understand a more complete picture of equity, the difference in median wage outcomes provides a good baseline comparison. Figure XI displays disparities in earning levels for different demographics in the state across median first, fifth, and 10th-year earning outcomes by credential type. While gains in earnings vary more over time, wage outcomes for all races and ethnicity groups have similar averages after the first year of completion. This is true for every completion type and **suggests that Colorado's Institutions provide equitable returns on investment in the short term after attainment goals are reached.**

It is only later in one's career that we see larger gaps in income across race and ethnicity populations, suggesting that employers could be encouraged to increase equitable practices to benefit their staff members in both the short- and long terms. These gaps are more pronounced in some degree types, such as bachelor's degrees.

FIGURE XI: Wage Outcomes by Degree Type in Colorado by Race/Ethnicity



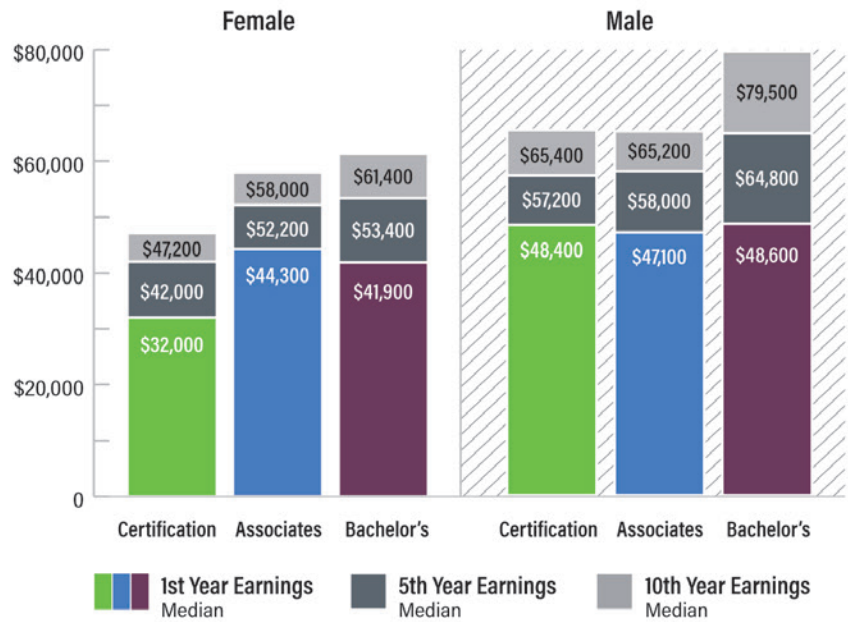
While wage gaps across race and ethnicity have marginally decreased over the previous 10 years¹², findings from this year's data indicate that there remains much work to be done in terms of bolstering equity, diversity, and inclusion in the workforce, as Black or African American and Hispanic or Latinx learners tend to make less in returns across all attainment levels in the long run relative to Asian and White Coloradan workers.

¹² For more information and data reporting on Colorado's continued improvements towards an equitable working environment, please refer to <https://cdhe.colorado.gov/data-and-research/research/education-workforce/ReturnOnInvestment>.

Equity in Wage Outcomes by Gender

Historically, wage outcomes have varied by sex, with fundamental inequities existing between male and female median wages across credential types. Based on the most recent return levels, data outcomes still indicate that there is work to be done in terms of equity regarding sex, as findings report that males continue to enjoy a higher wage premium than females in 2022. This signals to the state that there is still much work to be done in terms of gender equity in the state’s workforce.

FIGURE XII: Median Wage Outcomes for Coloradan Graduates, Disaggregated by Sex

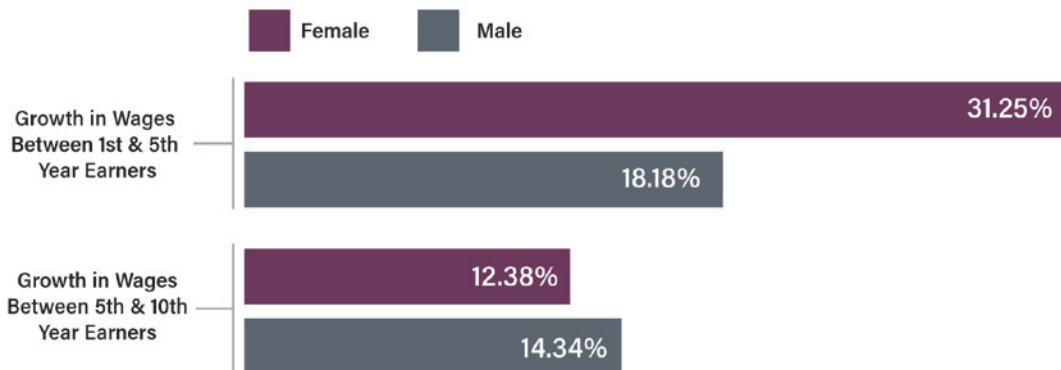


Source: SURDS Data, 2022

Noteworthy of presenting in this year’s report, however, is that data indicates a positive trend toward higher returns for female earning outcomes linked to short-term credential completion in the short run. In 2022, female certificate completion is linked to a spike in wages of just under **31.3%** between the first and fifth year after completion. This outpaces males’ boost in growth of wages during the short term by over **40%** (Figure XIII).

While this could signal a start in reversing the long-time trend of wage inequity across sexes for this completion type, in the longer term, the growth in wage outcomes for males starts to outpace females. This is shown between the 5th and 10th year gains with approximately a **14.3%** jump in earnings increase in growth relative to about **12.4%** for females.

FIGURE XIII: Growth Rates in Median Wage Outcomes for Coloradan Certificate Earners, Disaggregated by Sex



Source: SURDS Data, 2022



Concluding Thoughts

This year, overall, the data show that higher education leads to substantially positive economic mobility through increased median wages for all credential and degree levels. Still, equity concerns remain, as certain racial/ethnic groups and females continue to earn lower median wages. This is particularly true after 10 years in the labor force, even when they have earned an equal credential.

Perhaps the largest takeaway from this section is based on aggregate earnings data collected from Colorado learners. Through this lens, we find evidence that as education increases for Coloradans, annual wages also increase across all industry sectors in the state, regardless of the type of credential one completes – and this is especially true longitudinally. This positive return on investment in the workforce leads to a stronger labor market, a vigorous economy, vibrant communities, and ultimately, stronger Colorado families.

In addition to the financial returns, by increasing postsecondary attainment (thus becoming more competitive to employers in the labor market), Coloradans have a higher probability of finding a quality occupation that serves each job seeker’s distinctive goals and aspirations in terms of a career of choice, family income, and wellbeing.

Appendix A

Understanding the ROI Dataset

The ROI dataset used in this report 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 social security number, who work outside of Colorado, who are federal employees or self-employed, or who do not 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 will allow Colorado to leverage an expanded data source to better inform students when they are making their education decisions.

As previously mentioned, an updated tool providing a full scope of the data utilized in this report can be accessed through the [Postsecondary Degree Earnings Outcomes Tool](#) on the CDHE website. Here, readers can utilize a wide range of data associated with choice and returns outcomes across disaggregated populations within Colorado. This site will be updated on an annual basis to aid learners, researchers, and policymakers as new data is released.

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