



Higher Education Pays: The Initial Earnings of Graduates From Colorado's Colleges and Universities Working in Colorado

Mark Schneider
President, College Measures
Vice President, American Institutes for Research

CollegeMeasures.org

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STATE OF COLORADO

OFFICE OF THE GOVERNOR

136 State Capitol
Denver, CO 80203 - 1792
Phone (303) 866-2471



John W. Hickenlooper
Governor

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America's promise for a productive and successful life starts with a solid education. Individuals who earn a postsecondary credential will secure better employment opportunities and supply Colorado with a talented, highly-skilled workforce for years to come.

Colorado's Department of Higher Education has joined forces with College Measures to produce a tool that provides citizens, students and parents with a look at the first year earnings of college graduates from institutions across the state in a wide array of majors. *"Higher Education Pays: The Initial Earnings of Graduates From Colorado's Colleges and Universities Working in Colorado"* is designed to help inform decisions about both school choice and the outcomes of a specific degree. Especially in today's competitive marketplace, it is critical for students and families to understand the return on their college investment in relationship to the debt load students are willing to carry into their future.

Successful completion of a postsecondary credential ensures greater marketability and higher incomes. But, not all majors and degrees translate into the same earning potential in the workplace. A student's choice of school, program and level of degree makes a difference.

Preparing a 21st century workforce means investing our time and talents in a public education system that encompasses best practices in early childhood development and excellence in the delivery of K-12 instruction. We are dedicated to help ensure that every student is well prepared for postsecondary opportunities. College Measures provides a valid and reliable measure of some of the benefits of a college credential and is an essential piece of our work for generating the best outcomes for students.

We hope you'll visit collegemeasures.org/esm/colorado and explore what the future holds for you.

Sincerely,

John W. Hickenlooper
Governor

Joseph A. Garcia
Lieutenant Governor

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Executive Summary

The results suggest that the degree a student earns matters, but that there are important variations in returns by program and by institution.

Among the findings in this report:

- Colorado graduates working in Colorado can earn, on average, \$20,000 more in their first year of employment compared to a high school graduate.
- The career-oriented Associate of Applied Sciences (AAS) programs in the state of Colorado are helping many students successfully enter the labor market by equipping them with skills that are in demand. On average, one year after graduation, students with AAS degrees are earning almost \$7,000 more than graduates of bachelor's degree programs across the state.
- Graduates with the AAS degree earn, on average, about \$15,000 more than students who completed the Associate of Arts degree or Associate of Sciences degree but who are now in the labor force.
- There is wide variation in the earnings of graduates of the AAS degree, with almost \$15,000 separating the median earnings of graduates from Red Rocks Community College (\$53,000) from median earnings of graduates from Aims Community College.
- The median first-year earnings of bachelor's degree recipients statewide is around \$39,000. However, there is a wide range in earnings according to field of study: First-year earnings range from less than \$30,000 (for Fine and Studio Arts graduates) to more than \$50,000 (Registered Nursing graduates).
- For bachelor's degrees, in general, graduates in health and business earn more than graduates with liberal arts degrees. A closer look tells a more complex story, however. Consider business administration, management, and operations. A \$20,000 difference is found in the first-year earnings of persons who graduated in these fields from the University of Denver (more than \$59,000) and the University of Colorado Colorado Springs (\$39,000). Although part of that difference is likely attributable to differences in the local job markets, there is a \$16,000 difference in the earnings of graduates from the University of Denver and University of Colorado Denver, both located in the same metropolitan area.
- These patterns document the variation in earnings across programs and institutions of Colorado graduates who were working in the state and made at least the minimum wage. Many graduates have left Colorado to continue their studies or for work and are not found in our data.

Together, these findings demonstrate why students, their families, and policymakers need to look more carefully at the data available at collegemeasures.org/esm/colorado.

Introduction

Colorado has one of the most highly educated adult populations in the United States. According to recent Census data, around 36% of Colorado's adult population has a bachelor's degree or more education, almost 30% higher than the national average of 28%.¹ Thus, Colorado ranks third in the nation for college graduates, after the District of Columbia and Massachusetts. The concentration of advanced degree holders in Colorado is also above the national average (almost 13% in Colorado versus about 10% in the nation). This high level of educational attainment is matched by a concentration of high-tech jobs. According to a recent analysis of Bureau of Labor Statistics data, conducted by the Bay Area Council Economic Institute, Colorado ranks fifth in the nation in the concentration of high-tech employment.²

Because of Colorado's skilled workforce and its modern economy, higher education pays off for those who earn postsecondary credentials. We estimate the average earnings of high school graduates in their early 20's to be around \$25,000. In contrast, graduates with postsecondary degrees working in Colorado after graduation can average as much as \$20,000 more. As we show below, this bump in wages is not only among students who have earned a bachelor's degree. Indeed, early in their careers, graduates of two-year degree programs, especially students completing an Associate in Applied Science (AAS) degree, can earn as much or even more than graduates with a bachelor's degree.

Exploring the Data on Labor Market Outcomes of Colorado Graduates

Before examining indicators of the earnings of graduates from different programs across the state, we describe how these data were gathered as well as some limitations of the data that the reader should keep in mind when reading this report or accessing the more detailed data available at collegemeasures.org/esm/colorado.

This report and the accompanying website are the result of a partnership between the Colorado Department of Higher Education and College Measures. *The purpose of the partnership is to make publicly available the average first-year earnings of recent graduates from two-year and four-year institutions across the state who are working full time in Colorado one year after obtaining their degrees or certificates.* The goal is to better inform prospective students, policymakers, and those who lead institutions of higher learning in respect to first-year earnings among students in different fields and programs.

¹These data are from <http://www.census.gov/compendia/statab/cats/education.html>.

²According to the report, the five states with the highest concentration of high-tech workers are: Washington (11.4%), Massachusetts (9.4%), Virginia (9.3%), Maryland (8.9%), and Colorado (8.4%). Downloaded 5 January 2013 from https://s3.amazonaws.com/engine-advocacy/TechReport_LoRes.pdf.

With the support of the Lumina Foundation, College Measures is assisting state agencies in their efforts to make publicly accessible information about the earnings of graduates from higher education programs.³ By making available higher education student unit records (SUR) and unemployment insurance (UI) earnings data on graduates working in the state, Colorado and our other partner states are making it possible to compare the earnings of graduates at the state, institutional, and program levels. The data in this report show that earnings can vary across degree programs and across institutions in the state. Because students study a specific subject in a specific college, the detailed information reported here matters—students graduating with a business degree from one campus may earn more than students graduating with the same degree from another. The information provides prospective students with data they can use in selecting an institution and for weighing the potential earnings they may achieve and the debt they may incur.

It is important to note that the earnings of graduates from any higher education program or institution are not the only measure of how well a program or institution is performing. For example, individual student success reflects a variety of factors independent of their educational experience, such as the student’s background, the local job market, and so on.

Furthermore, students take many different paths after graduation. For some institutions and degree levels (for example, community college “transfer” associate’s degrees or bachelor’s degree programs focused on preparation for graduate study), wage outcomes early after graduation may be less important than programs that usually represent the culmination of a student’s formal postsecondary education. Students who go into the job market within a year of completion of their education represent an important segment of every school’s graduating class. However, the percentage of students covered by the wage data reported here varies across programs and institutions.

A final cautionary note: *Because UI wage data are limited to workers within a state, the earnings of graduates who work outside Colorado do not appear in these data.* This limitation may be a particular problem in Colorado where many students come from out of state for their education without specific plans of remaining after graduating.

In short, the merged data set used in this report presents a somewhat limited picture of the total contribution colleges make to the success of their graduates. However, from the perspective of any individual state, this limitation is less severe than it may seem at first glance. For example, by measuring the percentage of graduates who remain to work in the state after graduation, a state can see which campuses and programs are contributing the most toward improving the economic prospects and quality of life of state residents. And, despite the data limitations, the success

³The technical appendix describes how earnings and other terms used in this report are computed. In this report, the term “earnings” refers to the data reported by the state’s UI records system. The report also focuses on what is termed “first-year earnings.” In this definition, students have six months (two quarters) to find work before starting their “first year.” See the technical appendix for more information about this and the other measures used.

that students have in the labor market is valuable information, especially for students and their families as they consider their plans for higher education and how to finance those plans.

This report and its accompanying website (collegemeasures.org/esm/colorado) focus on the variation in first-year earnings of graduates from higher education institutions in the state of Colorado who are working in Colorado one year after graduation.⁴ In the past few months, College Measures has released web-based reporting tools for other states (including Arkansas, Tennessee, and Virginia). The patterns in those states can be compared to the results reported for Colorado.

About the Data

These data cover:

- Over 61,800 college graduates from 2006—2010 from Colorado public colleges and universities and from three private institutions who are in the state’s unemployment insurance wage data.
- Graduates who are employed in Colorado and earning at or above the Colorado minimum wage.
- Because of the mobility of Colorado graduates, these 61,800 students represent 26% of all graduates.

These data DO NOT cover:

- Graduates who continued their education after earning a credential, including those enrolling in graduate school or transferring to another college in Colorado and are full-time students. About 18% of graduates were pursuing further education in a participating Colorado institution.
- Graduates who left the state after completing a credential, who went to work for the federal government in Colorado or who were self-employed. These employees are not included in the state’s unemployment insurance data.
- Graduates who were employed and earning less than the Colorado minimum wage. These figures could unfairly lower the reporting of full-time, first-year salaries.

Other factors to consider:

- Regional differences in the job market may influence first-year earnings. First-year salaries in the metro Denver area may be higher than those in rural areas.
- Background differences between students might influence their potential earnings post-graduation. This includes differences in age at the time a credential was completed. For example, older students completing a credential may already be employed.
- These data represent a snapshot in time—one-year after graduation—and do not reflect earnings over time. Lifetime earnings on average are higher for graduates with higher levels of education.

⁴Average first-year earnings data are the earnings from quarters three through six after graduation of students who graduated from a given program between 2006 and 2010. See the Appendix for more details on this and other measures. Additional work exploring variation in the *growth* of earnings for students who are in different careers and who have earned their degrees from different programs is clearly necessary to assess more fully the labor market success of graduates.

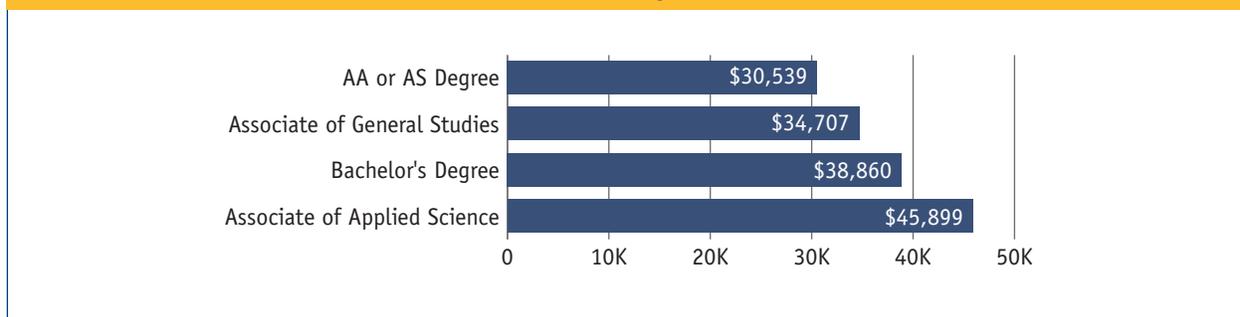
The Value of Technical or Career-Oriented Associate’s Degrees

Figure 1 highlights one of the most important patterns in the Colorado wage data: All degrees pay off. But Figure 1 also shows another important pattern. In many cases, graduates with two-year degrees enter the job market with higher earnings than graduates with bachelor’s degrees. Colorado community colleges award several types of associate’s degrees, with different expected outcomes from each:

- AAS degree: Entry into the workforce
- Associate of Arts (AA) degree/Associate of Science (AS) degree: Transfer to four-year colleges
- Associate of General Studies degree: Tailored to student needs

Later, we will look at the earnings of graduates from specific degree programs. As shown in Figure 1, on average, graduates with AAS degrees are earning substantial entry-level wages. In fact, on average, graduates with AAS degrees earn around \$7,000 more than graduates of bachelor’s degree programs across the state and around \$15,000 more on average than community college graduates with AA and AS degrees who are in the labor market. While the initial advantage of the AAS degree may decrease over time as earners with Bachelor’s degrees tend to see a more sustained increase in wages, the career-oriented associate’s degrees in the state of Colorado are helping many students successfully enter the labor market, equipping them with skills that are in demand.

Figure 1: Statewide Median Wages by Education Level



While the AAS degree clearly has substantial market value, non-technical AA/AS degrees can also pay off for graduates. We estimate that high school graduates in their mid-20s likely earn on average around \$25,000 per year. In contrast the average first-year wages for a AA/AS graduate is already more than \$5,000 higher—a gap that will likely grow over time. Although the early career payoff of the AA/AS degree lags behind wages of those completing other postsecondary credentials, this degree may still be a reasonable choice for many students.

In the following sections, we look at the data behind these overall patterns.

Bachelor's Degrees

Nationwide, bachelor's degrees, the most common degree awarded by America's colleges and universities,⁵ remain an excellent investment for most students. According to Bureau of Labor Statistics data, bachelor's degree holders nationwide earn on average about 65% per year more than high school graduates, and bachelor's degree holders are far less likely to be unemployed.⁶

However, these national data mask considerable variation across the states. More important, the data can mask variation between the returns to graduates from specific institutions. That is, graduates do not earn just a bachelor's degree; they earn a degree from a specific institution and in a specific field of study. The data in this report and on the College Measures website enable the reader to dig deeper into the variation hidden by overall averages.

First, we examine the range of early career earnings of graduates from four-year bachelor's degree-granting institutions in Colorado. Data include all public institutions and three private not-for-profit institutions that have shared their data with Colorado's Department of Higher Education.

Variation by Institution

Figure 2 shows the median first-year earnings of graduates working in Colorado one year post-graduation. The red bar highlights the *median* first-year earnings (slightly less than \$39,000) for these bachelor's degree recipients across all campuses in Colorado.

Graduates from the Colorado School of Mines command the highest beginning salaries—around 45% higher than the state median. Nationwide, graduates with bachelor's degrees in engineering are consistently among the highest earners and, given the special emphasis of the Colorado School of Mines, the performance of their graduates is consistent with expectations.

Graduates of Regis University, a private not-for-profit institution, also do quite well in the labor market, with median first-year earnings around 38% higher than the state median. One likely reason for the success of Regis' graduates is that they are older than students at other campuses in Colorado. Indeed, many of these students are already in the labor market, looking to increase their skills and advance their careers.⁷ Thus, while graduates from most other programs are launching

⁵http://nces.ed.gov/programs/digest/d10/tables/dt10_195.asp

⁶http://www.bls.gov/emp/ep_chart_001.htm

⁷The average age of Regis students in our database is 35, far higher than other schools with high-earning graduates: Colorado School of Mines: 22; University of Colorado Denver: 27; University of Colorado Boulder: 23. There is a strong relationship between age at graduation and wages across the state: the median first-year wages for students less than 25 years old when graduating was \$36,261. In contrast, graduates aged 25 or older had median earnings of \$48,488 one year after graduation. Thus, schools serving older students, who are likely to be mid-career, will tend to have higher earners among their graduates than earners from other campuses.

new careers, graduates from Regis may be well into theirs, with commensurately higher earnings. Graduates from University of Colorado Denver also earn above the statewide median, by around \$5,000, but that university also tends to serve somewhat older students. Several other institutions including Colorado Christian University, Colorado State University–Pueblo, Metropolitan State University of Denver, and Adams State University serve an older population of students, which may influence earnings.

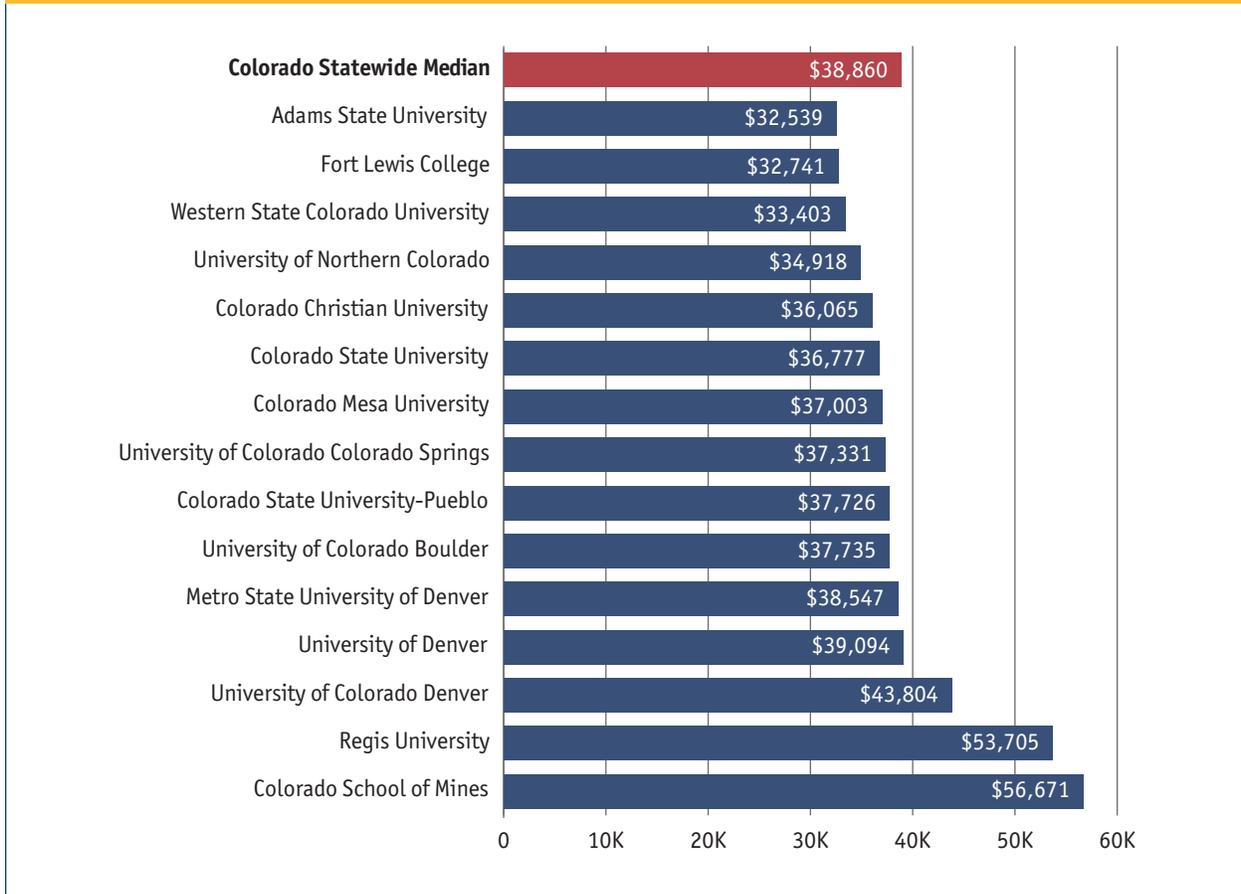
Other than graduates of the four campuses who earn above the state median, graduates from the next seven campuses have first-year earnings that are quite close, within \$3,000 of each other.

These data show that graduates from many institutions across the state can enter the job market with roughly the same level of earnings. Therefore, many Colorado universities beyond the state’s most well-known campuses offer promising avenues to labor market success.

The high mobility of graduates from Colorado colleges may affect one of the findings in these data: The median first-year earnings of bachelor’s graduates from the state’s flagship campus, the University of Colorado Boulder, are lower than the median earnings of five other campuses (University of Colorado Denver, Colorado School of Mines, Metropolitan State University of Denver, Regis University, and University of Denver) and, indeed, they are lower than the state median. University of Colorado Boulder attracts many out-of-state students, and the percentage of that school’s graduates found in the state UI system is low. We suspect that many graduates of the University of Colorado Boulder, likely including its most successful ones, leave the state, depressing the earnings reported. Others go on to graduate or professional school outside Colorado, and those in graduate or professional school in Colorado are likely to work part time and/or in relatively low-paying student positions (which nevertheless exceed the minimum wage threshold). This progression after graduation also would depress the earnings reported for University of Colorado Boulder.

It should also be noted that, of the four campuses with graduates that have the lowest earnings, three (Adams State University, Fort Lewis College, and Western State Colorado University) are located in “remote towns,” according to the U.S. Department of Education geographical classification system. Graduates from these campuses clearly face a different regional economy than graduates from campuses located in the Front Range of Colorado.

Figure 2: Median First-Year Earnings of Bachelor's Degree Graduates by Institution

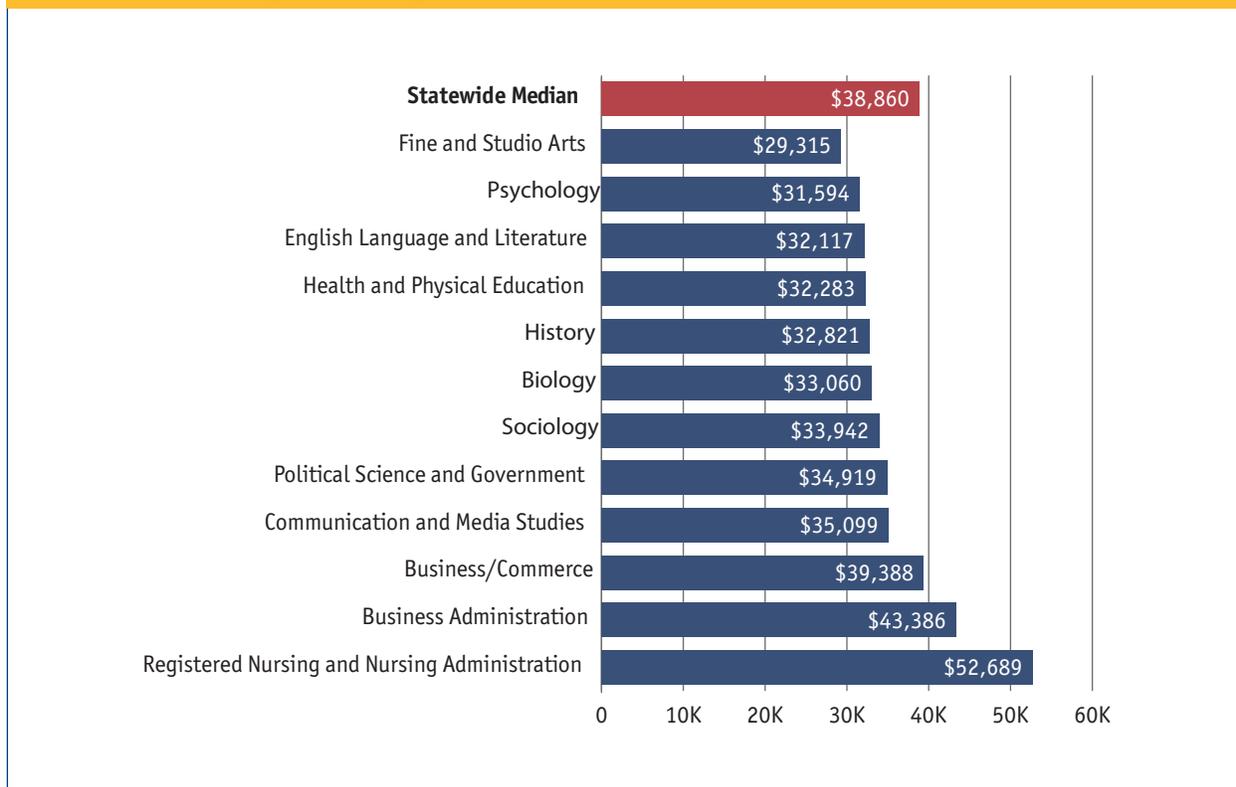


Variation by Bachelor's Degree Program

Students earn a degree from a specific campus, and they also earn their degrees from specific programs of study. Campus-level averages can mask substantial variation in the earnings of graduates from different fields of study. Indeed, as seen in Figure 3, the annual first-year earnings of students in different fields of study can vary greatly. Here, we define field of study by the standard federal Classification of Instructional Programs (CIP)⁸ and order programs by earnings.

⁸See the technical appendix for a definition of CIP codes.

Figure 3: Median First-Year Earnings of Graduates From Popular Bachelor’s Degree Programs in Colorado



Bachelor’s degree recipients have median first-year earnings that range from less than \$30,000 (fine and studio arts) to more than \$50,000 (registered nursing). First-year earnings for graduates from some large liberal arts programs fall below the state median, ranging from around \$35,000 for communications and media studies to less than \$33,000 for history, health and physical education, English language/literature, psychology, and fine and studio arts.

It is important to remember that these are the median first-year earnings in the Colorado labor market of students for whom the bachelor’s degree is currently their terminal degree. Some of these students might later choose to pursue further studies, with effects on their lifetime earnings. Additionally, earnings growth in each of these degrees can vary, affecting lifetime earnings.

The Importance of Program-Level Data

The program-level data we report give more detail than most previous work on how well graduates fare in the labor market. For example, the Bureau of Labor Statistics⁹ and Georgetown University's Center on Education and the Workforce¹⁰ have identified the nation's highest-paying professions. For the last several years, PayScale¹¹ has reported the early and mid-career salaries of graduates from about 1,000 bachelor's degree-granting institutions. More recently, with the support of College Measures, PayScale expanded its reporting to include salary data from graduates from approximately 600 two-year institutions, available at collegemeasures.org. These studies provide information on the *average payoff* of a field of study or the *average payoff* of graduating from a specific college. With the data set we are now making public, the *variation* in earnings for graduates from individual programs in individual colleges can be explored.

Our data show that the variation in first-year earnings across programs and institutions can be substantial. Figure 4 shows the median first-year earnings of bachelor's degree graduates from three of the most popular programs of study. These data are for six campuses that have all three of these programs.

Consider business administration, management, and operations: There is a \$20,000 difference in the first-year earnings of graduates from the University of Denver and the University of Colorado Colorado Springs. Although part of that difference is likely attributable to differences in the local job market, there is a \$16,000 difference in the earnings of graduates from University of Denver and University of Colorado Denver, both located in the same metropolitan area.

Differences in the earnings of graduates in the two other programs are smaller but can still be substantial. For example, there is a \$15,000 difference between the median first-year earnings of communications graduates from Regis University and University of Northern Colorado. Leaving aside Regis University, first-year earnings of communications graduates from the University of Denver are around \$6,000 higher than the earnings of graduates of the other campuses listed.

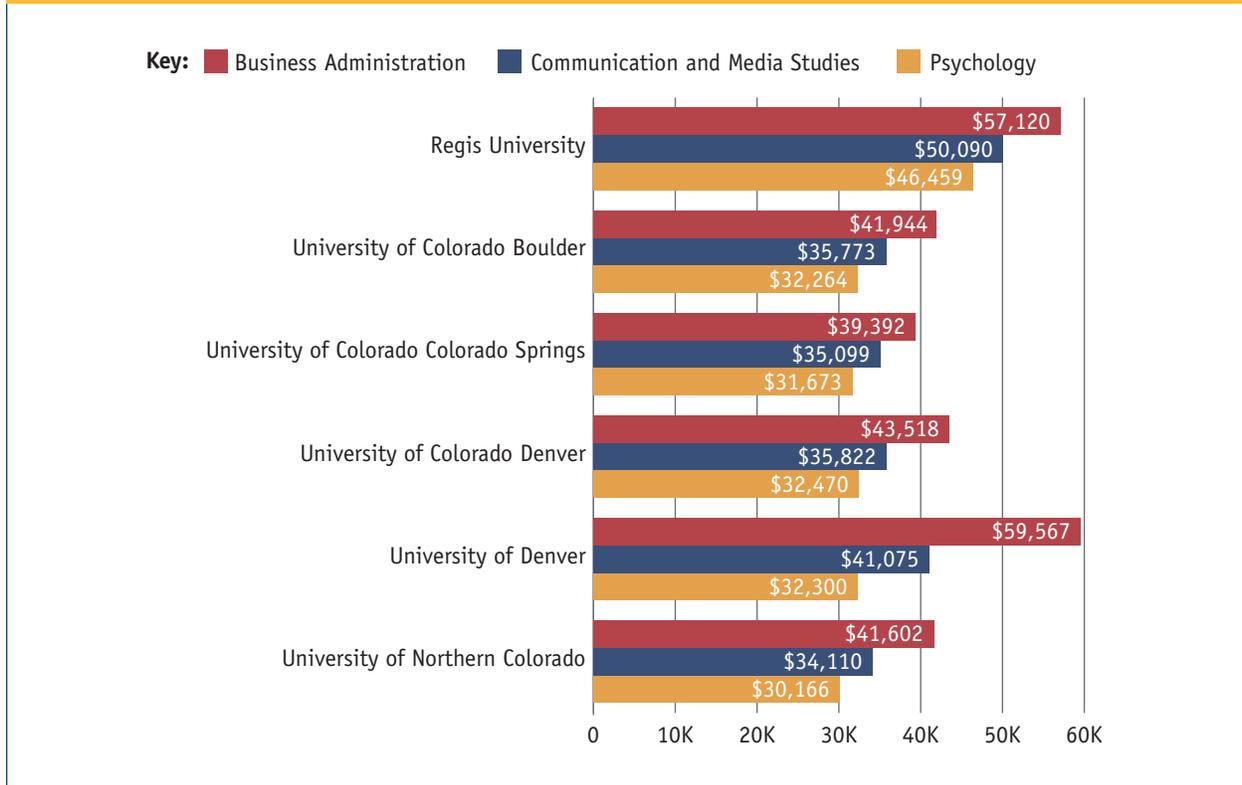
In contrast, and again setting aside Regis University with its largely nontraditional student body, earnings of graduates from psychology programs across the state are relatively low, and all are tightly clustered between \$30,000 and \$32,500.

⁹<http://www.bls.gov/bls/blswage.htm>

¹⁰<http://cew.georgetown.edu/collegepayoff>

¹¹<http://www.payscale.com/college-education-value>

Figure 4: Median First-Year Earnings of Bachelor’s Degree Graduates From Three Popular Programs of Study



Can Students Manage Their Debt?

Of great concern to students and their families is the debt they take on to pay for higher education. At over a trillion dollars, student debt surpasses the nation’s credit card and automobile debt—after mortgages, it is now the largest form of consumer debt. Recently, the Federal Reserve Bank of New York reported about 11% of student loans are delinquent and, in contrast to most other forms of debt, the volume of student debt is increasing.¹²

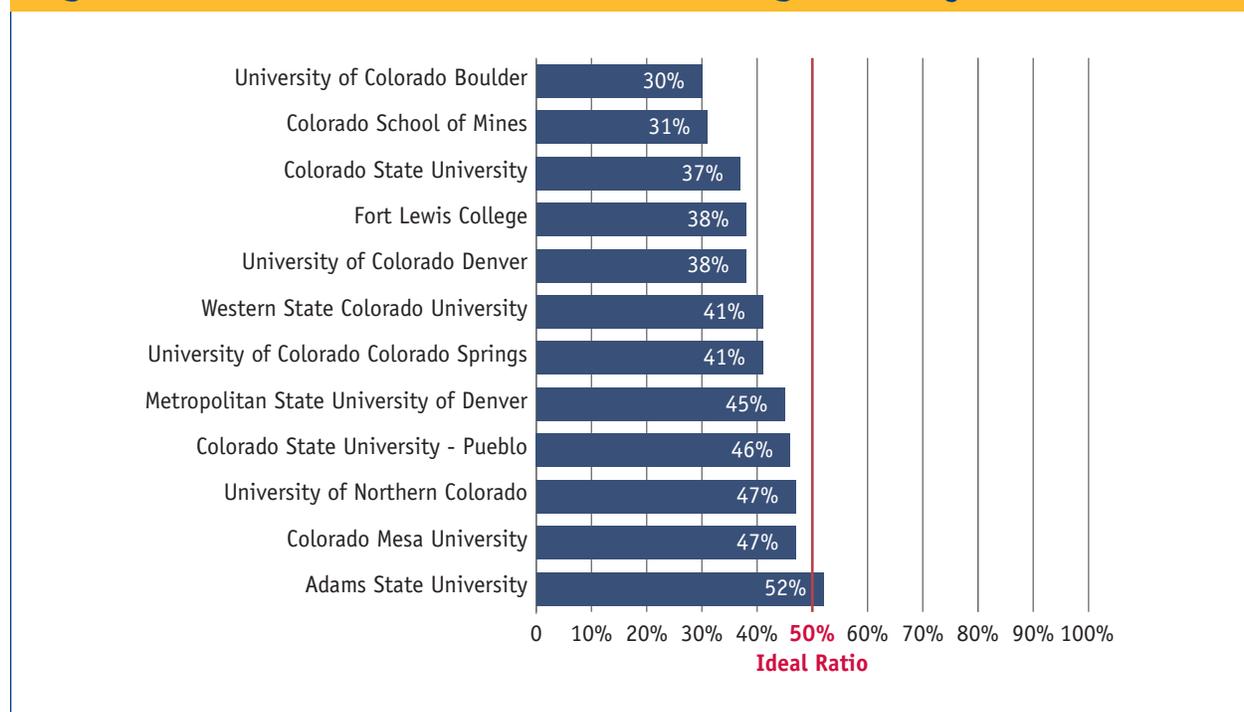
Because graduates of postsecondary institutions on average earn more than high school graduates, student debt can help students complete a degree that may increase their earnings. Thus, debt serves as an investment that can have a high rate of return.

¹² See <http://www.newyorkfed.org/studentloandebt>.

However, as growing delinquency rates show, too many students borrow far too much money. But how much is too much? According to Mark Kantrowitz, one of the nation’s leading experts in student financial aid, a good rule of thumb is that education debt for an entire college education should be less than expected starting salary after graduation. Even better, he says student loan debt should be less than 50% of starting salary.¹³

Figure 5 shows the ratio of student debt to first-year earnings for the dozen four-year public universities in Colorado. At the institution-level, graduates of the University of Colorado Boulder borrow the least compared to their first-year earnings, followed closely by graduates of the Colorado School of Mines. In both schools, average debt is about 30% of first-year earnings. Three other campuses (Colorado State University, Fort Lewis College, and the University of Colorado Denver) show ratios that are between 35 and 40%. The debt-to-earnings ratio of graduates from six more campuses falls between 41 and 47%. The highest ratio is found among graduates of Adams State University, the only campus where the ratio is higher than the “ideal” level identified by Kantrowitz.

Figure 5: Student Debt to First-Year Earnings Ratio by Institution



These institution-level data should be supplemented ultimately by program-level information, but the data suggest that on average Colorado graduates are assuming reasonable debt in relation to their earnings.

¹³ Mark Kantrowitz <http://www.fastweb.com/financial-aid/articles/3092-how-to-minimize-student-loan-debt>

Associate's Degrees

Public two-year community colleges now enroll more than one-third of the nation's postsecondary students¹⁴ and have become an increasingly important part of the nation's system of higher education. The Obama Administration has emphasized the role of community colleges as key to achieving its goal of the United States having the highest proportion of college graduates in the world by 2020.¹⁵ Colorado has also established a completion goal by 2020: that 66% of all Coloradans between the ages of 25–34 will earn a postsecondary credential.

Students enroll in community colleges to pursue a variety of goals that may include learning specific skills, obtaining an industry-recognized credential, pursuing an associate's degree, taking remedial courses to prepare for further postsecondary education, and taking courses to prepare for transfer to a four-year college or university. In short, the ultimate goal for many community college students is not an associate's degree, and many who earn an associate's degree will seek four-year degrees. That said, the community college graduates in our database are currently in the workforce, and it is worthwhile to see the relationship between their associate's degree and their earnings.

Variation by Type of Degree

Recall that community colleges in Colorado offer several types of degrees: The associate's degree in applied science (AAS) aims to prepare students to enter specialized and occupation-specific fields, while the associate's degree in arts (AA) and associate's degree in science (AS) aim to prepare students to transfer to a four-year school. The associate's degree in general studies is harder to classify, as it is a flexible degree designed to accommodate students' interests.

Figure 6 shows the median first-year wages of graduates with each of these types of degrees from the community colleges in the state. This graph contains a great deal of information, and we will highlight only a few of the most salient points.

Perhaps the most striking is the labor market success of graduates from occupational/career-oriented AAS degree programs. For example, the median wages of graduates with the AAS degree from Pikes Peak and Aims—the colleges where AAS graduates earned the least—are just below \$40,000, which is still higher than the median first-year earnings of graduates from *any* AA/AS program. Furthermore, the median first-year wages for AAS graduates from every community college except Aims Community College are *higher* than the statewide median of first-year wages of bachelor's degree graduates.¹⁶

¹⁴ *Digest of Education Statistics: 2010*, Table 201.

¹⁵ <http://www.whitehouse.gov/issues/education/higher-education/building-american-skills-through-community-colleges>

¹⁶ One factor that may help explain these results is the age of graduates earning these different degrees. Students completing the AAS degree are somewhat older than students completing the AA/AS degree (32 years vs. 28 years), and AAS recipients are older than bachelor's degree recipients, whose average age is 26.

Clearly, students earning the AAS degree find their skills rewarded in Colorado's labor market. However, as Figure 6 shows, within these overall results, first-year earnings of graduates with each type of associate's degree vary considerably.

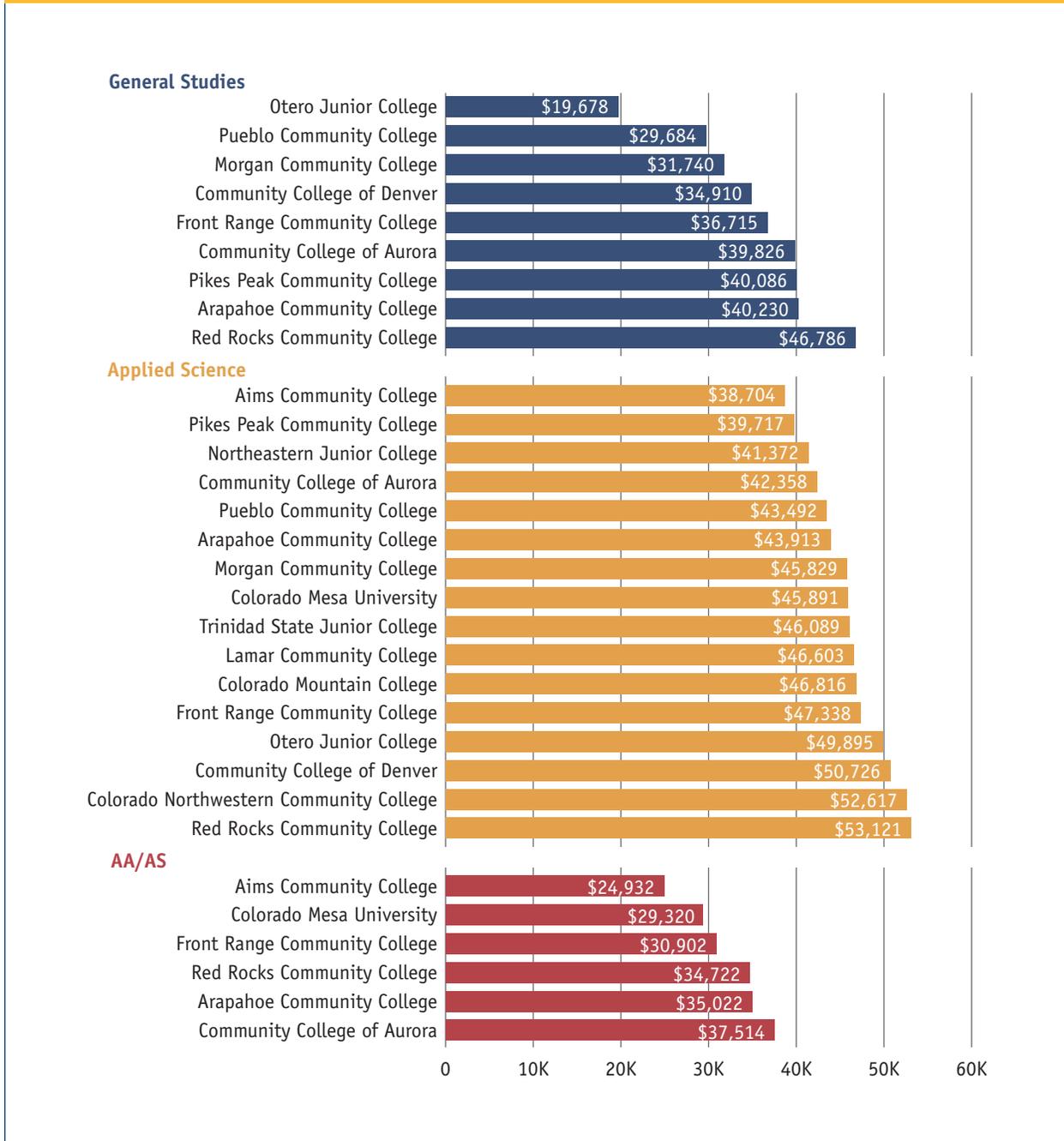
Turning first to the Associate of General Studies degree, the median wage of graduates from Red Rocks Community College is more than \$46,000. This is over \$6,000 more than the median wages of graduates from the next three community colleges (Arapahoe Community College, Pikes Peak Community College, and Community College of Aurora), where graduates' median first-year earnings are around \$40,000. The earnings of graduates with the Associate of General Studies degree fall well below \$40,000 in other than these four schools, dropping down to nearly \$20,000 for Associate of General Studies degree graduates of Otero Junior College.¹⁷

Variation also occurs between the first-year earnings of graduates with the AAS degree, but even a cursory inspection shows how much *higher* the wages of these graduates are compared to graduates of other degree programs. Median first-year earnings of graduates from four community colleges (Red Rocks Community College, Colorado Northwestern Community College, Community College of Denver, and Otero Junior College) come close to or exceed \$50,000. Graduates from the next six community colleges (Front Range Community College to Morgan Community College) all exceed \$45,000 in first-year wages. In only two (Pikes Peak Community College and Aims Community College) do the median wages of first-year graduates fall below \$40,000. Even in these two schools, however, the median first-year wages of their graduates are close to the statewide median earnings of new bachelor's degree graduates.

Colorado community colleges, like those across the nation, also prepare students to transfer to four-year degree programs. This project does not track the success of those students who do transfer successfully. However, it is evident that students who complete the transfer track but are in the labor market are lagging behind their peers who completed an AAS degree.

¹⁷ Otero Junior College is located in La Junta, CO, classified by the U.S. Department of Education as a remote town. Otero County is one of the poorest counties in the state, and this may help explain the low first-year earnings. Also note that its graduates with the AAS degree earn more than graduates from most other community colleges in the state.

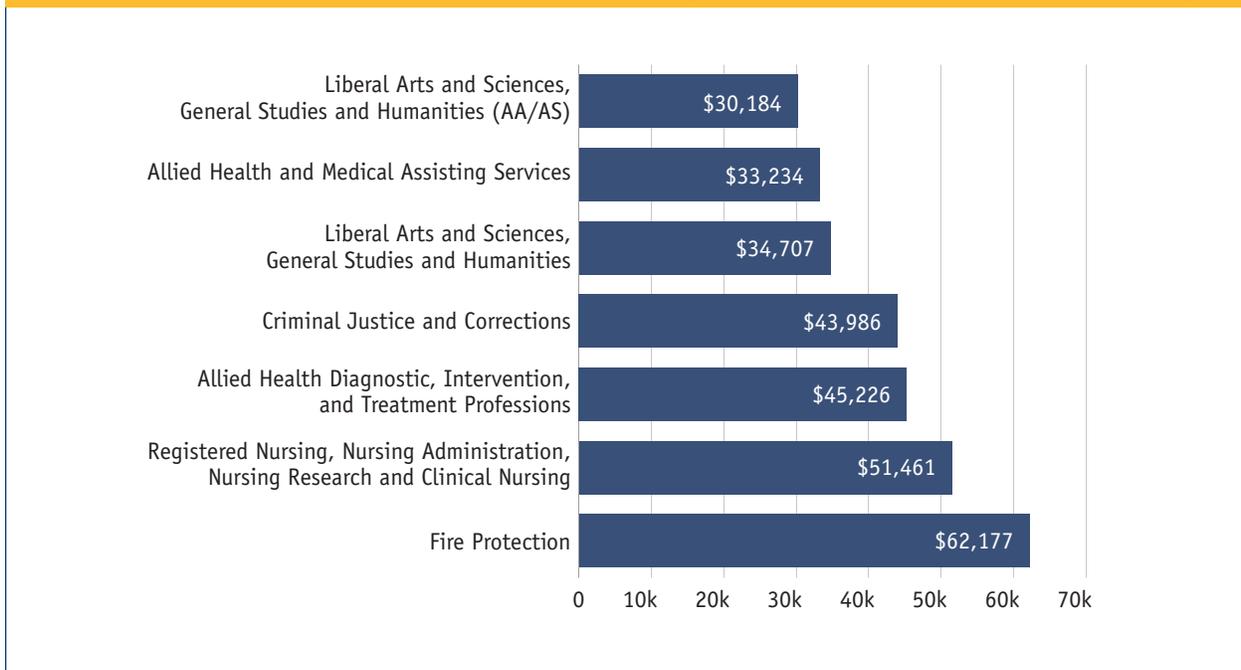
Figure 6: Median First-Year Earnings of Different Associate’s Degree Graduates by Institution



Variation by Program of Study, Associate's Degrees

This section reports the median first-year earnings of graduates from seven of the most popular associate's degree programs in Colorado (see Figure 7). On average, students earning associate's degrees in occupationally oriented programs—fire protection, nursing, allied health diagnostics—can start their careers earning \$10,000 more than students who earn degrees in liberal arts and sciences. As noted previously, students in these latter fields may be on their way to further education, but for those students who enter the labor market with these degrees, earnings are below those of graduates from applied programs.

Figure 7: Median First-Year Earnings of Graduates From Most Popular Associate's Degree Programs (All Associate's Degree Types)



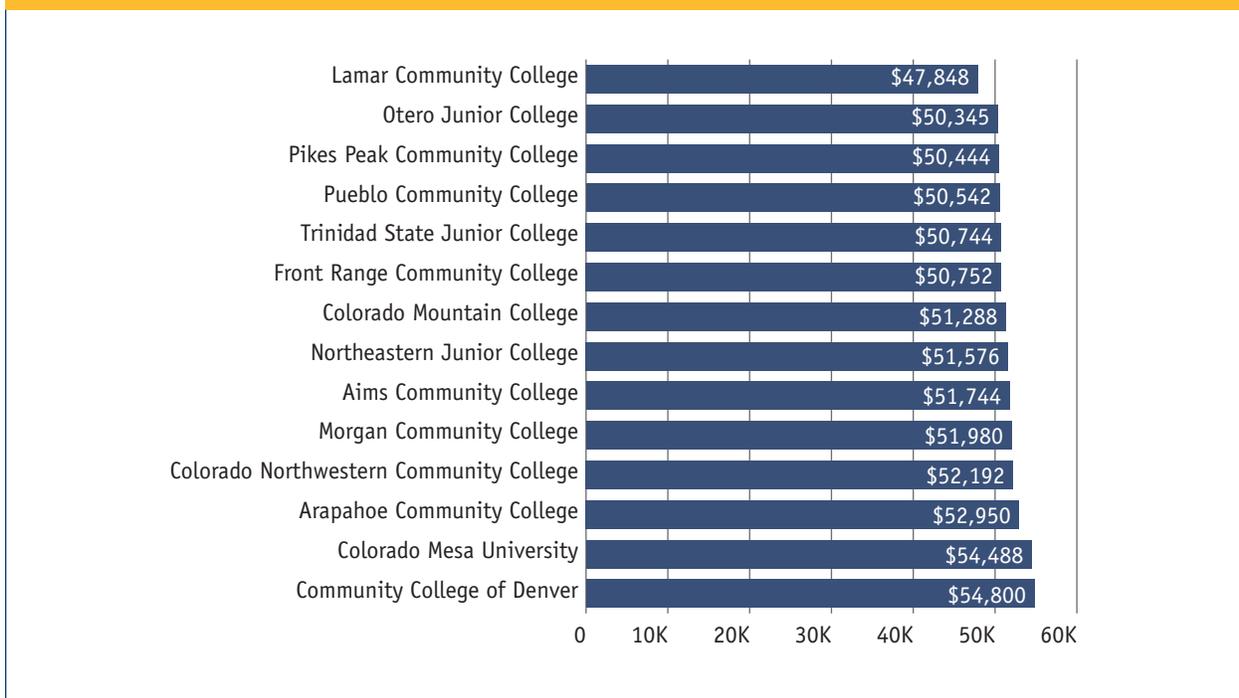
Variation Across Community Colleges

Figure 8 shows the range of first-year earnings of graduates from the same program, Registered Nursing, Nursing Administration, Nursing Research and Clinical Nursing, who completed their degrees from the different community colleges across Colorado. The data show that even after students choose a degree level and a program of study, where they study matters.

First-year earnings range from close to \$55,000 for graduates from the urban Community College of Denver to less than \$48,000 for graduates from rural Lamar Community College, a \$7,000 difference. As is evident in this comparison, it is important to remember that the location of a school and the strength of its local economy can influence earnings.

While the \$7,000 range is large, in many other programs differences can be far greater. For example, more than \$30,000 separates the earnings of graduates in Allied Health Diagnostics and graduates in Fire Protection from different community colleges. The reader can find these details at the collegemeasures.org/esm/Colorado website.¹⁸

Figure 8: Median First-Year Earnings: Registered Nursing, Nursing Administration, Nursing Research, and Clinical Nursing by Institution



¹⁸ Consider also the following example: the median earnings of graduates from Pikes Peak and Red Rocks community colleges with associate's degrees in fire protection are just short of \$70,000. In contrast, graduates from Aims Community College earn less than \$40,000.

Conclusions

Higher Education Pays: But Far More for Some Programs Than for Others

Associate's degrees can have a payoff that exceeds that of a bachelor's degree in the short term. While research from the Center on Education and the Workforce shows that *on average* bachelor's degree holders over time will earn more than associate's degree graduates,¹⁹ further work needs to be done separating out the lifetime earnings of graduates in different fields of study at all levels.

The Bureau of Labor Statistics and the Census Bureau have documented the “Big Payoff” for higher education, but our work shows that the payoff varies considerably from program to program and from institution to institution. The bottom line: The degree student earns, and where they earn it, matters. Most notably, we have shown that many pathways to success exist in the labor market. For example, we have demonstrated the high labor market value of AAS degrees. And we have demonstrated that at the bachelor's degree level, graduates from about one-half of the campuses in the state on average earn roughly the same first-year wages. Again, many pathways to strong earnings are available to students in Colorado, and we hope that the data we are making available can help students find them.

Putting the Data to Use

As students and others consider these data, we reiterate some of the cautions put forward earlier in this report. Although wide variation occurs in the first-year financial success of graduates from different programs, we generally have not tried to explain such variation, leaving that to further analysis. For example, we know that the credentials of incoming students vary across institutions, missions vary across institutions, and many schools serve regional labor markets where earnings vary. We believe that, for evaluative purposes, policymakers must take these factors into consideration.

We also know that postsecondary education has many rewards in addition to the boost in earnings; however, if a student borrows \$50,000 and is earning \$25,000, he or she likely will be so consumed by trying to pay off the loans as to have little time to enjoy these other rewards.

To repeat, we believe that government officials and political leaders should know about the variations in the economic payoff of degrees and programs of study—but they need to be careful about using them in any program of institutional accountability. However, the data reported here should be made widely accessible to the public and should inform consumer decisions.

¹⁹ <http://cew.georgetown.edu/collegepayoff/>

Technical Appendix

Measures

Setting a Degree Cohort

In this report we combine five years of data into one degree cohort and label the cohort with the most recent year of data. For example, the 2010—11 cohort, which is the most recent cohort with complete employment data and which we use as the degree cohort in our report, includes students graduating from 2006—07 through 2010—11. The cohort of degree and certificate recipients includes students who came from outside Colorado, even from outside the United States, to study.

Number of Completers

This is the total number of students who graduated in the degree cohort and were counted in this program and degree level.

A student receiving two degrees (e.g., BA, MA) at the same time is counted only in the higher degree; this has a differential effect on counts for combined bachelor's/master's programs. Students receiving one degree with two programs or majors (e.g., History, English) will appear as completers in each program completed.

Number of Completers With Earnings Data

This is the number of completers in the degree cohort with reported Colorado employment earnings in each of the four consecutive quarters starting 7—9 months after graduation and meeting or exceeding the minimum wage threshold in each quarter. The minimum wage threshold is set at \$3,253.25/quarter, which represents 13 weeks of employment at 35 hours per week at \$7.15/hour. This is referred to as the **4-quarter minimum rule** in other definitions.

Note that earnings from part-time employment are included if they exceed the quarterly minimum, which is the equivalent of \$12,973 per year.

Percentage of Completers With Earnings Data

This is the number of completers in the degree cohort with earnings from the Colorado state's employment data who meet the 4-quarter minimum rule, divided by the total number of completers in the degree cohort.

First-Year Earnings—Median

This is the *median* of the reported earnings from quarters three through six after graduation of students in the cohort who meet the 4-quarter minimum rule.

For example, for students graduating in May 2010, their first year earnings are the sum of first quarter, 2011 earnings through fourth quarter 2011 earnings.

First-Year Earnings—QTILE1

The 25th percentile reported earnings for completers with earnings data in this row.

First-Year Earnings—QTILE3

The 75th percentile reported earnings for completers with earnings data in this row.

Area of Study, Area of Study (CIP) Code, Program

The Area of Study, Area of Study (CIP) Code, and Program refer to the Classification of Instructional Program developed and maintained by the U.S. Department of Education's National Center for Education Statistics (NCES). According to NCES, "The Classification of Instructional Programs (CIP) provides a taxonomic scheme that supports the accurate tracking and reporting of fields of study and program completions activity. CIP was originally developed by the U.S. Department of Education's National Center for Education Statistics (NCES) in 1980, with revisions occurring in 1985, 1990, 2000, and 2010." CIP codes are used throughout Colorado for institutional reporting to CDHE and to the U.S. Department of Education. For more information about CIP codes, please visit the NCES website: <http://nces.ed.gov/ipeds/cipcode/>

The program listings use the CIP translation only, not the degree program name at the institution. Program content can differ significantly within a CIP area; for example, CIP 05.01 includes programs in Colorado in American Studies, Asian Studies, Latin American Studies, and Russian Studies.

Data Disclosure Rules

In order to protect confidentiality, these reports display program-level data only under the following conditions:

- Single-year data will not be reported, only rolling five-year aggregates. For example, graduates of 2010—11 are reported with those of 2006—07, 2007—08, 2008—09, and 2009—10.
- Earning data will be shown only when there are 10 or more graduates with reported earnings meeting the 4-quarter minimum rule, and these graduates represent at least 15% of all program completers in the cohort.
- Degree and certificate programs with no graduates in the five-year period are not listed. To see a full list of programs that schools provide, please go <http://highered.colorado.gov/i3/ApprovedDegrees.aspx>

The earnings data included in these reports represent only the following:

- (a) Graduates successfully matched to the Colorado state's earnings records
- (b) Graduates employed in the state, excluding federal employees and self-employed
- (c) Graduates whose first-year earnings meet the 4-quarter minimum test



Mark Schneider
President, College Measures
Vice President, American Institutes for Research

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