Rocky Mountain Divide

Lifting Latinos and Closing Equity Gaps in Colorado

Anthony P. Carnevale
Tanya I. Garcia
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GEORGETOWN UNIVERSITY
Center on Education and the Workforce
McCourt School of Public Policy

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Introduction

Persistent growth in skill requirements on the job and low unemployment has forced Colorado to compete for skilled labor nationwide, but that threatens to leave Coloradans born in the state behind in the competition for middle class jobs—especially Latinos[1] with a high school education or less.

Colorado has the second most-educated adult populace, but largely because it imports college-educated labor from other states.[2] Almost 56 percent of Coloradans have a high-quality certificate, associate's degree, bachelor's degree, or higher.[3] Yet at the same time Colorado has the fifth lowest high school graduation rate in the nation. The state's 77 percent high school graduation rate puts it close to the bottom—the national average is 83 percent.[4]

Because the state is committed both to improving the quality of its workforce and to improving opportunity for Coloradans born in the state, it has set an educational attainment goal that by 2025, 66 percent of state residents will have a postsecondary credential.[5] The majority of states have set overall postsecondary attainment goals, but Colorado has gone a step further by setting 66 percent goals for each significant racial and ethnic grouping. State leaders expect each racial and ethnic group in the state individually to reach this goal, but right now only Whites are on track to do so: Latinos and Native Americans[6] are the farthest behind in reaching the goal (29% of each have a postsecondary credential), Whites are the closest (64%), and Blacks are in between (39%).[7]

1 In this report, we use the term Latino to refer to people who identify as Hispanic or Latino and the term Black to people who identify as Black or African American. We use single terms—White, Black, and Latino—to alleviate ambiguity and enhance clarity. In charts and tables, we use White, Black/African American, and Hispanic/Latino.

2 Other large net importer states are California, Texas, Oregon, Arizona, Utah, and Georgia (Colorado Department of Local Affairs, *What Paradox*, 2015).

3 Among residents ages 25 to 64, Massachusetts has the highest postsecondary attainment rate of 56.2 percent. Lumina Foundation, *A Stronger Nation*, 2018.

4 New Mexico and the District of Columbia are the lowest in the country at 69 percent, followed by Nevada at 71 percent, Oregon at 74 percent, and Alaska at 76 percent. US Department of Education, Consolidated State Performance Report, School Year 2014-15, 2016, https://nces.ed.gov/programs/digest/d16/tables/dt16_219.46.asp.

5 The Colorado Commission on Higher Education first set this goal in 2012 and renewed its commitment in the latest state master plan in 2017. Colorado Commission of Higher Education, *Colorado Competes*, 2012, and Colorado Commission on Higher Education, *Colorado Rises*, 2017.

6 Although Native Americans have as far as Latinos to go in reaching the state attainment goal, Latinos represent 22 percent of high school graduates while Native Americans represent 1 percent. See Appendix B for a detailed race and ethnicity analysis.

7 Colorado Commission on Higher Education, *Colorado Rises*, 2017.

Among the racial and ethnic subgroups, Latino high school students are the most underserved. Colorado's postsecondary attainment gap between Whites and Latinos ages 25 to 34 is the highest among the nine states that have at least one million Latinos.[8] Because Latinos are the fastest growing racial and ethnic group in the state,[9] leaders are unlikely to reach the educational attainment goal without closing this gap. Otherwise, Latinos will continue to be left behind in Colorado's growing economy.

Major economic change threatens Colorado's ability to supply its economy with the educated workers it needs.

Dramatic changes in the United States economy and the inability of the nation's colleges to adapt to these changes serve as the backdrop for the states' new educational goals. Up until the 1980s, a high school education was enough for workers to enter the middle class. But since then, the wage premium for college-educated workers has always been greater than that for high school graduates.[10] This development effectively signaled our nation's shift from an industrial to a knowledge and service-based economy.[11] It also signaled a shift from an economy where most good jobs only required high school education to one in which the majority of good jobs required at least some postsecondary education or training. Also, the economic shift has been accompanied by an equally striking demographic shift in the size of the Latino population, which has become a more prominent demographic, more than doubling in size since 1970.[12]

The national shift from a high school to a college economy and the accompanying surge in the Latino population is playing out in Colorado and the other eight states that have at least one million Latinos. Whites have made this shift much more successfully than Latinos. Between 1991 and 2016, the proportion of White workers with a bachelor's degree rose by 20 percentage points.[13] Today, White workers (51%) are almost three times more likely than Latino workers (19%) to have a bachelor's degree. By and large, Latinos are still working in the sub-baccalaureate labor market nationwide and in the state. In 1991, 90 percent of Latino workers did not have a bachelor's degree. By 2016, that proportion had only dropped to 81 percent. If current trends continue, Whites will continue to reap greater economic gains than Latinos and the state postsecondary attainment goal will be more difficult to reach (Figure 1). The White advantage in bachelor's degrees has outpaced White population growth while Latino growth is primarily taking place in the non-bachelor's degree workforce.

8 The other eight states are Arizona, California, Florida, Illinois, New Jersey, New Mexico, New York, and Texas. Colorado is tied with California in first place, where the difference in postsecondary attainment between Whites and Latinos ages 25 to 34 is 35 percentage points (57% versus 22%, respectively, in Colorado and 56% versus 21%, respectively, in California). Florida has the smallest gap between Whites and Latinos in this age group with a 12 percentage-point difference (46% versus 34%, respectively). Nationally, the gap is 27 percentage points. Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey, 2014-2016 (pooled).

9 This is also the case nationally. Krogstad, "U.S. Hispanic population growth has leveled off," 2017.

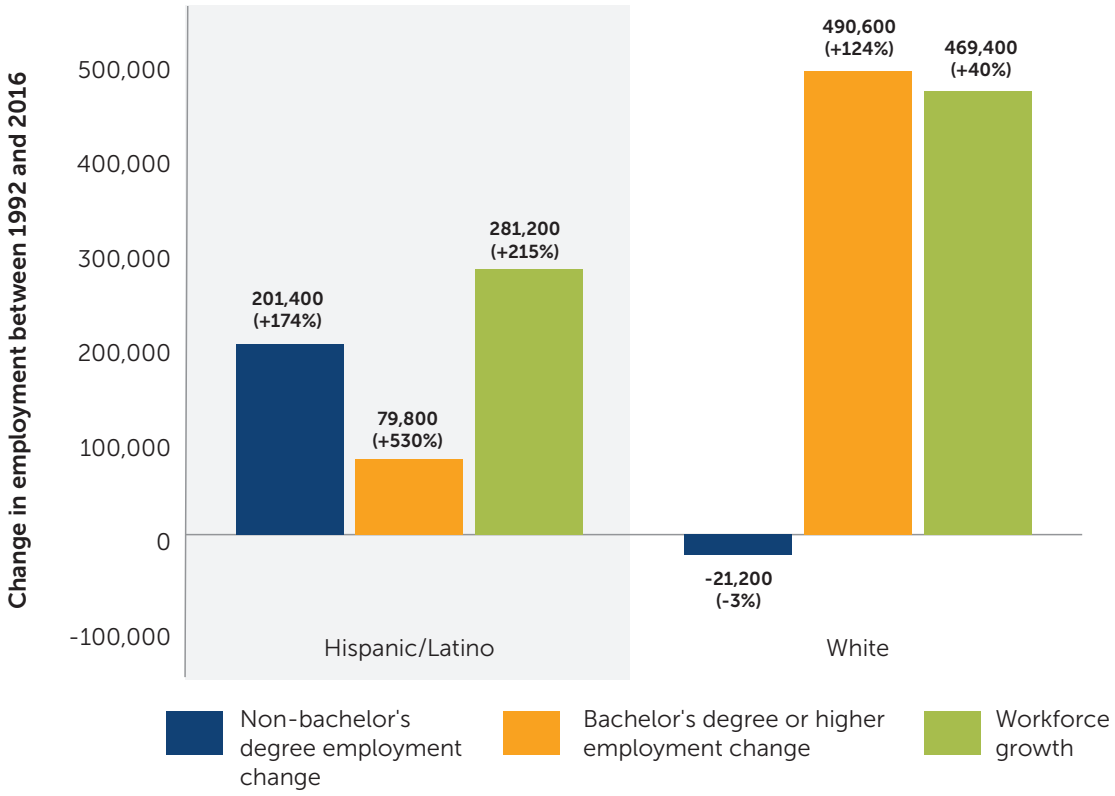
10 Carnevale et al., *The College Advantage*, 2012. The wage premium for workers with a bachelor's degree over those with a high school education or less rose from 1.44 in 1980 to 1.97 in 2010.

11 For more discussion on structural economic shifts, see Carnevale and Rose, *The Undereducated American*, 2011 and Carnevale and Rose, *The Economy Goes to College*, 2015.

12 Flores, *Facts on U.S. Latinos*, 2015, 2017.

13 Georgetown University Center on Education and the Workforce analysis of US Census Bureau and Bureau of Labor Statistics, Current Population Survey (CPS) March Supplement data, Colorado, 1992-2016.

Figure 1. The growth in bachelor's degree attainment for White workers is over six times higher than that for Latino workers.



Source: Georgetown University Center on Education and the Workforce analysis of US Census Bureau and Bureau of Labor Statistics, Current Population Survey (CPS) March Supplement data, Colorado, 1992-2016.

In addition, US colleges have not adapted well to the new economy, which will require them to change from institutions that cater to a select few to ones that serve a much wider proportion of Americans. The result is an increasingly separate and unequal postsecondary education system that mimics the inequities within K-12 education and follows students into the workforce, where the least educated garner the lowest wages.[14] National data already confirm that Latino workers are the least educated.[15] But not all Latinos are less academically qualified than Whites: for example, every year approximately 65,000 Latinos across the country who are in the top half of their high school class never get a college credential.[16] Even when Latinos have high college entrance exam scores, they are still not attending the same colleges as Whites, and when they do attend those colleges, they are earning postsecondary credentials at lower rates. In Colorado, Latino high school students are the least likely to enroll in college compared to Whites and Blacks.[17] More Latinos need to complete college so they may benefit as much as Whites in Colorado's thriving economy. And in order for this to happen, it is necessary to examine why Latinos leak out of the college to career pipeline more so than Whites.

14 Carnevale et al., *Race, Money, and Public Colleges*, forthcoming, and Carnevale and Strohl, *Separate and Unequal*, 2013.
15 Carnevale and Fasules, *Latino Education and Economic Progress*, 2017.
16 Carnevale, "Every Year, Half a Million Top-Scoring Students Never Get a College Credential," 2018, https://www.linkedin.com/pulse/every-year-half-million-top-scoring-students-never-get-carnevale/.
17 The Colorado Department of Higher Education, *2013 Legislative Report on the Postsecondary Progress and Success of High School Graduates*, 2013.

Key findings

Understanding what happens to Latino students along the way from high school to the bachelor's degree and into the workforce can shed light on why Whites are more likely than Latinos to earn a postsecondary credential. Colorado, with its fast-growing Latino population, is a bellwether state for explaining the college to career pipeline. The state's efforts can inform how the rest of the nation addresses leaks throughout the pipeline that widen attainment gaps between Whites and Latinos.

EIGHT KEY FINDINGS EMERGE FROM THIS REPORT:

Colorado's education to employment pipeline is full of holes.

Out of every 100 students who graduated from a Colorado public high school between 2009 and 2011, 46 enrolled as credential seekers in a Colorado public college within a year after high school, but only 13 of these completed a postsecondary credential within four years of enrolling in college, and just nine entered the labor market in Colorado within a year after college graduation.

Colorado's on-time high school graduation rates for Latinos are way below the national average.

Colorado is one of the most educated states, but still has the fifth lowest on-time graduation rate in the country: 77 percent of students graduate from high school in four years, compared to the national average of 83 percent. Latinos fare even worse—68 percent of Latinos in Colorado graduate from high school within four years, compared to 78 percent of Latinos nationally.

Low Latino college enrollment levels threaten to challenge the state's postsecondary attainment goals. But Latinos are more likely than Whites to stay in Colorado for college.

About 42 percent of Latino high school graduates immediately enroll in college compared to 63 percent of Whites, which means over half (58%) of Latinos either delay enrolling in college or never enroll compared to 37 percent of Whites. Of those who immediately enroll in college, about 24 percent of Whites go to college out of state compared to 12 percent of Latinos.

Latino college students in Colorado are clustered at the sub-baccalaureate level.

More than 50 percent of Latinos enroll in certificate or associate's degree programs, compared to 33 percent of Whites. Latinos make up 22 percent of high school graduates in the state, so they are overrepresented at public two-year colleges (26%) and underrepresented at public four-year colleges (14%). These enrollment patterns translate into lower wages for Latinos compared to Whites later on; workers with sub-baccalaureate credentials, on average, earn less than workers with bachelor's degrees.

Latino students are less likely than Whites to enroll in selective colleges.

Only 53 percent of Latinos with ACT scores in the top quartile enrolled in a public selective college in Colorado, compared to 65 percent of Whites in the same category. This is important because the selectivity level of colleges is closely associated with higher graduation rates. About 70 percent of Latinos with high ACT scores who enrolled in a public selective college complete a postsecondary credential within five years, compared to 46 percent of Latino students who enrolled in a public middle-tier college and 40 percent who enrolled in a public open-access college.

Latino high school graduates are less likely than White high school graduates to complete a postsecondary credential, and far less likely to earn a bachelor's degree.

About 31 percent of Latinos complete a postsecondary credential within five years of college enrollment, compared to 49 percent of Whites. Of these completers, 52 percent of Latinos earn a bachelor's degree, compared to 75 percent of Whites.

When Latinos and Whites have similar test scores and enroll in similar colleges, the completion gap between them significantly narrows.

Overall the completion gap between Whites and Latinos is 18 percentage points. However, Whites and Latinos have an average completion gap of 7 percentage points when taking into account both institutional selectivity and ACT quartile.

Almost three-quarters of students who complete a postsecondary credential enter the Colorado labor market within a year after graduation.

Latinos (76%) who completed a postsecondary credential are slightly more likely than Whites (72%) to enter the Colorado labor market within a year after graduation, but Whites (21%) are more likely to have a good job, which pays them $35,000 or more, compared to Latinos (15%).

About this report

This report is a pipeline analysis of Colorado high school students attending public colleges in the state, since that is within the purview of what Colorado leaders can address in order to meet the state's educational attainment goal.[18] Using state administrative data, we examine the postsecondary enrollment, completion, and earnings of White and Latino[19] Colorado public high school graduates who earned a high school diploma between 2009 and 2011.[20]

Unless otherwise stated, findings come from data from the Colorado Department of Higher Education on 2009-2011 high school graduates, 2010-2012 postsecondary enrollees, 2010-2015 postsecondary completers, and 2011-2016 earnings of postsecondary enrollees.

18 Of the Colorado high school graduates enrolling in college within one year after high school, 51 percent enroll in state: 46 percent at public colleges and 5 percent at private colleges. Overall, about 16 percent of Colorado high school graduates enroll in college out of state.

19 While Blacks and Native Americans are also included in Colorado's equity goal, we chose to focus on the comparison between Whites and Latinos because they account for the majority of Colorado high school graduates. Whites account for 67 percent of high school graduates and Latinos account for 22 percent, while Blacks account for 6 percent and Native Americans account for 1 percent. A detailed analysis of all race and ethnicity categories can be found in Appendix B. Appendix A includes an analysis of low-income students in Colorado.

20 Methodology and data are discussed in detail in Appendices D and E.


Were working in the state one year after completing college
9
Completed a postsecondary credential within four years of enrolling
12
Enrolled in a public Colorado college within one year of high school graduation
40
Graduated on time from high school
83
Were working in the state one year after completing college
4
Completed a postsecondary credential within four years of enrolling
5
Enrolled in a public Colorado college within one year of high school graduation
25
Graduated on time from high school
68
Whites are more likely than Latinos to make it through Colorado's college to career pipeline.
Out of 100 Colorado public high school students:
Hispanic/Latino
White

Part 1.
High School Graduation

One of the big differences between White and Latino high school students in Colorado is that Whites are much more likely than Latinos to both finish high school and live with parents who have at least some postsecondary education. Latino students in Colorado's K-12 system are more likely than White students to have parents whose highest level of education was a high school diploma or less. In addition to academic preparation in high school (test scores and grades), family background (parental educational attainment levels and family incomes) affects whether students will graduate from college.[21]

What happens to students in high school matters because finishing high school is the first step that students must take before applying to college. Colorado's high school graduation rates serve as a baseline for examining the disparities between the state's White and Latino students, which set the stage for whether they go to college as well as the wages they will earn when they enter the workforce. Compared to Whites, Latinos in the state are much more likely to enter the workforce as high school dropouts, representing one of the substantial pipeline leaks in this analysis.

Latino children tend to come from the least educated families in the state.

Two interconnected developments set the stage for the disparities in parental educational attainment levels[22] between Whites and Latinos. The first is the dramatic change in the US economy's need for college-educated workers and the second is the postsecondary education system's ability to adapt to these changes. Essentially, Latinos are less likely than Whites to have made the shift from the high school to the college economy, and this is in part because colleges have served families with college experience better than those without this prior knowledge.[23] In effect, Whites are and have been better served than Latinos.

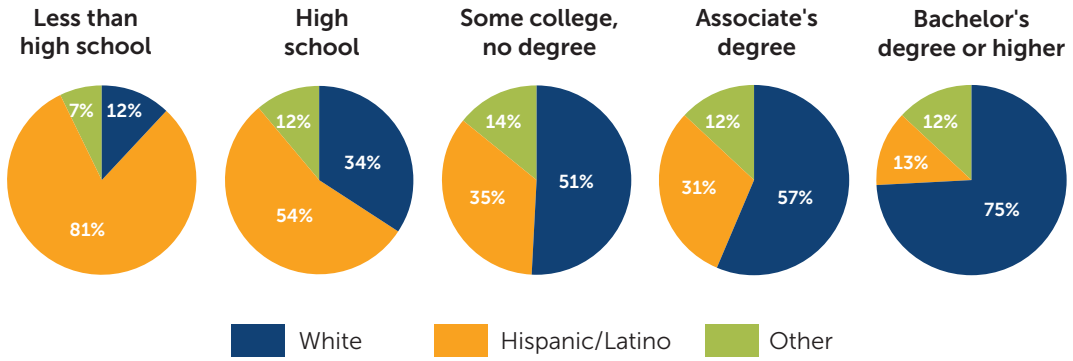
21 Bowen et al., *Crossing the Finish Line*, 2009.
22 We use households with children age 17 and under to examine parental attainment levels by race and ethnicity. When parents have different levels of education, the data is based on the parent with the highest educational attainment.
23 Carnevale et al., *Race, Money, and Public Colleges*, forthcoming, and Carnevale and Strohl, *Separate and Unequal*, 2013.

The impact of parental income on their children's economic mobility is well documented. On average, parental income levels explain at least half of their children's incomes when they become workers, and the relationship is even more pronounced for children whose parents are in the top half of the income distribution.[24] In addition to financial benefits, nonmonetary ones accrue to children living with higher-income parents, such as the amount of time parents can spend with their children.[25] In essence, there is a link between parental education and income.[26]

Compared to Whites, Latinos are more likely to start at a disadvantage because their parents are less likely to have a college degree, let alone to ever have been enrolled in college. Almost half of Latino children in Colorado have parents with a high school education or less: 28 percent of the parents have a high school diploma and 21 percent are high school dropouts.[27] By contrast, only 2 percent of White children have parents who dropped out of high school and just 9 percent have parents with no more education than a high school diploma. The remaining 89 percent of White children in Colorado have at least one parent with at least some college and more than 60 percent of these children have at least one parent with a bachelor's or graduate degree. Among children with parents who dropped out of high school, Latinos are overrepresented compared to Whites (Figure 2).

The result is that today, Latinos are much less likely than Whites to be able to rely on their parents for advice or financial support to get to college. In order to prevent Latinos from leaking out of high school and enable them to transition to college, Latino students—particularly those who are first generation—would need to get this information elsewhere, including from school staff or other members of the community.

Figure 2. Latino children account for over 80 percent of Colorado children living with parents who dropped out of high school, but they represent only 13 percent of children living with parents who have at least a bachelor's degree.



Source: Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey, 2014-2016 (pooled).

24 Mitnik and Grusky, *Economic Mobility in the United States*, 2015.
25 Corak, "Economic Mobility," 2016.
26 Ibid.
27 Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey, 2014-2016 (pooled).

Latino students graduate from high school at lower rates than their White counterparts.

Colorado has not caught up with the rest of the nation in terms of high school graduation rates. While on-time high school graduation rates have been on the rise in every state, including Colorado, for the past several years, Colorado's overall rate of 77 percent is still the fifth lowest in the country and lags behind the national average of 83 percent.[28]

Latinos' on-time high school graduation rate of 68 percent in Colorado is far behind the average for Whites (83%) and the national rate for Latinos (78%).[29] This means that 32 percent of Latinos are leaking out at this stage of the pipeline compared to 17 percent for Whites and 22 percent of Latinos nationally. Latinos are disproportionately represented among low-income students and English language learners, characteristics that also contribute to lower high school graduation rates.[30] In Colorado overall, low-income students and English language learners have on-time graduation rates of 66 percent and 61 percent, respectively.[31] Low high school graduation rates result from a number of factors, including that the schools are more frequently located in poorer neighborhoods with fewer financial resources, which further impact the school's ability to attract qualified teachers.[32]

When measuring high school completion[33] along a longer timeframe, Latinos close some of the gap with Whites, but still trail them. About 92 percent of Colorado's White students complete high school within six years versus 82 percent of Latinos.[34]

Compared to Whites, Latino students aren't as likely to know how to transition from high school to college since almost half of them have parents who never went to college. As a result, the lack of parental experience has the potential of creating information and networking deficits among their children. Building their cultural capital[35] among parents and students will not only benefit them, but also future generations. Here again, the role of counselors and other school leaders could make a difference for the Latinos whose parents never went to college.

28 New Mexico and the District of Columbia are the lowest in the country at 69 percent, followed by Nevada at 71 percent, Oregon at 74 percent, and Alaska at 76 percent. US Department of Education, Consolidated State Performance Report, School Year 2014-15, 2016, https://nces.ed.gov/programs/digest/d16/tables/dt16_219.46.asp.

29 US Department of Education, Consolidated State Performance Report, School Year 2014-15, 2016, https://nces.ed.gov/programs/digest/d16/tables/dt16_219.46.asp.

30 Colorado defines low-income high school students as students eligible to receive free or reduced-price (FRP) lunches and English language learners as students who require language support to achieve standards in grade-level content in English. Latinos account for 22 percent of Colorado high school graduates but 48 percent of the high school graduates who received FRP lunches and 78 percent of high school graduates who were English language learners. Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates.

31 US Department of Education, Consolidated State Performance Report, School Year 2014-15, 2016, https://nces.ed.gov/programs/digest/d16/tables/dt16_219.46.asp.

32 Boschma and Brownstein, "The Concentration of Poverty in American Schools," 2016; Lynch, "Poverty and School Funding," 2016.

33 High school completion is defined as earning a high school diploma or its equivalent, while high school graduation is defined only as earning a high school diploma.

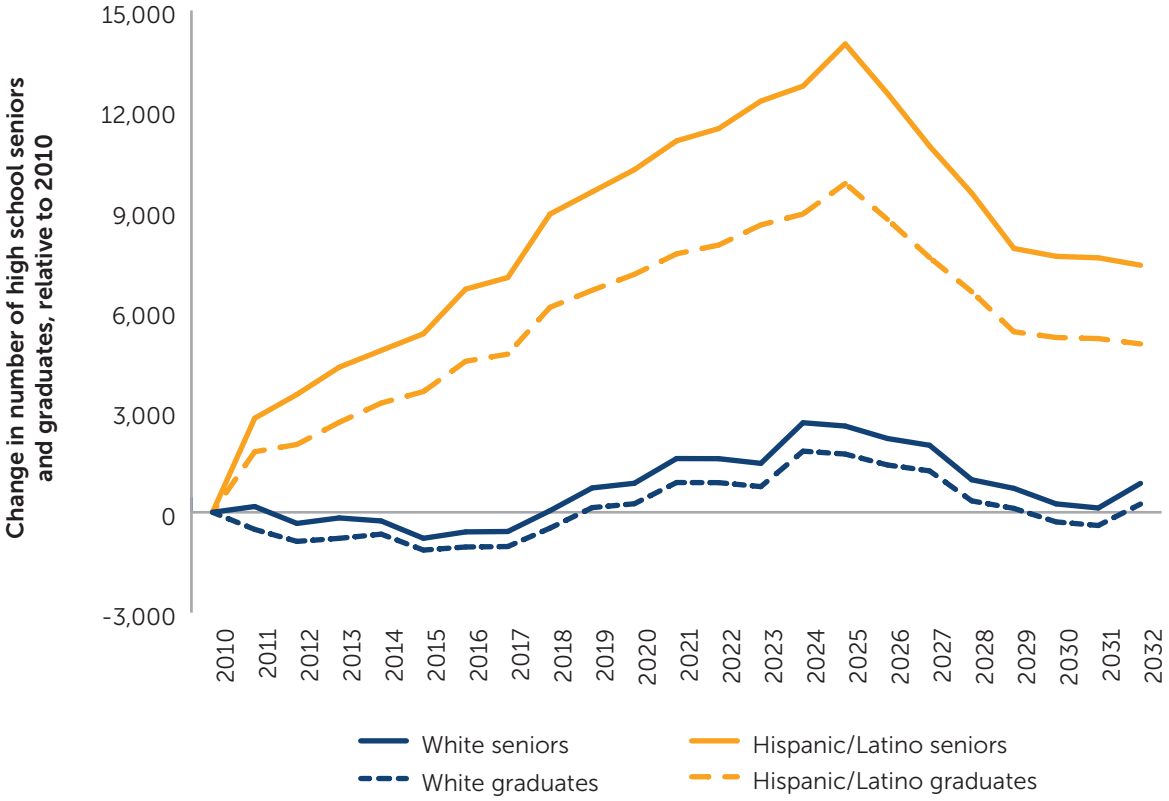
34 Colorado Department of Education, 2016-17 Graduation Rates, Anticipated Year of Graduation Cohort 2014-15, https://www.cde.state.co.us/cdereval/gradcurrent.

35 Cultural capital refers to a person's knowledge and skills that promote social mobility. Collier and Morgan, "Is That Paper Really Due Today?," 2008.

Latinos are expected to make up a growing proportion of Colorado high school students.

The leaks in the pipeline between high school and college could exacerbate the gaps between Whites and Latinos because the Latino high school population is expected to increase. Unlike the majority of other Western states, Colorado's high school-aged population is expected to grow, not shrink, between now and 2032.[36] Much of the increase will come from Latino students, while enrollment of Whites will remain about the same. The share of Colorado high school graduates who are Latino is projected to increase from 21 percent in 2010 to 28 percent in 2032, reaching a peak of 34 percent in 2025 (Figure 3). The number of Latino high school seniors is growing, but in order for Colorado to meet its educational attainment goal, more than 68 percent of Latino high school seniors would have to finish with a diploma.

Figure 3. Latino high school enrollment is projected to rise until 2025.



Source: Georgetown University Center on Education and the Workforce analysis of data from Western Interstate Commission for Higher Education, *Knocking at the College Door: Projections of High School Graduates through 2032*, Colorado, 2016.

36 Bransberger and Michelau, *Knocking at the College Door*, 2016.

Part 2. Postsecondary Enrollment

When high school graduates enroll in college, it signals their intention to get a postsecondary credential. Nine out of 10 students who enroll in college say their goal is to improve the job opportunities available to them.[37] They make several decisions—with or without the information they need to make them—that impact whether and how they enroll in and complete college. All these decisions matter because they represent the various leaks that will affect whether students are able to stay in college. Those who don't enroll directly after high school substantially reduce their chances of getting a degree. The "gap year" may be a good idea for some students but, in general, it increases the risk of noncompletion for students.[38]

In Colorado, fewer Latinos than Whites enroll in college. When they do go to college, the educational paths that Latinos take tend to reduce their chances of earning a credential and maximizing their earnings. Latinos delay enrolling in college more often than Whites. More Latinos enroll in two-year colleges than in four-year colleges—even when they have high test scores and plan on getting a bachelor's degree. Last but not least, Latinos are more likely to enroll in certificate and associate's degree programs, postsecondary credentials that typically lead to lower wages than bachelor's degrees.

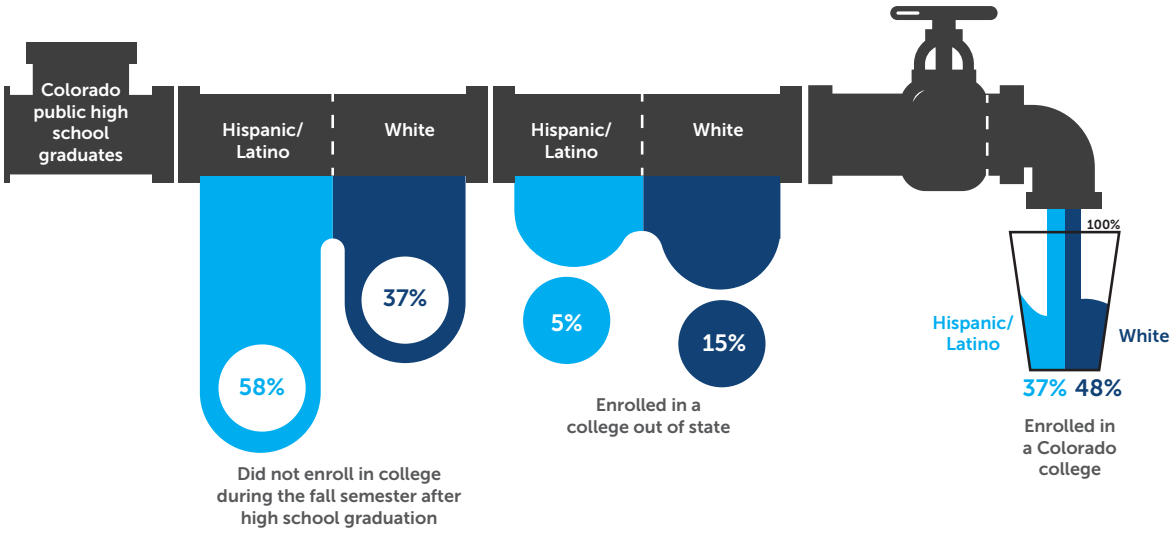
Colorado's Latino high school graduates enroll in college at lower rates than Whites.

In order for Latino high school graduates to be on par with their White counterparts, Latinos would need to increase their college enrollment by at least 21 percentage points. About 37 percent of Latino high school graduates enrolled[39] in Colorado public colleges,[40] compared to 48 percent of Whites.[41] Looking specifically at the high school class of 2011, 42 percent of Latinos enrolled in college (public, private, in-state, or out-of-state) during the fall semester, compared to 63 percent of Whites. Overall, 5 percent of Latinos and 15 percent of Whites enrolled out of state.[42] As it stands, 58 percent of Latinos who graduated from high school

37 Fishman, "College Decisions Survey," 2015.
38 Turner, "Going to College and Finishing College," 2004.
39 Unless otherwise stated, postsecondary enrollment is defined as high school graduates enrolling in college within the year following high school graduation.
40 This analysis focuses on Colorado public colleges. While students are still enrolling and completing postsecondary credentials at private and out-of-state colleges, Colorado public colleges fall within the state's purview in terms of meeting its educational attainment goal.
41 Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees.
42 Colorado Department of Higher Education, *2013 Legislative Report on the Postsecondary Progress and Success of High School Graduates*, 2013.

either never enrolled or delayed their enrollment in college, compared to 37 percent of White high school graduates (Figure 4).

Figure 4. Latinos are less likely than Whites to enroll in college, but when they do, Latinos are more likely to enroll in-state.



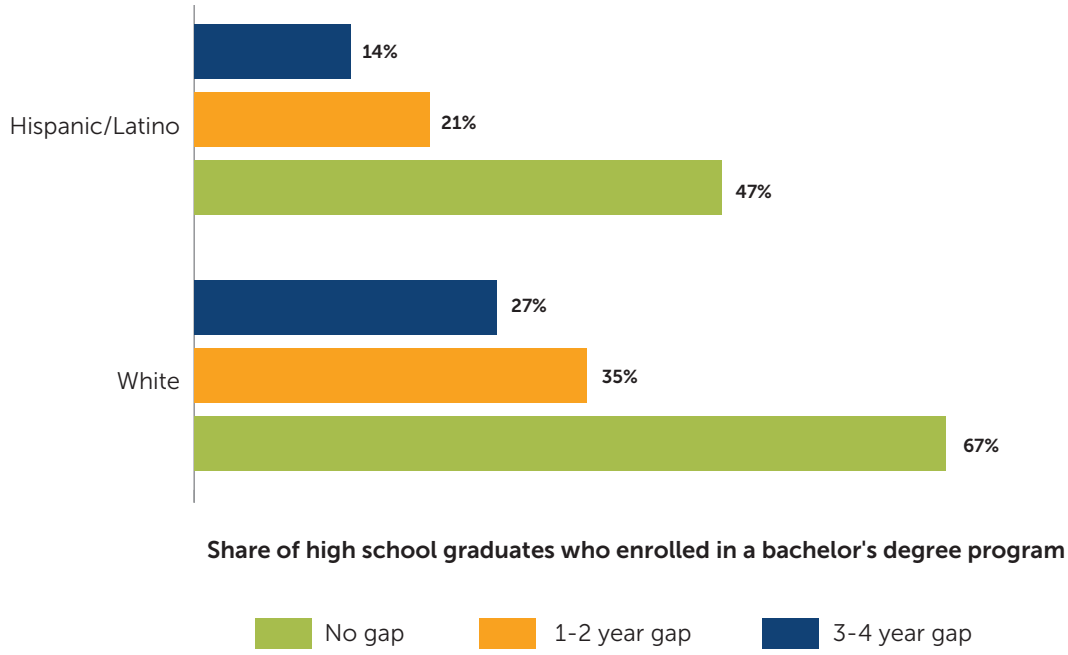
Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education, *2013 Legislative Report on the Postsecondary Progress and Success of High School Graduates*, 2013.

While delaying enrollment does not mean that students never attend college, research suggests that students are less likely to complete any postsecondary credential the longer they wait to enroll.[43] Nationally, Latinos are more likely than Whites to delay enrollment.[44] However, among Colorado's high school class of 2009,[45] 12 percent of both Latinos and Whites delayed enrollment up to six years.[46] This suggests that Whites and Latinos are equally likely to delay enrollment but that the enrollment gap between Latino and White high school graduates is not narrowing.

Delaying enrollment not only decreases students' likelihood of completing any postsecondary credential, it also limits their ability to get a bachelor's degree farther down the road. This is especially true for Latinos, who already are much less likely to enroll in bachelor's degree programs compared to Whites. Of those who have a three-to-four year gap between high school graduation and college enrollment, only 14 percent of Latinos and 27 percent of Whites enrolled in a bachelor's degree program (Figure 5).

43 Turner, "Going to College and Finishing College," 2004.
44 Carnevale and Fasules, *Latino Education and Economic Progress*, 2017.
45 We focus on the 2009 high school graduate cohort here in order to analyze longer enrollment trends.
46 Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009 high school graduates, 2010-2016 postsecondary enrollees.

Figure 5. Latinos are about half as likely as Whites to enroll in a bachelor's degree program when they delay enrollment.



Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2016 postsecondary enrollees.
Note: Gap reflects the time elapsed between high school graduation and college enrollment.

Latinos are much more likely than Whites to enroll in open-access colleges than in selective colleges.

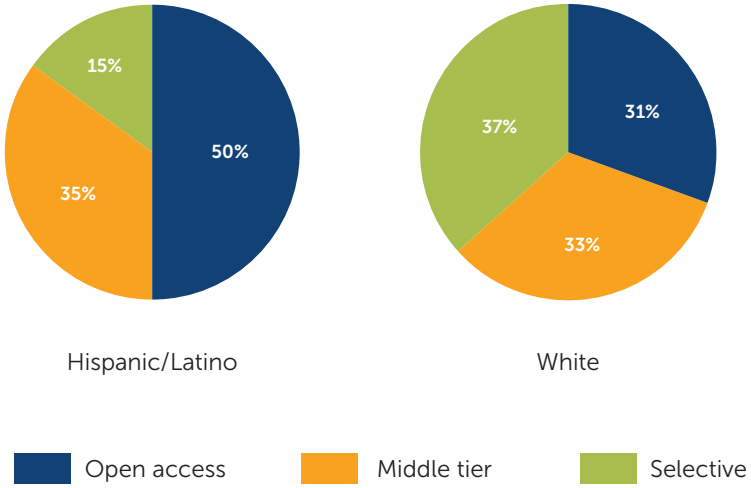
In addition to when Latinos enroll, where they enroll makes a difference in whether they will earn a postsecondary credential. Latinos are more likely than Whites to enroll in two-year colleges. Latinos make up 22 percent of Colorado high school graduates, so they are overrepresented at Colorado public two-year colleges (26%) and underrepresented at public four-year colleges (14%).[47]

While two-year colleges are far more plentiful, most students who enroll there end up without a postsecondary credential, thus representing an additional leak in the college to career pipeline.[48] Low graduation rates are partly due to disparities in how they allocate funds: open-access colleges, which are primarily community colleges, spend about one-third as much on academic and instructional support as selective four-year colleges in Colorado.[49] Latinos often begin their journey at these open-access two-year colleges. Selective[50] colleges, on the other hand, are oriented around bachelor's degrees and have higher graduation rates than open-access colleges.[51] Half of the Latinos who went to public colleges in the state

47 Throughout this report, we use Latino high school graduation share as a standard to analyze representativeness.
48 Carnevale and Fasules, *Latino Education and Economic Progress*, 2017.
49 In 2015, Colorado public selective colleges spent about three times more on academics and instruction per full-time equivalent (FTE) student compared to Colorado public open-access colleges—almost $15,000 compared to $5,000. Georgetown University Center on Education and the Workforce analysis of data from US Department of Education, Integrated Postsecondary Education Data System (IPEDS), finance, 12-month enrollment, and institutional characteristics surveys, 2014-15.
50 Selective colleges are those in the top three categories of selectivity as determined by *Barron's Profiles of American Colleges*. These colleges generally admit only students with a median ACT score of 24 or higher. Appendix D contains a list of the public colleges in Colorado by selectivity.
51 Carnevale et al., *Race, Money, and Public Colleges*, forthcoming, and Carnevale and Strohl, *Separate and Unequal*, 2013.

enrolled in open-access colleges, while only 15 percent enrolled in selective colleges.[52] The remainder enrolled at middle-tier institutions. Comparatively, 31 percent of Whites enrolled in open-access colleges, 37 percent enrolled in selective colleges, and 33 percent enrolled in middle-tier colleges (Figure 6). In order for Latinos to achieve parity with Whites on college enrollment, more of them need to enroll in middle-tier and selective colleges, where they are more likely to have access to greater institutional financial resources and support.

Figure 6. Half of Latinos enroll in open-access colleges, compared to 31 percent of Whites.



Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees.
Note: Values might not add to 100 percent due to rounding.

Whites with high test scores are more likely than Latinos with similar scores to enroll in selective colleges.

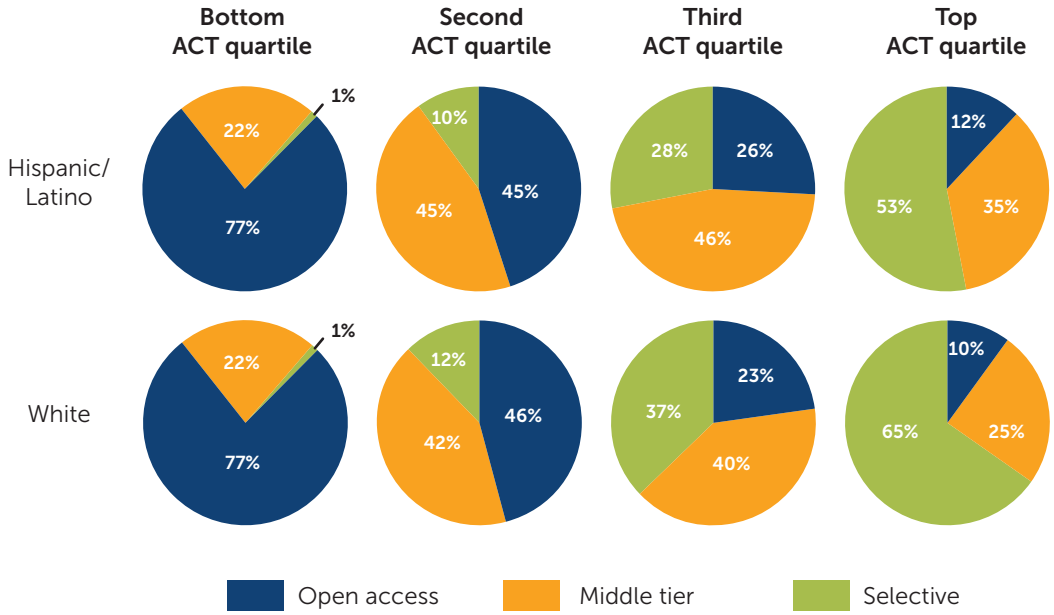
The unequal enrollment patterns between Whites and Latinos remains when accounting for college entrance exam scores. A common argument for the unequal enrollment patterns of Whites and Latinos is that Latinos do not have the college entrance exam scores they would need to go to selective colleges.[53] About 7 percent of Latino high school graduates in Colorado score in the top quartile of the ACT. However, this doesn't explain why these Latinos with high ACT scores[54] don't enroll in selective colleges at the same rate as Whites.

52 Over half of Latinos (53%) enroll in a certificate or associate's degree program, compared to 33 percent of Whites. Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates. 2010-2012 postsecondary enrollees.
53 Sander and Taylor, *Mismatch*, 2012.
54 High ACT test scores are those above 24, which would be considered in the top quartile nationally.

Each year, 34 percent of Latino high school graduates with high ACT scores enrolled in a selective college. The remaining 66 percent of Latinos had high enough ACT scores but either did not enroll in any college or enrolled in less selective colleges. Comparatively, about 45 percent of White high school graduates with high ACT scores enrolled in a selective college.[55]

Of the high school graduates who enrolled at a public college in Colorado, Whites and Latinos with ACT scores in the bottom half have very similar enrollment patterns. However, as ACT test scores increase, enrollment patterns between Whites and Latinos diverge more and more. About 37 percent of Whites with ACT scores between 21 and 24 enrolled in selective colleges, compared to 28 percent of Latinos in the same quartile. Likewise, only 53 percent of Latinos with high ACT scores went to a selective college, compared to 65 percent of similarly-qualified Whites (Figure 7). In order to prevent this particular leak in the college enrollment pipeline from taking place, Latino students in the top two ACT quartiles would have to enroll in selective colleges at the same rate as Whites.

Figure 7. Whites and Latinos with ACT scores in the bottom half enroll in the same types of colleges, but those with ACT scores in the top half do not.



Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees.
Note: Students in the bottom ACT quartile had ACT scores below 17, second quartile had scores between 17 and 20, third quartile had scores between 21 and 24, and top quartile had scores above 24.

55 About 32 percent of Latinos and 37 percent of Whites with high ACT scores enrolled in a public selective college in Colorado. Assuming out-of-state enrollment trends stay consistent across ACT quartiles and race/ethnicity, then an additional 2 percent of Latinos and 8 percent of Whites with high ACT scores enrolled in a selective college out of state (5 percent of Latinos and 15 percent of Whites enroll in college out of state and 53 percent of students who enroll out of state attend a selective college). Georgetown University Center on Education and the Workforce analysis of data from US Department of Education, Integrated Postsecondary Education Data System (IPEDS), Fall Enrollment Survey, 2010, and Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees.

One reason Latinos are less likely than Whites to apply to selective colleges is lack of awareness: they do not realize that financial aid could reduce the sticker price.[56] Latinos also face non-education-related obstacles compared to Whites. A major explanation of the differences in where Latinos and Whites apply to colleges is that many Latinos desire to remain close to home due to family obligations and responsibilities.[57] Overall, Latinos are more likely to remain in Colorado than Whites—76 percent of Latinos ages 25 to 34 who were born in Colorado are still living in the state, compared to 57 percent of Whites.[58]

A note on remediation

In Colorado, Latinos are much more likely than Whites to require remedial courses at both two-year (60% of Latinos compared to 47% of Whites) and four-year colleges (51% of Latinos versus 28% of Whites). However, in this report we exclude a more in-depth analysis on this topic because the available data did not permit a full exploration of the impact of remediation on students throughout the college and career pipeline.

56 Hoxby and Turner, "Expanding College Opportunities for High-Achieving, Low Income Students," 2013.
57 Desmond and Turley, "The Role of Familism in Explaining the Hispanic-White College Application Gap," 2009.
58 Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey, 2014-2016 (pooled).

Part 3. Postsecondary Completion

In order for students to fully benefit from college, simply enrolling is not enough. Completing college with a solid education and good job prospects is the real goal. More often than not, Latinos who enroll in college do not stay enrolled, compared to their White counterparts. Several factors may cause leaks that prevent students from earning a postsecondary credential, such as delaying enrollment, where they enroll, and whether they are required to take remedial courses. While the reasons why students stay in or drop out of college are complex, in the end Whites are more likely than Latinos to complete college.

Students who attend colleges with weak counseling and student support services are at greater risk of noncompletion. This is often the case in open-access colleges, which are not funded sufficiently to afford strong counseling and other student support services. Some students enroll at a two-year or four-year college regardless of their test scores. So for example, a Latino student with test scores that are average or better might enroll in an underfunded two-year college or open-admission four-year school because it is closer to home or more affordable. However, students enrolling in open-access colleges will have a lower chance of graduating than if they enroll in better-financed selective institutions.[59] Research shows that there are two primary factors for why students take longer to graduate or drop out of college altogether: lack of academic preparation and lack of financial resources to provide financial aid and other student services that support student completion. Of those two, the lack of financial resources and supportive services is the primary factor in noncompletion.[60]

In addition, students who begin their postsecondary careers at two-year colleges are less likely to get a bachelor's degree. Getting the first two years of college out of the way at a two-year school is usually more affordable and can be a very smart financial strategy, especially if students live at home. Unfortunately, students who take this path with the intention of getting a bachelor's degree are much less likely to earn that credential compared to students who start out at four-year colleges.[61]

59 Carnevale and Strohl, "How Increasing College Access Is Increasing Inequality and What to Do About It," 2010; Carnevale et al., *Race, Money, and Public Colleges*, forthcoming; and Carnevale and Strohl, *Separate and Unequal*, 2013.

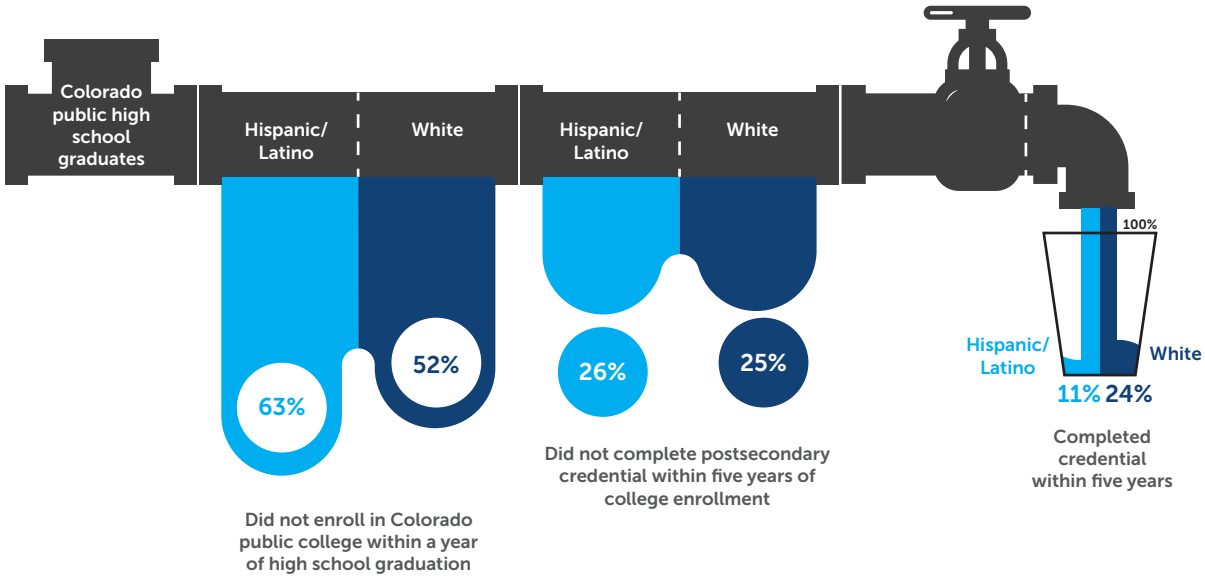
60 Bound et al., "Why Have College Completion Rates Declined?," 2010.

61 There is a rich literature on the historical association of increasing access with increasing differentiation, stratification and race and class-based tracking. See Oakes, "Commentary: Access and Differentiation: Structuring Equality and Inequality in Education Policy," 2009. Also, see related research on the effects of sub-baccalaureate education as a barrier to bachelor's degree attainment, including Bahr, "Cooling Out in the Community College," 2008.

Whites are more than twice as likely as Latinos to earn a postsecondary credential within five years.

The vast majority of all Colorado high school graduates—and especially Latinos—never make it to the college finish line.[62] Only 11 percent of all Latino high school graduates and 24 percent of White high school graduates completed a postsecondary credential with five years of enrolling in college.[63] Another 26 percent of Latinos and 25 percent of Whites tried but did not make it through the college pipeline (Figure 8). Of those who enrolled, Latinos have lower completion rates compared to Whites—31 percent of Latinos compared to 49 percent of Whites earned a postsecondary credential.

Figure 8. Latinos are less likely than Whites to enroll in college and complete a postsecondary credential.



Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees, 2010-2016 postsecondary completers.

62 As previously stated, this analysis focuses solely on Colorado high school graduates who enrolled in public in-state colleges. While it is likely that more Colorado high school graduates completed at private in-state colleges or out-of-state colleges, these students are counted as non-enrollers for our purposes. Completion rates also might be understated because some high school graduates enrolled in a public Colorado college but completed their credential at a private in-state or out-of-state college.

63 Unless otherwise stated, completion analysis focuses on Colorado high school graduates who enrolled in a Colorado public college within a year after high school graduation. In this section, we focus on completions within five years of postsecondary enrollment. However, in order to fully follow all three high school graduation cohorts (2009-2011) into the labor market, we use four-year completion rates in the earnings section, Part 4. All four- and five-year completion rates can be found in Appendix B. Appendix D contains additional methodology and data information.

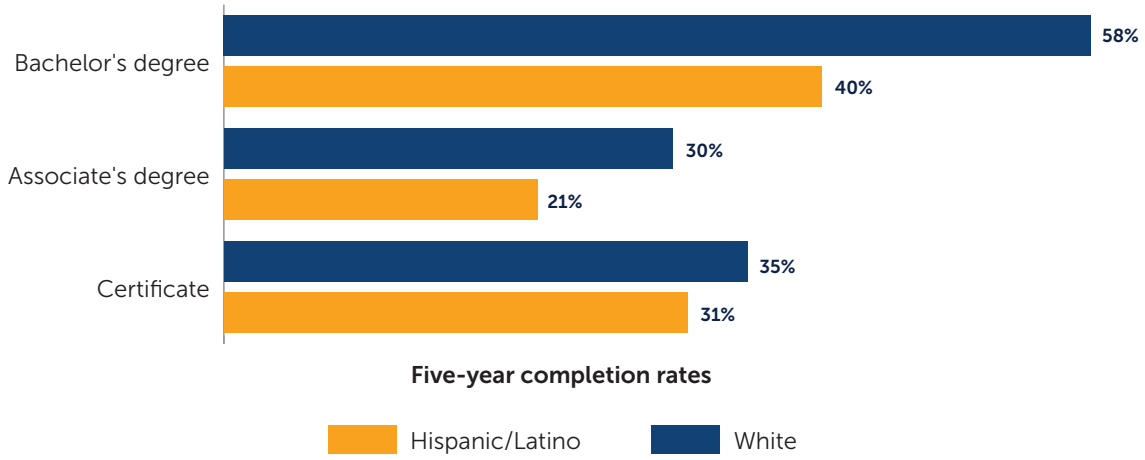
Where students enroll can dramatically impact their ability to earn a postsecondary credential.

Completing college not only depends on whether students remain enrolled, but also where they first enroll. Students attending four-year colleges are more likely to return (88%) after one year than those going to two-year colleges (62%).[64] Similarly, there is a 26-percentage point difference in the five-year completion rates at four-year institutions versus two-year institutions—53 percent compared to 27 percent, respectively.[65]

While Latinos are much more likely to enroll in two-year colleges, the type of institution they attend does not fully explain the completion gap between Whites and Latinos.[66] Latinos still have lower completion rates than Whites even if they enrolled at the same type of college. At four-year colleges, only 38 percent of Latinos completed a credential, compared to 57 percent of Whites. Similarly, only 23 percent of Latinos completed a credential at two-year colleges, compared to 31 percent of Whites.[67]

The same is true by type of credential. Latinos who enroll in associate's degree programs are less likely to complete any postsecondary credential compared to those who enroll in certificate or bachelor's degree programs. Only 21 percent of Latinos who enrolled in an associate's degree program earned a postsecondary credential, compared to 31 percent of those who enrolled in a certificate program and 40 percent who enrolled in a bachelor's degree program. Comparatively, Whites still have higher completion rates, but follow similar overall completion trends as Latinos—30 percent of Whites who enrolled in an associate's degree program earned a postsecondary credential, compared to 35 percent of those who enrolled in a certificate program and 58 percent who enrolled in a bachelor's degree program (Figure 9). In order to narrow the college completion gap between Whites and Latinos, more Latinos would need to enroll in four-year colleges and bachelor's degree programs in particular.

Figure 9. Latinos are most likely to complete a postsecondary credential within five years if they enroll in a bachelor's degree program, but their completion rates trail those of Whites at all levels.



Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees, 2010-2016 postsecondary completers.

64 Colorado Department of Higher Education, *2013 Legislative Report on the Postsecondary Progress and Success of High School Graduates*, 2013.
65 Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees, 2010-2016 postsecondary completers.
66 Nichols, *A Look at Latino Student Success*, 2017.
67 Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees, 2010-2016 postsecondary completers.

In other words, regardless of which credential they sought, the majority of Latinos who enroll in college do not have anything to show for it five years later. About 79 percent of Latinos who enrolled in associate's degree programs, 69 percent who enrolled in certificate programs, and 60 percent who enrolled in bachelor's degree programs did not earn any postsecondary credential.

Students with high ACT scores are less likely to earn a postsecondary credential if they attend open-access colleges.

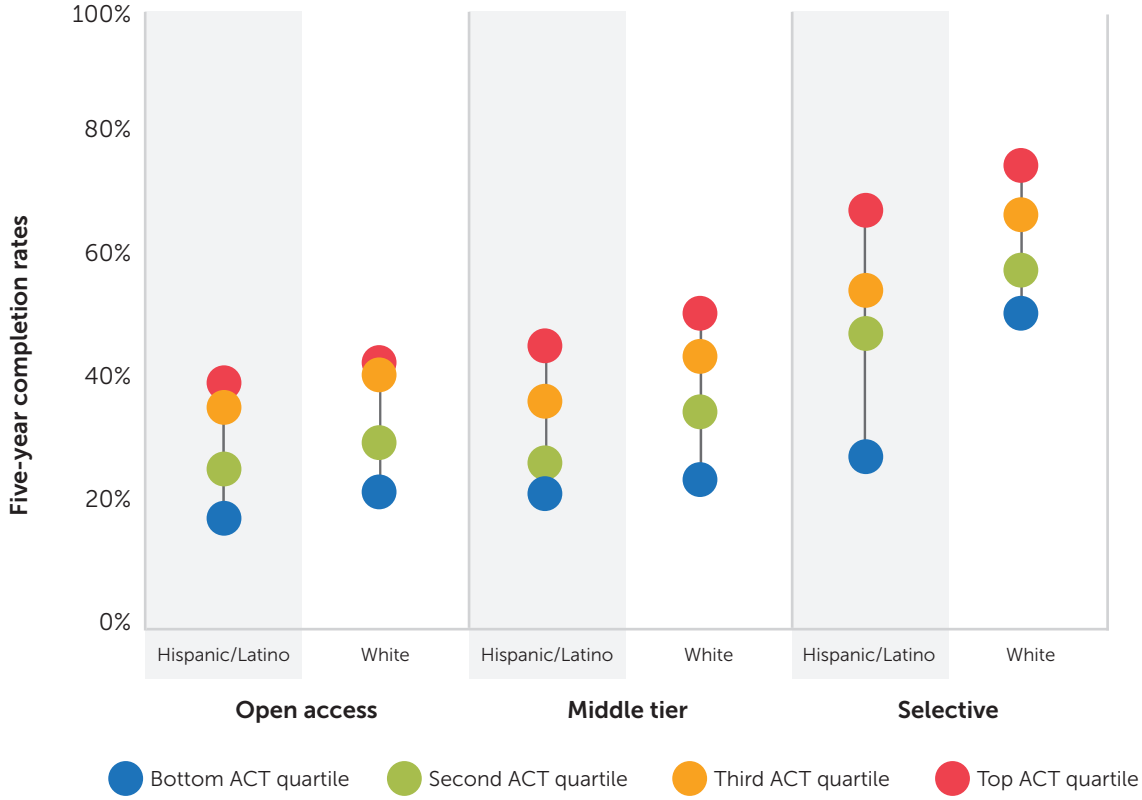
Institutional selectivity partially accounts for the differences in student completion rates between two-year and four-year institutions. The more selective a college is, the higher its graduation rate.[68] In Colorado, 69 percent of students complete a postsecondary credential at a selective college within five years, compared to 39 percent at a middle-tier college and 27 percent at an open-access college.[69]

This trend holds true for Latinos, who are more likely to earn a postsecondary credential if they enroll in a selective college. Regardless of test score, about 58 percent of Latinos who enrolled in a selective college completed a credential within five years, compared to 31 percent who enrolled in a middle-tier college and 23 percent who enrolled in an open-access college.[70] Comparatively, 71 percent of Whites who enrolled in a selective college completed a credential, compared to 42 percent who enrolled in a middle-tier college and 31 percent who enrolled in an open-access college. Recent research points to the prevalence of pre-college factors such as academic preparation and high school characteristics in explaining the college completion gap (65%), whereas selectivity explains 35 percent of the gap.[71]

But once again, academic preparedness does not explain why Latinos and Whites have different completion rates. Latinos with high ACT scores are more likely to earn a credential if they enroll at a selective college rather than an open-access college—68 percent of Latinos with high ACT scores complete a credential at a selective college, compared to 46 percent at a middle-tier college and 40 percent at an open-access college. Comparatively, 75 percent of Whites with high ACT scores complete a credential at a selective college, compared to 51 percent at a middle-tier college and 43 percent at an open-access college (Figure 10).

68 Carnevale et al., *Race, Money, and Public Colleges*, forthcoming, and Carnevale and Strohl, *Separate and Unequal*, 2013.
69 Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees, 2010-2016 postsecondary completers.
70 Ibid..
71 Flores et al., "The Racial College Completion Gap," 2017.

Figure 10. On average, the completion gap between Whites and Latinos greatly narrows depending on the selectivity of the college and ACT scores.

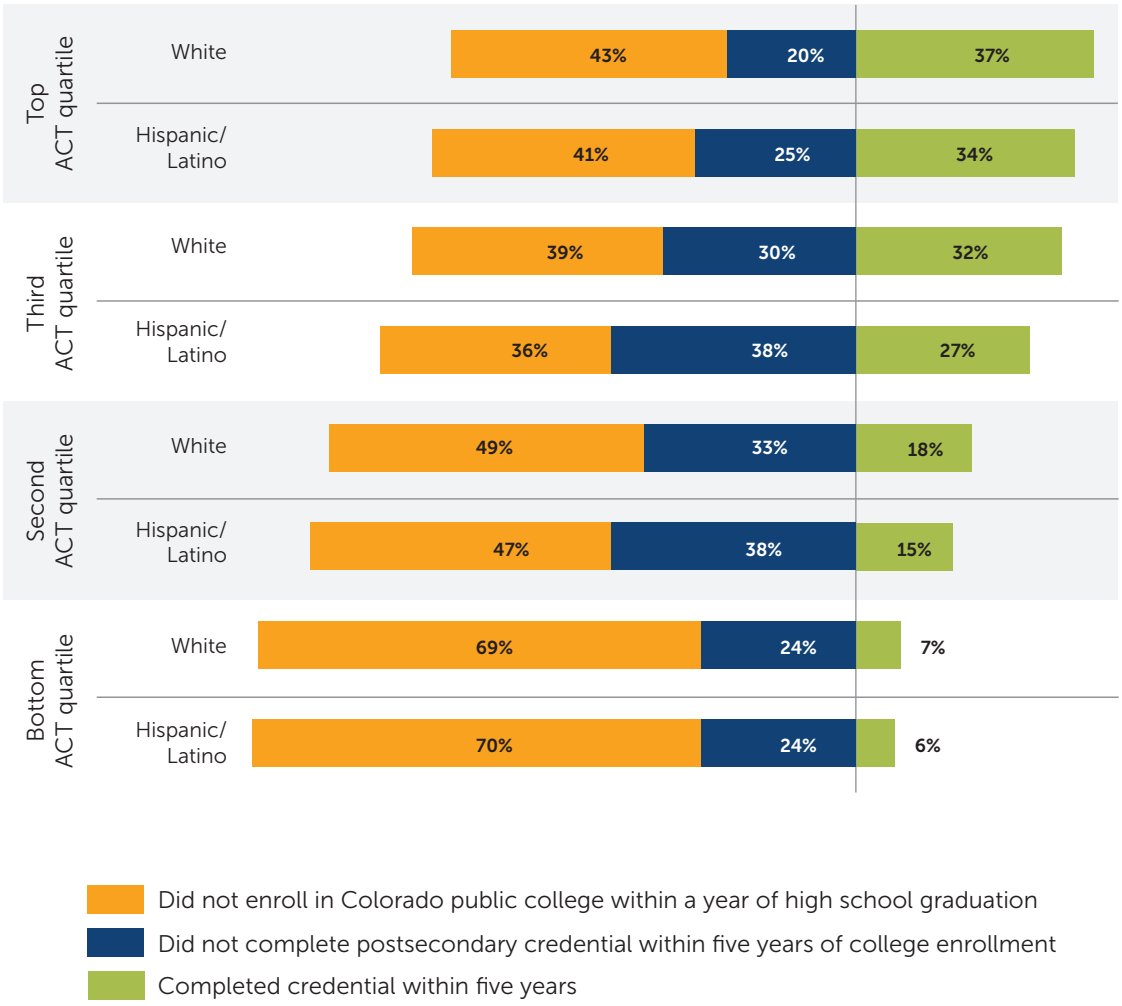


Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees, 2010-2016 postsecondary completers.
Note: Students in the bottom ACT quartile had ACT scores below 17, second quartile had scores between 17 and 20, third quartile had scores between 21 and 24, and top quartile had scores above 24.

When examining students with high ACT scores, the completion gap between Whites and Latinos narrows. Overall, Latinos and Whites have an 18 percentage-point gap when looking at completion in a five-year period. This gap varies when looking at students with similar ACT scores enrolled in similar colleges. The completion gap for Latinos and Whites is lowest (2 percentage points) for students with ACT scores in the bottom quartile who enroll in middle-tier colleges and widest (23 percentage points) for students with ACT scores in the bottom quartile who enroll in a selective college. However, on average, the completion gap is 7 percentage points when accounting for both ACT quartile and institutional selectivity. Thus, even controlling for institutional selectivity and ACT score, Latinos are still less likely than Whites to complete a postsecondary credential. Further research is necessary to examine why disparities in completion rates by institutional selectivity and ACT scores still exist between Whites and Latinos in order to better determine how to address these leaks.

Within each ACT quartile, the percentage of Latino and White high school graduates who earn a postsecondary credential is very similar. However, a 1 to 5 percentage point gap remains between Latinos and Whites at each quartile, which means there is still work to be done (Figure 11).

Figure 11. In all ACT quartiles, Latino high school graduates come very close to White high school graduates in completing college.



Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees, 2010-2016 postsecondary completers.
Note: Students in the bottom ACT quartile had ACT scores below 17, second quartile had scores between 17 and 20, third quartile had scores between 21 and 24, and top quartile had scores above 24.

No matter what their ACT scores are, many Coloradans who enter college leave empty handed—especially Latinos. If Latinos are ever going to reap the economic rewards that a college credential provides, they will have to complete college at the same or greater rate as Whites. Colleges need to not only get more students on campuses, but also help them get through their programs and earn a college credential. This is especially urgent for Latinos in the state, who fall out of the college pipeline much more regularly than their White counterparts.

Part 4.
Employment and Earnings

For new entrants into the labor force, their first job not only sets them on their career path—the first salary they receive sets their lifetime earnings.[72] The high school graduates who end up getting a bachelor's degree are the ones most likely to reap the economic benefits that come with going to college. A bachelor's degree is important to getting a solid career and earnings, and it propels intergenerational mobility, especially for first generation students whose parents earn the low wages associated with having a high school education or less. A bachelor's degree also sets up workers for graduate school and beyond, where they will earn even higher wages.

Whether Colorado high school graduates are working and how much they are earning depends largely on whether they have a postsecondary credential, which type of credential they earned, and what type of program they enrolled in. Latino high school graduates are less likely than Whites to enroll in college, complete a postsecondary credential, and be working with a credential. The exception is Latinos with bachelor's degrees, who are slightly more likely to be working in the state than Whites. In addition, more Latinos are enrolling in and completing sub-baccalaureate programs instead of bachelor's degrees, which exacerbates the wage gap between them and Whites.

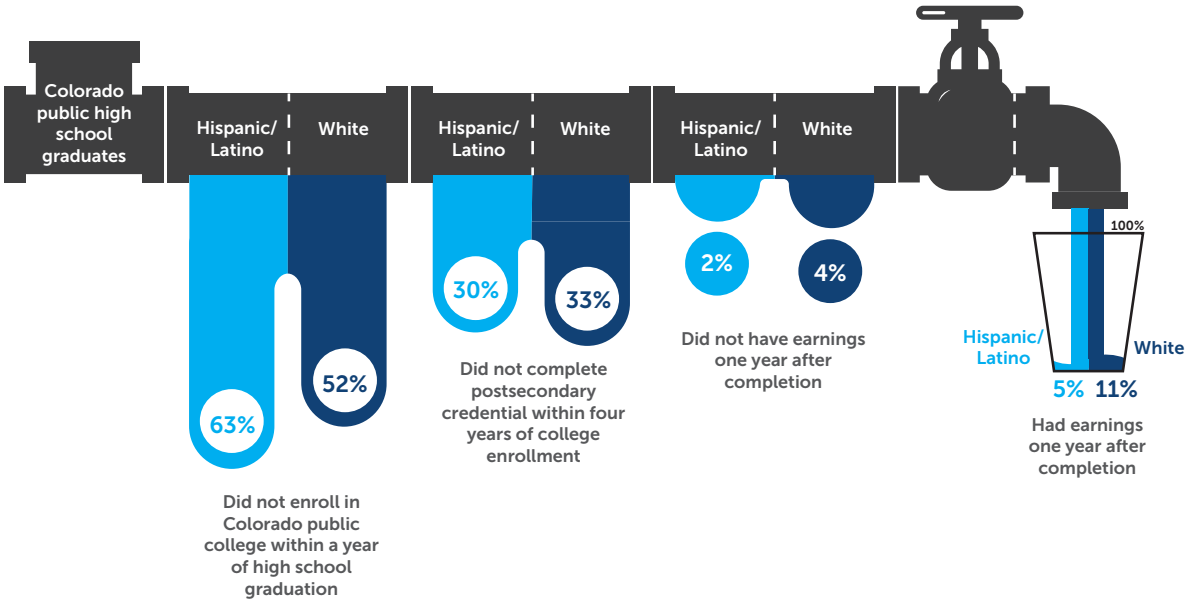
Latino high school graduates who complete college are slightly more likely than Whites to be working in Colorado.

The final leak in Colorado's college to career pipeline occurs when students complete college and enter the job market. Due to the enrollment and completion leaks earlier in the pipeline, Latinos overall are about half as likely as Whites to have enrolled in college, completed a credential within four years of enrollment, and worked in the Colorado labor market within a year after completion—5 percent versus 11 percent, respectively (Figure 12).[73] However, Latinos are less likely to leak from this point in the pipeline compared to Whites. But these minor differences obscure the fact that at this point in time, more than 90 percent of

72 Federal Reserve Bank of New York, *The Labor Market for Recent College Graduates*, 2018.
73 Unless otherwise stated, employment and earnings analysis is based on Colorado high school graduates who enrolled in a Colorado public college within a year after high school graduation and completed a credential within four years of postsecondary enrollment. We use four-year completion rates here so that we can fully follow the high school graduate cohorts (2009-2011) into the labor market.

Latinos have not made it to college completion. Of those who completed a postsecondary credential, 76 percent of Latinos have earnings in the Colorado labor market one year after completing their credential, compared to 72 percent of Whites.[74]

Figure 12. Latino high school graduates are half as likely as White high school graduates to be working in Colorado with a credential.



Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees, 2010-2015 postsecondary completers, 2011-2016 earnings.

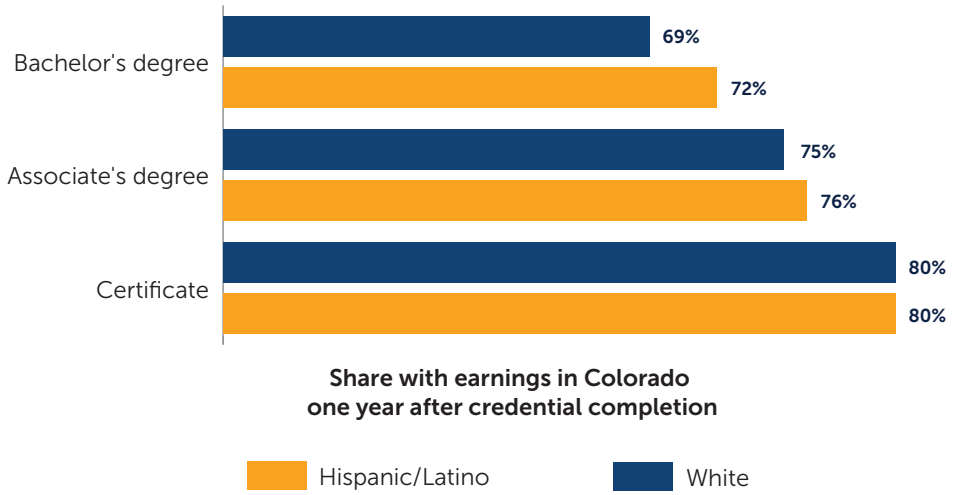
Overall, certificate and associate's degree holders tend to earn similar wages, but those with bachelor's degrees tend to make much more.

The precept that more education yields more pay[75] applies to Colorado high school graduates as well. One year after earning their respective credentials, certificate holders earned a median of $19,400, associate's degree holders earned $20,200, and those with a bachelor's degree earned $33,900.[76] Also, what you make depends on what you take. This is especially true for recipients of associate's and bachelor's degrees where median earnings varied by over $20,000 depending on the field of study.[77] For example, high school graduates who completed an associate's degree in liberal arts earned $18,400, while those who completed an associate's degree in health earned $42,100.[78]

74 Earnings come from unemployment insurance (UI) wage records, which do not include self-employed, military personnel, federal government workers, employees of religious orders, and most independent contractors. They also do not include individuals who are working in other states. Thus, it is possible more Colorado high school graduates are working. While one-year earnings do not account for all the jobs and opportunities that present themselves to workers over time, they are an important baseline for lifetime earnings.
75 Carnevale and Cheah, *Five Rules of the College and Career Game*, 2018.
76 Median earnings represent full-time, full-year approximations. For more on methodology, see Appendix D.
77 This is consistent with prior research such as Carnevale et al., *The Economic Value of College Majors*, 2015, and Carnevale et al., *Certificates in Oregon*, 2018.
78 See Appendix C for a more detailed analysis of field of study by credential level.

Latino and White high school graduates who completed certificates[79] are more likely to be working in Colorado, compared to those who completed associate's or bachelor's degrees. About 80 percent of both Whites and Latinos with certificates are working in the state. The pattern is similar for those with associate's degrees (76% for Latinos and 75% for Whites). However, Latinos with bachelor's degrees (72%) are slightly more likely to be employed in the state than Whites with the same credential (69%) (Figure 13). Bachelor's degree recipients are more likely to stay in school to earn a graduate degree, which likely contributes to their lower labor market entry in the state.[80] Therefore, it is worth it for Colorado to focus on Latinos because they are likely to remain in the state to work with a postsecondary credential.

Figure 13. Latinos at all levels of postsecondary achievement are as likely as or more likely than Whites to be working in the Colorado labor market one year after completing their credentials.



Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees, 2010-2015 postsecondary completers, 2011-2016 earnings.

79 Unlike the national data available, the Colorado data included information on high school students who enrolled in and completed certificate programs. Workers with certificates are likely reflected in the "some college" category used in national data collections.

80 About 22 percent of students in bachelor's degree programs claim they are not seeking employment upon graduation, primarily because they are attending graduate school. Busteed and Auter, "Why Colleges Should Make Internships a Requirement," 2017.

Individuals with a postsecondary credential are more likely to be employed. Only about 64 percent of Colorado residents of the same age as those in this study, but who attended college and didn't get a credential, are employed.[81] Those who never went to college are also less likely to be employed in the state. Only 52 percent of individuals who dropped out of high school and 66 percent with only a high school education are employed in Colorado.[82] Moreover, individuals with a postsecondary credential have better job opportunities in Colorado. For example, the number of good jobs[83] in Colorado for workers with a high school education decreased by 4 percentage points between 1991 and 2015, while good jobs for workers with associate's degrees increased by 12 percentage points.[84]

Enrolling in sub-baccalaureate programs typically results in lower earnings for Latinos.

While Latinos are more likely to be working in Colorado, what they earn matters as well. Latinos overall have lower median earnings and fewer have good jobs[85] compared to Whites. Whites earn $28,000, while Latinos earn $22,300 (a $5,700 difference). Similarly, 21 percent of working Whites have a good job compared to 15 percent of Latinos (Table 1). This is not surprising given that Whites are much more likely than Latinos to complete bachelor's degrees.

Latinos are successfully completing certificates on par with their share of high school graduates but still have room for improvement for associate's degrees and a long way to go for bachelor's degrees. While Latinos make up 22 percent of Colorado high school graduates, they make up 24 percent of certificate holders, 20 percent of associate's degree holders, and only 9 percent of those with a bachelor's degree. These figures demonstrate why Latinos are more likely to have lower earnings than Whites overall.

However, when we look at earnings at each credential level, Latinos' wages are fairly similar to those of Whites. Earnings are comparable between Whites and Latinos with certificates and associate's degrees, but Latinos with bachelor's degrees earn $1,600 less than Whites with bachelor's degrees. At each credential level, working Latinos are slightly more likely to have full-time, full-year earnings compared to Whites, and they are similarly likely to be working in a good job.

81 Unemployment insurance (UI) wage records were not available for high school graduates who did not enroll in a Colorado public college. Therefore, we do not have employment or earnings for these students. Employment rates are therefore estimated using the US Census Bureau's American Community Survey by looking at individuals between the ages of 19 and 26 (similarly aged as 99 percent of our sample). We consider those who are self-employed or employed in the armed forces to be unemployed in an attempt to stay as consistent with UI wage records as possible.

82 Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey, 2012-2016 (pooled).

83 While there is no universally accepted or official earnings level that defines self-sustaining earnings, in defining a good job, we have chosen $35,000 ($17 per hour for a full-time job) as a floor for those under the age of 45 and $45,000 ($22 per hour for a full-time job) for workers age 45 and over. Carnevale et al., *Good Jobs That Pay without a BA: A State-by-State Analysis*, 2017. This definition differs from that of "top jobs" in the most recent Colorado Talent Pipeline Report. Colorado Workforce Development Council, *The Colorado Talent Pipeline Report*, 2017.

84 Carnevale et al., *Good Jobs That Pay without a BA: A State-by-State Analysis*, 2017.

85 Following Carnevale et al., *Good Jobs That Pay without a* BA, 2017, we define a good job as any job with annual earnings equal to or above $35,000.

Table 1. Overall, Latinos tend to have lower wages compared to Whites, but their wages are fairly similar to those of Whites at each credential level.

		White	Hispanic/Latino
Bachelor's degree	Median earnings	$34,100	$32,500
	Percent working with full-time, full-year earnings	63%	66%
	Percent working in a good job	30%	30%
Associate's degree	Median earnings	$20,200	$20,200
	Percent working with full-time, full-year earnings	44%	49%
	Percent working in a good job	9%	11%
Certificate	Median earnings	$19,700	$19,200
	Percent working with full-time, full-year earnings	47%	50%
	Percent working in a good job	8%	6%
Overall	Median earnings	$28,000	$22,300
	Percent working with full-time, full-year earnings	55%	54%
	Percent working in a good job	21%	15%

Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees, 2010-2015 postsecondary completers, 2011-2016 earnings.

Education pays for workers in Colorado. Students primarily enroll in college because they want to have better job opportunities once they enter the labor market, but those options won't present themselves without a postsecondary credential in hand.[86] In terms of economic opportunity, the job market in Colorado looks much more promising for workers with at least an associate's degree than for high school dropouts or those who finished high school but never went to college. But it looks brightest for those who enter the labor market with a bachelor's degree in hand.

86 Busteed, "Welcome to the Exit Era of Higher Education," 2016.

Conclusion and Policy Recommendations

Colorado is one of many states that have been underinvesting in educating the children of their least advantaged residents while using job growth to attract well-educated individuals from other states.[87] These policies are economically efficient in that they reap the found value of other states' educational investment—but they are unfair to state residents. In Colorado, these policies are especially unfair to the Latino population.

This report and the Colorado master plan are motivated by another fact about many of Colorado's Latinos: In the 21st Century, many Latinos aren't going anywhere in the Colorado economy unless they go to college first. This fact has far reaching consequences for the state because of another fact: Latinos are the fastest growing segment of the population in Colorado,[88] and they also tend to be the least educated.

Latinos have made impressive gains in terms of high school graduation and entry into the certificate labor market. But in order to continue their educational progress and their chances for middle class jobs with a long term future, Latinos need to take the next step up the educational ladder to join the ranks of associate's and bachelor's degree-holders in the Colorado workforce. Ultimately for Latinos and all Coloradans, the bachelor's degree is the gold standard for educational progress, stable employment, and earnings and still provides the most long term adaptability for workers.[89]

Specific career-related education between high school and the bachelor's degree can provide middle class earnings—many technical certificates earn more than many bachelor's degrees and almost 30 percent of associate's degrees earn more than the average bachelor's degree.[90] But the general education that comes with the bachelor's degree is the best guarantor of long term adaptability in labor markets and it remains the postsecondary credential that promises full inclusion in a modern and culturally diverse democracy.

Much to its credit, among the nine states with more than one million Latinos, Colorado is the only state explicitly focused on closing attainment gaps by race, ethnicity, and class as part of its statewide postsecondary

87 DeRuy, "The Colorado Paradox," 2016. In 2008, the state legislature voted down a bill that proposed creating a $300 million college scholarship program by repealing the oil and gas tax subsidy, known as Amendment 58. Protopsaltis, "Amendment 58 tackles the 'Colorado Paradox,'" 2008.

88 By 2050, demographic projections show that Whites will represent less than half of the US population and Latinos will make up more than a quarter. Between 1980 and 2050, Whites are projected to drop from almost 80 percent of the population to 47.2 percent; Latinos will have gone from 6.4 percent to 26.5 percent in this time period. US Census Bureau, *Population Projections 1980-2060*, 2017.

89 For Latinos who earn this postsecondary credential, it is likely to play an outsized role in boosting their intergenerational mobility. Carnevale et al., *Race, Money, and Public Colleges*, forthcoming, and Carnevale and Strohl, *Separate and Unequal*, 2013.

90 Carnevale et al., *Five Rules of the College and Career Game*, 2018.

attainment goal,[91] codified in the state master plan. Colorado's approach is a model for the other eight states with large Latino populations and for the nation. Of the 57 million Latinos in the United States, 76 percent live in these nine states, with the rest spread across the other 41 states and the District of Columbia.[92]

Colorado has the scaffolding in place to make these changes happen, and the real test will come when state leaders put their goal into action. Colorado's stated intention to target investment in the Latino population is a worthy one. Almost eight out of ten (76%) Latinos who graduate from a Colorado high school, enroll in college, and earn a college credential stay in the state to work. This figure is seven out of ten (72%) for Whites.

However, in order to truly lift Latinos so that they are able to achieve the same educational and economic success as Whites:[93]

- At least 83 percent of Latinos would graduate from high school on-time (the figure is currently 68%).
- The percentage of Latinos who never enrolled in or delayed enrollment in college would have to decrease by more than 20 percentage points (from 58% to 37%).
- Of those who do enroll in college, about 70 percent of Latinos would need to enroll in middle-tier and selective colleges, instead of 50 percent.
- Twice as many Latino high school graduates would earn a college credential within five years of enrolling in college, 24 percent instead of the current 11 percent.
- Five-year completion rates for Latinos with bachelor's degrees would increase to 60 percent, 30 percent for associate's degrees, and 35 percent for certificates (compared to their current rates of 40%, 21%, and 31%, respectively).
- Overall median earnings for Latinos with a postsecondary credential would increase by almost $6,000 annually (from $22,300 to $28,000).

Colorado and many other states have been trying to develop coherent education and career pathways over the past several decades.[94] But these efforts have not yielded true alignment of K-12 education with postsecondary education and careers.

The long term goal for policy in Colorado is still to change the context for education policymaking from the current policy silos of pre-K, K-12, postsecondary, human services, and jobs to a system that connects the dots between all five domains. This is especially true for the part of the pipeline that runs from high school to college and careers where the connections between education and jobs intensify. These siloed policy domains made sense when the economy only required high school education or less for access to good jobs. But we now live and work in an economy where 20 percent of good jobs go to high school graduates; 25 percent of good jobs go to middle skill workers who have more than high school but less than a bachelor's degree; but 55 percent of good jobs go to people with a bachelor's degree or better.[95]

The path from youth dependency to adult financial independence and successful family formation has truly become a pipeline that begins in pre-K-12 education and moves through some level of postsecondary preparation for middle class careers. As the K-12 pipeline moves into secondary education, the relationships between schooling, college, and careers becomes much more relevant. In high school the process of aligning individual interests, values, and personality traits with career pathways becomes increasingly appropriate in school counseling. Face-to-face counseling as well as the use of reliable tools that help students explore education and career options are useful at this point along the education pipeline. At the juncture between

91 According to the Lumina Foundation, California and New York don't have or haven't set robust attainment goals. The goals for Arizona, Florida, Illinois, New Jersey, New Mexico, and Texas refer to state residents but do not further break it down by race, ethnicity, or class. http://strongernation.luminafoundation.org/report/2018/#nation

92 López and Radford, *Facts on U.S. Immigrants, 2015*, 2017.

93 These statewide targets will likely differ at the local and regional levels and vary depending on Latino population growth.

94 Most notable have been the P-20 councils that began springing up in the 1990s and peaked at thirty-eight states in 2008 but have waned in their numbers and influence since. While these councils have been useful for innovation and initial dialogue, they have been undermined by the realities of institutional interests and the diversity of policy perspectives.

95 Georgetown University Center on Education and the Workforce analysis of US Census Bureau and Bureau of Labor Statistics, Current Population Survey (CPS) March Supplement data, Colorado, 2016.

high school, college, and careers, the one-dimensional academic goals need to give way to longer term goals focused on the social, economic, and civic functionality of young adults. Traditional academic pathways need to give way to more individualized choices that link high school to college and careers tied to both academic and experiential learning.

Policy recommendations

This report shows that at every step of the state's college to career pipeline, Latinos are still behind Whites. Colorado already has strong cooperation among multiple agencies and partnerships with other leaders in the state.[96] But unless the state creates a unified accountability system that connects high schools, postsecondary institutions, and labor markets, today's leaks that lead to unequal educational and economic outcomes between Whites and Latinos will continue. Having a central authority with budgetary responsibility would create the systemic changes that need to take place to address head on the pipeline leaks along the way to a solid education and career. We need a system of governance and financing that recognizes that high school, college, and careers are becoming more interconnected.

Create a unified governance and accountability system that goes beyond purely academic completion goals in high school and college to a focus on systematically supporting the transition from youth dependency to adult independence and family formation.

Starting in the 1980s, employers began to demand that more workers possess education beyond high school. During that time, the age at which workers made the median earnings appropriate for financial independence and family formation was 26. It is now 34, largely because of our failure to effectively connect secondary education, postsecondary education, and labor markets.[97] Today's students are different than those from decades past, representing workers who, in order to get ahead, need to change jobs up to four times by age 32 and every five years thereafter until they reach middle age.[98] In addition, at least one-third of today's students qualify as low-income and receive a federal Pell Grant; almost half are financially independent from their parents; and over a quarter of today's students are parents. Together, these realities make a strong case for why states and the nation need to invest in a new governance and accountability system that would break down the silos across pre-K, K-12, postsecondary, human services, and workforce sectors.[99]

Ideally, the unified system begins with data-based integration and transparency in student pathways that begin in high school, continue at the program level in fields of study at the postsecondary level, and tie fields of study to career pathways after college. The current Statewide Longitudinal Data Systems (SLDS) in Colorado and elsewhere are the beginnings of such an information system that can connect pathways at the program level to post-graduation employment and earnings, but these systems remain underdeveloped and underutilized in counseling and accountability systems.

Improve and dramatically expand high school counseling so that more Latinos have the knowledge they need to transition from high school to college and enroll directly in bachelor's degree programs.

All students need better information to help them decide which colleges to attend, how to pay for college, what to major in, which courses to take, where the jobs are, and how much they will earn once they obtain a postsecondary credential.[100] To some extent, Latinos' lower college completion rates compared to Whites begin long before the college admissions staff gets involved.

96 Colorado Workforce Development Council is one example, https://www.colorado.gov/pacific/cwdc/members-5.
97 Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau and Bureau of Labor Statistics Current Population Survey, 1980, 2017.
98 Higher Learning Advocates, *Policy Toolkit: Today's Students*, 2018.
99 The Statewide Longitudinal Data Systems provide the infrastructure necessary to make this happen, https://nces.ed.gov/programs/slds/.
100 Some of this information is available at Launch My Career Colorado, which shows the return on investment for a variety of postsecondary credentials that public and private colleges award, https://launchmycareercolorado.org/.

In Colorado, the average student-to-school counselor ratio is 383:1, which is better than the national average of 482:1, but above the 250:1 recommended by the American School Counselor Association.[101] Colorado is already among several states that are implementing practices to help students progress through college once they arrive on campus.[102] But continuing these efforts will only go so far. In addition, state leaders might consider introducing these college-advising reforms earlier in high school, which would go a long way in preparing high school students for their college and career futures. Many of these practices integrate intrusive advising and predictive analytics,[103] with the goal of building the cultural capital of all racial and ethnic groups. Latinos are likely to benefit from these reforms, especially the ones from families where neither parent went to college.

Integrate career exploration and preparation in the advising process.

Today's youth don't have enough exposure to jobs that reflect the new entry requirements for middle class careers. One of the key reasons why the youth labor market collapsed was increased employer demand for workers with education beyond high school.[104] Several states are finding ways to connect education and careers through innovative models. In Colorado, the new youth apprenticeship program and Denver's CEC Early College program include the chance to get an industry certification, meaningful work experience, and a year of free college.[105] But these programs have limited reach statewide. The integration of secondary, postsecondary, and career programs is still nascent in Colorado and elsewhere. Going forward we need to guard against a reassertion of vocational tracking by race and class in secondary schools. Other examples such as Linked Learning, Career Academies, and Early College High Schools are diverse approaches, but none of these have gone to scale. No matter the program, it should be available to all students. Many existing programs target low-income students or those who come from or disadvantaged racial and ethnic groups.[106]

Career exploration in middle school and beyond would include activities such as counseling, career fairs, and job shadowing. Career preparation in high school and college would include experiences such as internships, apprenticeships, and mentorships, as well as the opportunity to acquire industry-based credentials. Once they graduate from high school, students can continue to prepare for work in a specific or narrow range of occupations available through postsecondary degree and certificate programs, apprenticeships, employer- or military-provided training, or workforce development programs, among others.

To get on the path to economic self-sufficiency, more Latinos need to enter the labor market with a bachelor's degree.

When looking broadly at the share of Latino high school graduates in the state (22%), they are overrepresented among certificate holders (24%) and are underrepresented among bachelor's degree holders (9%). Overall, lifetime earnings of workers with certificates pale in comparison to those with bachelor's degrees. Therefore, it will be useful for state leaders to revisit specific targets for this metric.

101 American School Counselor Association, "Student-to-School-Counselor Ratio 2014-2015," https://www.schoolcounselor.org/asca media/asca/home/Ratios14-15.pdf.
102 Complete College America, "Colorado Math Pathways," https://completecollege.org/article/colorado-math-pathways-a-case-study/; Complete College America, "Alliance Compact: Scaling Standards," https://completecollege.org/wp-content/uploads/2017/09/Alliance Compact-and-Scaling-Standards-FINAL-WEB-3.15.18.pdf.
103 Varney, "Intrusive Advising," 2016. http://www.nacada.ksu.edu/Resources/Academic-Advising-Today/View-Articles/Intrusive-Advising aspx.
104 The substantial growth in the number of occupations and programs of study exemplifies the complexities of the modern economy, and it means that students need to make many more decisions about what to study and where to work earlier rather than later in their educational journeys. Between 1950 and 2010, the number of occupations tripled from 270 to 840, while the number of programs of study quintupled between 1985 and 2010, from 410 to 2,260. Carnevale et al., *Career Pathways*, 2017.
105 CareerWise Colorado, http://www.careerwisecolorado.org/. CEC Early College, http://www.dosomethingreal.com/. Other examples are work-based learning and career academies.
106 Stern, "Pathways or Pipelines," 2015.

According to the state master plan, state leaders expect to "increase certificate completion by minority and low-income students."[107] We recognize that Colorado needs more workers with certificates and that certificates with labor market value do benefit Latinos. But to the extent the master plan tracks Latinos into jobs that do not require two-year or four-year degrees, it may slow momentum in Latino progress up the education and career ladder onto two-year and four-year degree pathways. However, the solution to Colorado's workforce dilemma is not to relegate Latinos to the sub-baccalaureate labor market. We see some cause for concern that Latino progress toward the bachelor's degree may be in the Colorado master plan, but the plan lacks an emphasis on bachelor's degree attainment for Latinos.

Given the mass movement of Whites to the bachelor's degree, not paying equal attention to Latino bachelor's degree attainment could increase the differences in Latino and White educational progress. Focusing Latino progress on certificates and the sub-baccalaureate middle skill labor market may be a pragmatic next step but it also will continue to preserve and leverage differences in White and Latino educational progress, furthering the intergenerational growth in White racial privilege and a second-class educational and economic status for Latinos.

Redesign bachelor's degree programs so that students who earn at least 60 credits automatically receive an associate's degree so they may progress to a bachelor's degree later on.

Recently introduced federal legislation[108] recognizes the link between associate's and bachelor's degrees. Colorado has already explored the feasibility of reverse transfer for students who begin their studies at two-year colleges and continue them at four-year colleges.[109] However, the redesign would also extend to students who directly enrolled in a four-year college and were earning credits that apply toward associate's and bachelor's degree programs. Implementing this practice across the state will likely reduce the 15 percent of workers in the state who end up with some college but no postsecondary credential[110] and also increase their lifetime earnings.

Build stronger pathways that lead from certificate programs to associate's and bachelor's degree programs so that Latinos can continue to improve their employability as well as their earnings.

For a variety of reasons, many certificate holders never continue their college journeys: 18 percent of workers ages 23 to 65 have certificates, but only one-third of them go on to get college degrees.[111]

The ideal postsecondary education and training system pays no attention to where students begin their postsecondary studies.[112] In other words, students who initially enroll in and complete certificate programs should be able to come back without having to start over. In Colorado, only 6 percent of Latinos with certificates have a good job, compared to 11 percent with associate's degrees and 30 percent with bachelor's degrees. Given the close connection between bachelor's degrees and good jobs, encouraging Latinos to get a bachelor's degree—particularly the ones who are the first in their families to go to college—will make a big impact on improving intergenerational mobility now and in the future.

107 Colorado Commission on Higher Education, *Colorado Rises*, 2017.
108 Senator Bob Casey, "Casey, Booker, Kaine Introduce Bill to Empower Community College Students," 2018.
109 Colorado was one of 15 states that participated in Credit When It's Due, a reverse transfer effort sponsored by multiple foundations. Taylor and Bragg, *Optimizing Reverse Transfer Policies and Processes*, 2015.
110 Lumina Foundation, *A Stronger Nation*, 2018.
111 Carnevale et al., *Certificates*, 2012.
112 Lumina Foundation's Connecting Credentials initiative identifies the development of a common language to serve as the basis for a connected credentialing system as one of seven priority areas in its action plan, http://connectingcredentials.org/wp-content/uploads/2016/09/Action-Plan.pdf.

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Appendix A: Low-Income Student Pipeline

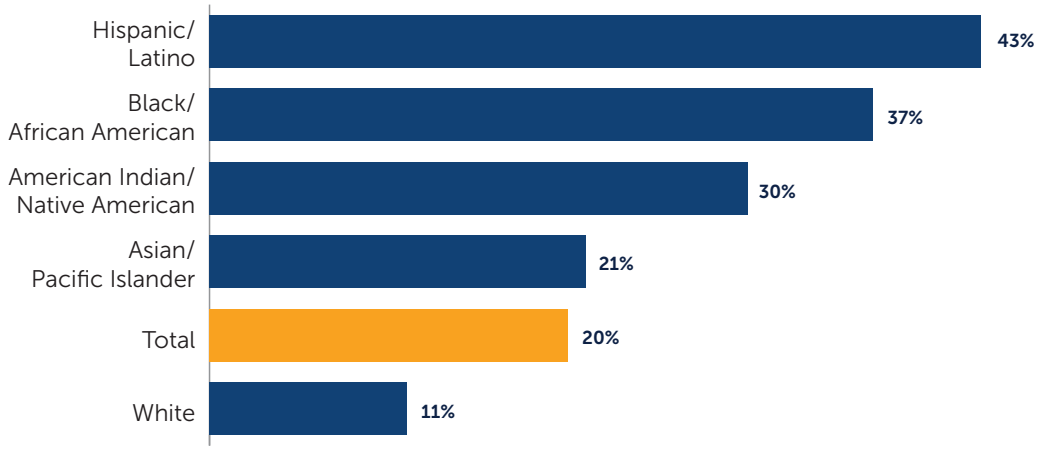
In addition to race and ethnicity, Colorado is focusing on closing equity gaps by income.[1] We use eligibility for free and reduced-price (FRP) meals as a proxy for low-income instead of federal Pell Grant eligibility since this pipeline analysis begins with high school students. Nonetheless, descriptive analysis revealed similar results regardless of proxy.[2]

The low-income student pipeline story in Colorado is similar to that for Latinos. Only half of high school graduates who received FRP lunches enroll in a public college in the state and less than a third of these students end up with a postsecondary credential in five years. Low-income students with high ACT scores tend to not complete college at the same rate as their higher-income peers.[3] On a positive note, three-quarters of those who earn a postsecondary credential are working within a year after graduating from college.

Latino, Black, and Native American high school graduates are much more likely than Whites to come from low-income families.

Latinos, Blacks, and Native Americans in Colorado are three to four times more likely than Whites to be low-income students in high school. About 43 percent of Latino, 37 percent of Black, and 30 percent of Native American high school graduates received FRP lunches compared to 11 percent of White high school graduates (Figure A1). Given the growing Latino population in the state, high school graduates[4] who are both Latino and low-income could improve their economic standing significantly if they enroll in college and complete a bachelor's degree.

Figure A1. Latino high school graduates are the most likely to be low income.



Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates.

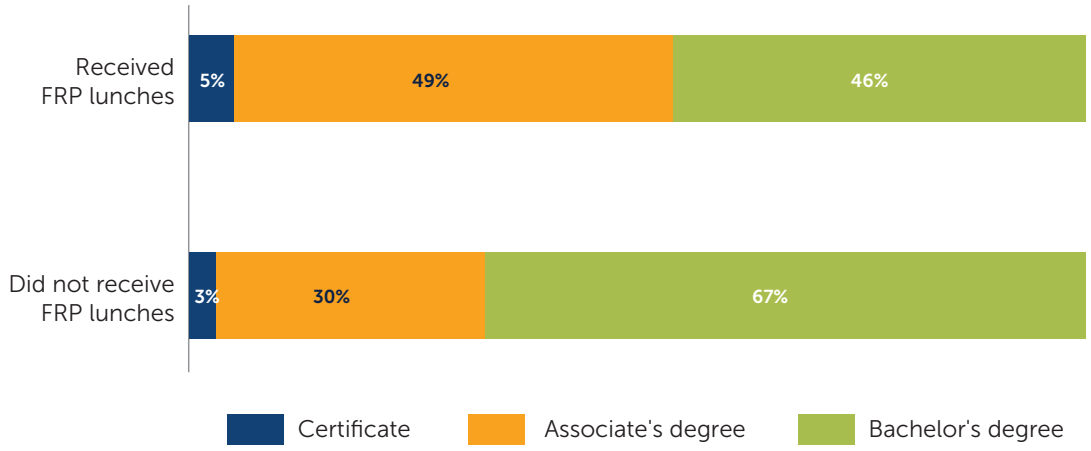
1 Colorado Commission on Higher Education, *Colorado Rises*, 2017.
2 While there isn't a perfect one-to-one mapping between these two proxies, we do find that students who received free or reduced-price (FRP) lunches are much more likely to have also received Pell Grants than students who did not receive FRP lunches. Similarly, students who received Pell Grants are more likely to have received FRP lunches than students who did not receive Pell Grants.
3 Higher-income peers refer to high school graduates who did not receive FRP lunches.
4 Whites represent 67% of high school graduates, followed by Latinos (22%), Blacks (6%), Asians (4%), and Native Americans (1%). Appendix B contains a detailed race and ethnicity analysis.

Low-income students tend to graduate from high school on time at much lower rates than the national average. About 66 percent of low-income students in Colorado finish within four years, compared to a 76 percent graduation rate for low-income students across the United States.[5] In addition, the high school graduation rate for low-income students (66%) is slightly lower than it is for Latinos (68%) in the state.

Only 4 out of 10 low-income high school graduates enroll in college, and less than half of these enroll in bachelor's degree programs.

Only 40 percent of low-income high school graduates enrolled in a Colorado public college, compared to 48 percent of their higher-income peers.[6] When low-income students do go to college they tend to concentrate their enrollment at the sub-baccalaureate level, which is associated with lower graduation rates. Of those who enrolled, only 46 percent of low-income students enrolled in a bachelor's degree program, compared to 67 percent of their higher-income peers (Figure A2).

Figure A2. Low-income students who enroll in college are much more likely than their higher-income peers to enroll in certificate and associate's degree programs.



Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees.

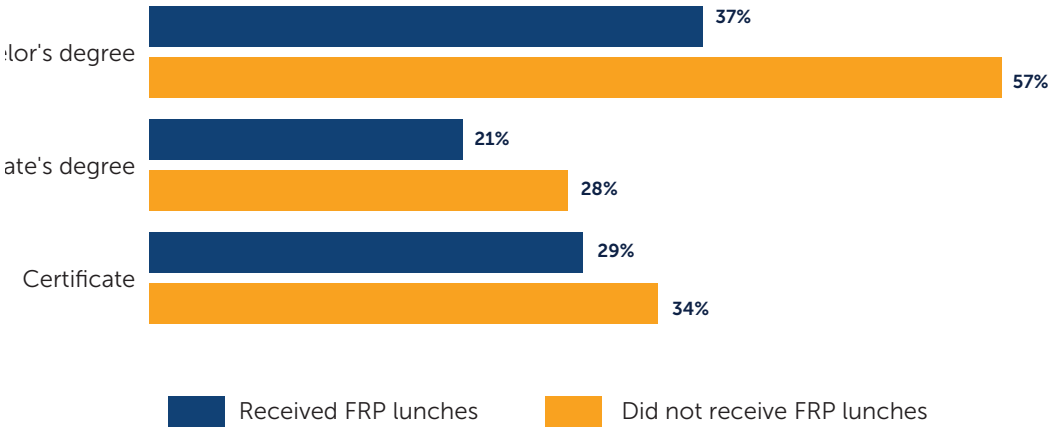
5 Only New Mexico and Nevada have lower graduation rates for students from low-income families, 64 percent. In Texas, 86 percent of low-income students graduate from high school, the highest rate in the nation. US Department of Education, *Consolidated State Performance Report,* School Year 2014-15, 2016, https://nces.ed.gov/programs/digest/d16/tables/dt16_219.46.asp.

6 Looking at the high school class of 2011, 42 percent of low-income high school graduates enrolled in college: 37 percent in Colorado and 5 percent out of state. Colorado Department of Higher Education, *2013 Legislative Report on the Postsecondary Progress and Success of High School Graduates*, 2013.

Low-income students enrolling in sub-baccalaureate programs are the least likely to earn a bachelor's degree.

This pattern of enrolling in open-access colleges likely contributes to the completion gap between low-income students and their higher-income peers. Overall, 28 percent of low-income students who enrolled in college completed a credential within five years compared to 48 percent of their higher-income peers. While this gap narrows for certificate- and associate's degree-holders, five-year completion rates for low-income students who enrolled in bachelor's degree programs are still 20 percentage points behind their peers (Figure A3). There are several possible reasons why this gap remains for bachelor's degrees. Low-income students are more likely to take remedial courses, which has an adverse impact on whether they complete a credential.[7] Moreover, low-income students are less likely to enroll in selective colleges where they would be twice as likely to complete a credential.[8]

Figure A3. Low-income students enrolling in bachelor's degree programs are more likely than other low-income students enrolled in certificate and associate's degree programs to complete college.



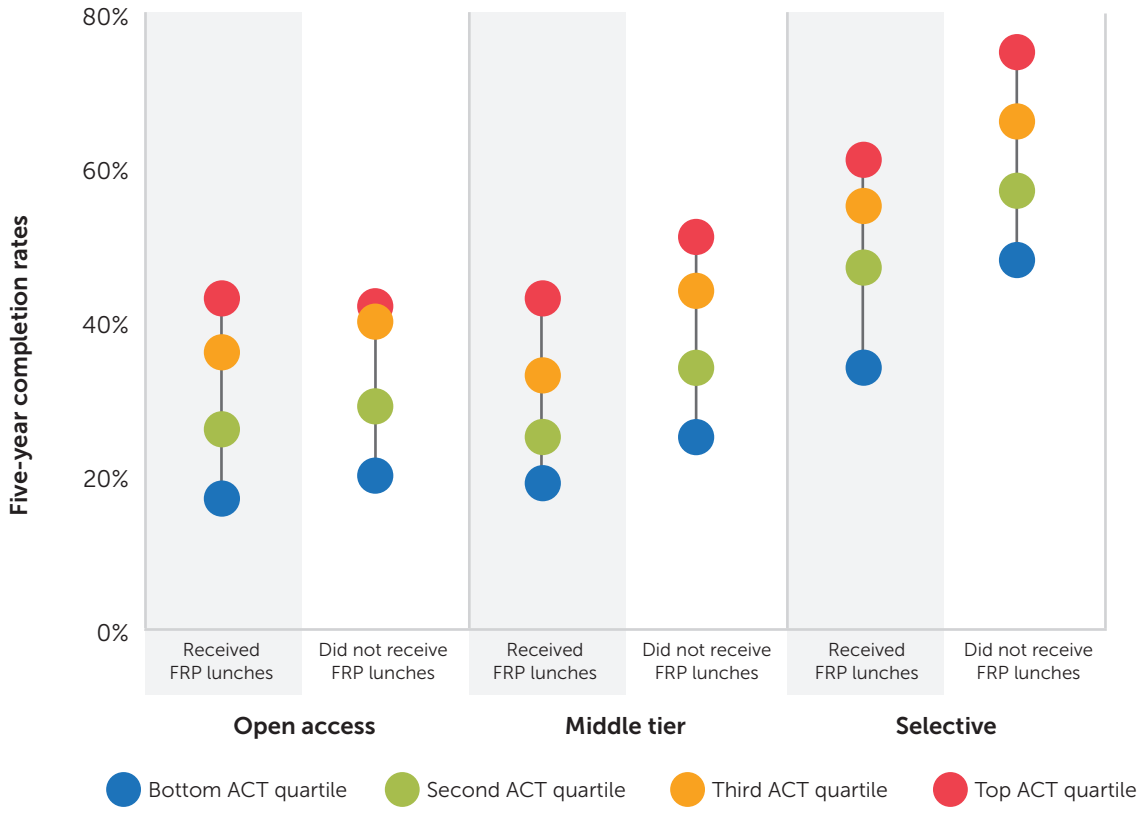
Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees, 2010-2015 postsecondary completers.

Low-income high school graduates with high ACT scores tend to enroll in selective colleges at lower rates than their higher-income peers. Less than half (47%) of low-income students with high ACT scores enrolled in a selective college compared to 66 percent of their higher-income peers. Even when low-income high school graduates with high ACT scores enroll in selective colleges, they complete postsecondary credentials at lower rates. Only 61 percent of low-income students with high ACT scores earned a postsecondary credential in five years after enrolling in a selective college compared to 75 percent of their higher-income peers (Figure A4).

7 Over 60 percent of low-income students require remediation, compared to 32 percent of their higher-income peers. Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees.

8 Only 14 percent of low-income students enroll in selective colleges, compared to 36 percent of their higher-income peers. Even when they have high test scores, less than half (47%) enroll in selective colleges, compared to 66 percent of their higher-income peers. Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees.

Figure A4 . Low-income students are less likely to earn a postsecondary credential than their higher-income peers even when they have similar ACT scores and enroll in similar colleges.



Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees, 2010-2015 postsecondary completers.
Note: Students in the bottom ACT quartile had ACT scores below 17, second quartile had scores between 17 and 20, third quartile had scores between 21 and 24, and top quartile had scores above 24.

Almost three-quarters of low-income students are working in Colorado after they complete college, and over half of them are in full-time, full-year jobs.

One year after completing their credentials, almost three-fourths of low-income students are working in the Colorado labor market. Of those working, over half are working approximately full time and full year, and 13 percent are in a good job. In general, low-income students who completed credentials are similarly likely as their higher-income peers to enter the Colorado labor market one year after completion. Overall, low-income students have lower earnings and are less likely to be in a good job mainly because they are less likely to have bachelor's degrees, which are associated with higher earnings than certificates and associate's degrees. However, when comparing earnings at each credential level, first-year earnings for low-income students are similar to the earnings of their higher-income peers at the certificate, associate's degree, and bachelor's degree levels (Table A1).

Table A1. Overall, low-income students have lower wages compared to their higher-income peers, but their wages are similar at each credential level.

		Did not receive FRP lunches	Received FRP lunches
Bachelor's degree	Percent with earnings	69%	69%
	Median earnings	$34,000	$32,200
	Percent working with full-time, full-year earnings	63%	66%
	Percent working in a good job	30%	29%
Associate's degree	Percent with earnings	75%	73%
	Median earnings	$20,100	$21,000
	Percent working with full-time, full-year earnings	43%	48%
	Percent working in a good job	9%	11%
Certificate	Percent with earnings	81%	80%
	Median earnings	$19,800	$18,700
	Percent working with full-time, full-year earnings	47%	50%
	Percent working in a good job	8%	5%
Overall	Percent with earnings	72%	74%
	Median earnings	$28,000	$21,900
	Percent working with full-time, full-year earnings	55%	53%
	Percent working in a good job	21%	13%

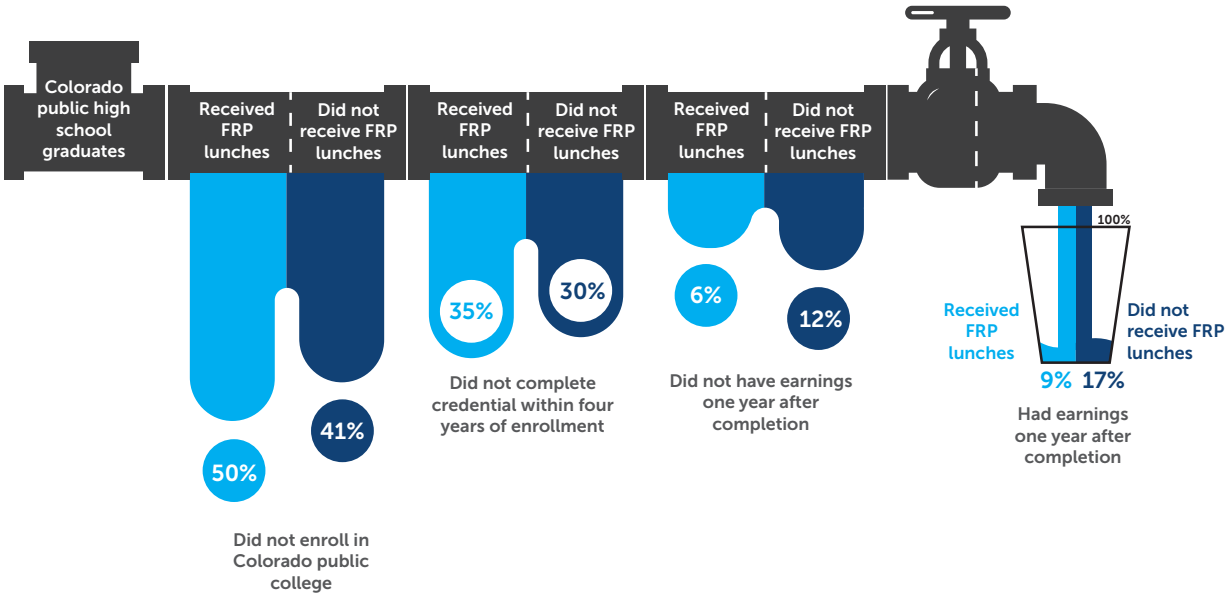
Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees, 2010-2015 postsecondary completers, 2011-2016 earnings.

Just like their Latino counterparts, many low-income students are not on track to reap the economic benefits of having a postsecondary credential.

Some leaks require greater repair than others when it comes to getting more low-income students through the college and career pipeline. Only 9 percent of low-income high school graduates enrolled in college, completed a credential within four years, and had earnings one year after completion compared to 17 percent of their higher-income peers (Figure A5). Latinos account for 48 percent of low-income high school graduates, so it is not surprising that Latinos and low-income students have similar trends.[9] The same bottom line for Latinos applies to low-income students, regardless of race or ethnicity: more need to graduate from high school, enroll in college, complete college, and enter the workforce with a postsecondary credential.

9 For example, 42 percent of both Latino and low-income high school graduates enrolled in college. Colorado Department of Higher Education, *2013 Legislative Report on the Postsecondary Progress and Success of High School Graduates,* 2013.

Figure A5. Low-income high school graduates are about half as likely as their higher-income peers to make it through the college and career pipeline.



Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees, 2010-2015 postsecondary completers, 2011-2016 earnings.

Appendix B: Detailed Race and Ethnicity Analysis

Table B1. Four-year high school graduation and six-year high school completion rates for Colorado public high school students.

Race/Ethnicity	Four-year high school graduation rate	Six-year high school completion rate
White	83%	92%
Hispanic/Latino	68%	82%
Black/African American	70%	84%
Asian/Pacific Islander	87%	91%
American Indian/Native American	64%	76%
Colorado Total	**77%**	**88%**

Source: Georgetown University Center on Education and the Workforce analysis of data from US Department of Education, Office of Elementary and Secondary Education, *Consolidated State Performance Report*, School Year 2014-15, 2016, and Colorado Department of Education, 2016-2017 Graduation Rates, Anticipated Year of Graduation Cohorts 2014/15.
Note: High school graduation rate refers to the percentage of students who graduated high school with a diploma, while high school completion rate refers to the percent of students who have received a high school diploma or its equivalent.

Table B2. Racial and ethnic distribution of high school graduates and postsecondary enrollees by institution type.

Race/Ethnicity	Colorado high school graduates	Two-year colleges	Four-year colleges
White	67%	62%	76%
Hispanic/Latino	22%	26%	14%
Black/African American	6%	8%	5%
Asian/Pacific Islander	4%	3%	5%
American Indian/Native American	1%	1%	1%

Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees, 2010-2015 postsecondary completers, 2011-2016 earnings.
Note: Columns might not add to 100 percent due to rounding.

Table B3. Percentage of Colorado high school graduates progressing through the college and career pipeline.

Race/Ethnicity	Enrolled in Colorado public college	Completed credential within four years of enrollment	Had earnings in Colorado one year after credential completion
White	48%	15%	11%
Hispanic/Latino	37%	7%	5%
Black/African American	44%	6%	4%
Asian/Pacific Islander	55%	14%	10%
American Indian/Native American	36%	6%	4%
Colorado Total	**46%**	**13%**	**9%**

Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees, 2010-2015 postsecondary completers, 2011-2016 earnings.

Table B4. Percentage of Colorado high school graduates progressing through the college and career pipeline without controlling for when they enrolled or completed college.

Race/Ethnicity	Enrolled in Colorado public college by 2016	Completed credential by 2016	Had earnings in Colorado one year after credential completion
White	60%	30%	18%
Hispanic/Latino	47%	15%	9%
Black/African American	57%	14%	7%
Asian/Pacific Islander	65%	33%	17%
American Indian/Native American	47%	13%	7%
Colorado Total	**57%**	**25%**	**15%**

Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2016 postsecondary enrollees, 2010-2016 postsecondary completers, 2011-2016 earnings.

Table B5. Distribution of Colorado high school graduates who enrolled in a Colorado public college within a year of high school graduation by institutional selectivity.

Race/Ethnicity	Open access	Middle tier	Selective
White	31%	33%	37%
Hispanic/Latino	50%	35%	15%
Black/African American	46%	38%	16%
Asian/Pacific Islander	25%	32%	43%
American Indian/Native American	45%	33%	22%
Colorado Total	**35%**	**33%**	**32%**

Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees.
Note: Rows might not add to 100 percent due to rounding.

Table B6. Distribution of Colorado high school graduates who enrolled in a Colorado public college within a year of high school graduation by institutional selectivity and ACT score quartile.

ACT quartile	Race/Ethnicity	Open access	Middle tier	Selective
Bottom quartile	White	77%	22%	1%
	Hispanic/Latino	77%	22%	1%
	Black/African American	70%	26%	3%
	Asian/Pacific Islander	68%	28%	4%
	American Indian/Native American	81%	19%	0%
Second quartile	White	46%	42%	12%
	Hispanic/Latino	45%	45%	10%
	Black/African American	33%	51%	16%
	Asian/Pacific Islander	32%	44%	23%
	American Indian/Native American	47%	40%	13%
Third quartile	White	23%	40%	37%
	Hispanic/Latino	26%	46%	28%
	Black/African American	17%	50%	33%
	Asian/Pacific Islander	13%	39%	48%
	American Indian/Native American	24%	44%	32%
Top quartile	White	10%	25%	65%
	Hispanic/Latino	12%	35%	53%
	Black/African American	9%	39%	52%
	Asian/Pacific Islander	6%	21%	73%
	American Indian/Native American	15%	30%	55%

Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees.
Note: Students in the bottom ACT quartile had ACT scores below 17, second quartile had scores between 17 and 20, third quartile had scores between 21 and 24, and top quartile had scores above 24.

Table B7. Distribution of Colorado high school graduates who enrolled in a Colorado public college within a year of high school graduation by credential type.

Race/Ethnicity	Certificate	Associate's degree	Bachelor's degree
White	3%	29%	67%
Hispanic/Latino	5%	48%	47%
Black/African American	4%	45%	52%
Asian/Pacific Islander	2%	24%	74%
American Indian/Native American	4%	44%	51%
Colorado Total	**3%**	**34%**	**63%**

Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees.
Note: Rows might not add to 100 percent due to rounding.

Table B8. Four- and five-year credential completion rates for Colorado high school graduates who enrolled in a Colorado public college within a year of high school graduation by institution type.

	Two-year college		Four-year college		Overall	
Race/Ethnicity	Four year	Five year	Four year	Five year	Four year	Five year
White	26%	31%	33%	57%	31%	49%
Hispanic/Latino	19%	23%	20%	38%	19%	31%
Black/African American	8%	10%	17%	34%	13%	23%
Asian/Pacific Islander	15%	23%	30%	55%	26%	47%
American Indian/ Native American	14%	17%	21%	40%	18%	30%
Colorado Total	**22%**	**27%**	**30%**	**53%**	**27%**	**44%**

Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees, 2010-2016 postsecondary completers.

Table B9. Four- and five-year credential completion rates for Colorado high school graduates who enrolled in a Colorado public college within a year of high school graduation by credential type.

	Certificate		Associate's degree		Bachelor's degree	
Race/Ethnicity	Four year	Five year	Four year	Five year	Four year	Five year
White	31%	35%	25%	30%	33%	58%
Hispanic/Latino	29%	31%	17%	21%	20%	40%
Black/African American	8%	9%	8%	10%	17%	36%
Asian/Pacific Islander	22%	30%	15%	22%	30%	55%
American Indian/ Native American	*	*	12%	16%	23%	42%
Colorado Total	**29%**	**32%**	**21%**	**26%**	**31%**	**54%**

Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees, 2010-2016 postsecondary completers.
*Data suppressed because fewer than 30 observations.

Table B10. Four- to seven-year bachelor's degree completion rates for 2009 Colorado high school graduates who enrolled in a Colorado public college within a year of high school graduation.

Race/Ethnicity	Four year	Five year	Six year	Seven year
White	32%	57%	66%	69%
Hispanic/Latino	18%	37%	47%	51%
Black/African American	16%	31%	40%	43%
Asian/Pacific Islander	28%	53%	65%	70%
American Indian/Native American	22%	43%	48%	51%
Colorado Total	**29%**	**54%**	**62%**	**66%**

Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009 high school graduates, 2010 postsecondary enrollees, 2010-2016 postsecondary completers.

Table B11. Four- and five-year credential completion rates for Colorado high school graduates who enrolled in a Colorado public college within a year of high school graduation by institutional selectivity.

	Open access		Middle tier		Selective	
Race/Ethnicity	**Four year**	**Five year**	**Four year**	**Five year**	**Four year**	**Five year**
White	26%	31%	22%	42%	43%	71%
Hispanic/Latino	19%	23%	15%	31%	30%	58%
Black/African American	8%	10%	11%	25%	29%	56%
Asian/Pacific Islander	16%	23%	18%	40%	38%	66%
American Indian/ Native American	14%	17%	15%	29%	31%	56%
Colorado Total	**22%**	**27%**	**20%**	**39%**	**41%**	**69%**

Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees, 2010-2016 postsecondary completers.

Table B12. Five-year credential completion rates for Colorado high school graduates who enrolled in a Colorado public college within a year of high school graduation by institutional selectivity and ACT quartile.

Institutional selectivity	Race/Ethnicity	Bottom quartile	Second quartile	Third quartile	Top quartile
Open access	White	22%	30%	41%	43%
	Hispanic/Latino	18%	26%	36%	40%
	Black/African American	7%	15%	22%	31%
	Asian/Pacific Islander	20%	27%	24%	35%
	American Indian/Native American	10%	18%	28%	*
Middle tier	White	24%	35%	44%	51%
	Hispanic/Latino	22%	27%	37%	46%
	Black/African American	18%	26%	29%	32%
	Asian/Pacific Islander	23%	33%	45%	55%
	American Indian/ Native American	*	29%	39%	26%
Selective	White	51%	58%	67%	75%
	Hispanic/Latino	28%	48%	55%	68%
	Black/African American	48%	53%	56%	62%
	Asian/Pacific Islander	29%	49%	62%	73%
	American Indian/ Native American	*	*	51%	74%

Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees, 2010-2016 postsecondary completers.
Note: Students in the bottom ACT quartile had ACT scores below 17, second quartile had scores between 17 and 20, third quartile had scores between 21 and 24, and top quartile had scores above 24.
*Data suppressed because fewer than 30 observations.

Table B13. Percent of Colorado high school graduates who enrolled in a Colorado public college within a year of high school graduation and completed a postsecondary credential within four years of enrollment with earnings in Colorado one year after completion by credential type.

Race/Ethnicity	Certificate	Associate's degree	Bachelor's degree	Overall
White	80%	75%	69%	**72%**
Hispanic/Latino	80%	76%	72%	**76%**
Black/African American	85%	70%	71%	**73%**
Asian/Pacific Islander	88%	59%	64%	**66%**
American Indian/Native American	*	*	70%	**69%**
Colorado Total	**80%**	**74%**	**69%**	**72%**

Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees, 2010-2015 postsecondary completers, 2011-2016 earnings.
*Data suppressed because fewer than 30 observations.

Table B14. Median full-time, full-year earnings for Colorado high school graduates who enrolled in a Colorado public college within a year of high school graduation, completed a postsecondary credential within four years of enrollment, and had earnings in Colorado one year after completion by credential type.

Race/Ethnicity	Certificate	Associate's degree	Bachelor's degree	Overall
White	$19,700	$20,200	$34,100	**$28,000**
Hispanic/Latino	$19,200	$20,200	$32,500	**$22,300**
Black/African American	*	$20,100	$30,400	**$25,800**
Asian/Pacific Islander	*	*	$35,000	**$30,600**
Colorado Total	**$19,400**	**$20,200**	**$33,900**	**$26,900**

Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees, 2010-2015 postsecondary completers, 2011-2016 earnings.
*Data suppressed because fewer than 30 observations. Native Americans are not included because fewer than 30 observations.

Table B15. Percent of working Colorado high school graduates who enrolled in a Colorado public college within a year of high school graduation and completed a postsecondary credential within four years of enrollment with full-time, full-year earnings by credential type.

Race/Ethnicity	Certificate	Associate's degree	Bachelor's degree	Overall
White	47%	44%	63%	**55%**
Hispanic/Latino	50%	49%	66%	**54%**
Black/African American	*	43%	61%	**54%**
Asian/Pacific Islander	*	*	61%	**55%**
Colorado Total	**48%**	**44%**	**63%**	**55%**

Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees, 2010-2015 postsecondary completers, 2011-2016 earnings.
*Data suppressed because fewer than 30 observations. Native Americans are not included because fewer than 30 observations.

Table B16. Percentage of working Colorado high school graduates who enrolled in a Colorado public college within a year of high school graduation and completed a postsecondary credential within four years of enrollment in a good job by credential type.

Race/Ethnicity	Certificate	Associate's degree	Bachelor's degree	Overall
White	8%	9%	30%	**21%**
Hispanic/Latino	6%	11%	30%	**15%**
Black/African American	*	6%	22%	**14%**
Asian/Pacific Islander	*	*	31%	**24%**
Colorado Total	**7%**	**9%**	**30%**	**20%**

Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees, 2010-2015 postsecondary completers, 2011-2016 earnings.
Note: Good job is defined as having earnings above $35,000.
*Data suppressed because fewer than 30 observations. Native Americans are not included because fewer than 30 observations.

Appendix C: Field of Study Analysis

There are few differences in field of study enrollment patterns between Whites and Latinos. The biggest differences are that Latinos are more likely to enroll in business and STEM (science, technology, engineering, and mathematics) certificate programs. Whites are more likely to enroll in STEM bachelor's degree programs. Other races and ethnicities do not follow the same enrollment trends. In certificate programs, Blacks and Asians are far less likely to enroll in industrial arts and far more likely to enroll in business and STEM. In bachelor's degree programs, Blacks are less likely to be enrolled in STEM and Asians are less likely to be enrolled in career-focused fields of study.

Table C1. Distribution of Colorado high school graduates who enrolled in a Colorado public college within a year of high school graduation by certificate field of study and race and ethnicity.

Certificate field of study	White	Hispanic/ Latino	Black/ African American	Asian/ Pacific Islander	Overall
Industrial arts	22%	20%	9%	12%	**20%**
Health	34%	31%	26%	28%	**32%**
Business and STEM	19%	26%	34%	42%	**22%**
Consumer and public services	25%	24%	31%	18%	**27%**

Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees.
Note: Columns might not add to 100 percent due to rounding. Native Americans are not included due to sample size.

Table C2. Distribution of Colorado high school graduates who enrolled in a Colorado public college within a year of high school graduation by associate's degree field of study and race and ethnicity.

Associate's degree field of study	White	Hispanic/ Latino	Black/ African American	Asian/ Pacific Islander	American Indian/Native American	Overall
Liberal arts	70%	73%	73%	71%	71%	**71%**
Industrial arts	7%	5%	2%	3%	7%	**6%**
Health	4%	5%	3%	7%	4%	**5%**
Business and STEM	9%	9%	11%	14%	9%	**9%**
Consumer and public services	9%	8%	11%	5%	9%	**9%**

Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees.
Note: Columns might not add to 100 percent due to rounding.

Table C3. Distribution of Colorado high school graduates who enrolled in a Colorado public college within a year of high school graduation by bachelor's degree field of study and race and ethnicity.

Bachelor's degree field of study	White	Hispanic/ Latino	Black/ African American	Asian/ Pacific Islander	American Indian/Native American	Overall
Health	14%	16%	20%	27%	16%	**15%**
STEM	20%	14%	11%	22%	18%	**19%**
Business	13%	13%	14%	13%	9%	**13%**
Arts, liberal arts, and humanities	28%	25%	21%	24%	28%	**27%**
Career focused	14%	15%	16%	6%	15%	**14%**
Social sciences and teaching	12%	15%	18%	8%	15%	**12%**

Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees.
Note: Columns might not add to 100 percent due to rounding.

Earnings vary greatly, depending on field of study, especially for those who earned associate's degrees and bachelor's degrees. Colorado high school graduates who completed associate's degrees in liberal arts earn $23,700 less than those who completed associate's degrees in health. Similarly, Colorado high school graduates who completed bachelor's degrees in arts, liberal arts, and humanities earn $23,900 less than those who completed a bachelor's degree in the STEM fields. This variety in earnings makes it particularly important for students to align their interests and field of study with knowledge of occupations available once they complete their credentials.

Table C4. Employment and median earnings of Colorado high school graduates who enrolled in a Colorado public college within a year of high school graduation and completed a postsecondary credential within four years of enrollment by certificate field of study.

Certificate field of study	Percent with earnings in Colorado	Median full-time, full-year earnings	Percent working in state with full-time, full-year earnings
Industrial arts	77%	$23,700	58%
Health	82%	$18,700	45%
Business and STEM	76%	$20,100	48%
Consumer and public services	83%	$20,700	54%

Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees, 2010-2015 postsecondary completers, 2011-2016 earnings.

Table C5. Employment and median earnings of Colorado high school graduates who enrolled in a Colorado public college within a year of high school graduation and completed a postsecondary credential within four years of enrollment by associate's degree field of study.

Associate's degree field of study	Percent with earnings in Colorado	Median full-time, full-year earnings	Percent working in state with full-time, full-year earnings
Liberal arts	75%	$18,400	41%
Industrial arts	73%	$30,900	57%
Health	88%	$42,100	72%
Business and STEM	76%	$26,500	57%
Consumer and public services	82%	$21,000	51%

Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees, 2010-2015 postsecondary completers, 2011-2016 earnings.

Table C6. Employment and median earnings of Colorado high school graduates who enrolled in a Colorado public college within a year of high school graduation and completed a postsecondary credential within four years of enrollment by bachelor's degree field of study.

Bachelor's degree field of study	Percent with earnings in Colorado	Median full-time, full-year earnings	Percent working in state with full-time, full-year earnings
Health	69%	$29,500	56%
STEM	63%	$53,200	74%
Business	77%	$41,400	74%
Arts, liberal arts, and humanities	74%	$29,300	62%
Career focused	74%	$30,000	63%
Social sciences and teaching	74%	$30,300	61%

Source: Georgetown University Center on Education and the Workforce analysis of data from Colorado Department of Higher Education (CDHE), 2009-2011 high school graduates, 2010-2012 postsecondary enrollees, 2010-2015 postsecondary completers, 2011-2016 earnings.

Appendix D: Colorado Administrative Data and Methodology

This report utilizes data from de-identified administrative records on enrollment and completion from the Colorado Department of Higher Education (CDHE) Student Unit Record Data System (SURDS) and matched quarterly unemployment insurance (UI) wage records from the Colorado Department of Labor and Employment. We conduct a pipeline analysis of Colorado high school students attending public colleges in the state and follow them through postsecondary enrollment, completion, and into the labor market.

High School

Data on high school graduates from public Colorado high schools is available between 2009 and 2013. We chose to base our analysis on high school graduates from public Colorado high schools who graduated high school between 2009 and 2011. The years 2009 through 2011 allow us to fully follow high school graduates into the labor market. The study sample consists of 154,147 Colorado high school graduates.

Postsecondary Enrollment

Colorado high school graduates are tracked to first-time postsecondary enrollment through enrollment data containing end-of-term information on all students who enroll in a Colorado public college.[1] Colorado high school graduates are considered not enrolled in college if they are not found in the enrollment file. While this does not mean they did not enroll in another college outside of Colorado, it is outside the scope of our research.

To determine initial postsecondary enrollment, we first exclude all high school concurrent enrollments. We then find the first academic year and term in which a student appears as a credential seeker. High school graduates are defined as credential seekers if they enroll in a certificate, associate's degree, or bachelor's degree program.

Our primary analysis focuses on high school graduates who immediately enrolled in a Colorado public college. High school graduates are defined as immediate enrollers if they first enrolled as credential seekers within a year of their high school graduation. High school graduates are defined as delayed enrollers if they enrolled as credential seekers but waited more than one year after their high school graduation. The enrollment gap is determined by the difference between high school graduation and initial postsecondary enrollment.

Postsecondary Completion

High school graduates who enroll in a Colorado public college are then followed through college completion. About 20 percent of students earn multiple credentials. We keep any credentials completed during different academic years in order to see how students build on their credentials.[2] Sometimes students receive multiple credentials in one academic year. To determine the primary credential completed in an academic year, we first keep the highest credential awarded. Then, we keep the most recent credential awarded in that academic year. Next, we drop any credentials where the field of study is identified as secondary or lower. This results in a unique credential type by academic year but not a unique credential by field of study and academic year. We were unable to determine a primary field of study for 1 percent of the high school graduates, so we randomly chose the field of study to keep for this group.

1 While the Air Force Academy is a public college in Colorado, it is excluded from this analysis because it serves a national mission instead of a specific Colorado mission as this report highlights.

2 About 4 percent earn both a certificate and an associate's degree, 3 percent earn both an associate's and a bachelor's degree, and 4 percent earn a certificate and a bachelor's degree.

Completion data is available from 2009 through 2016, so we focus our completion analysis primarily on four and five-year completion rates. Completion rates are defined as the number of students completing a credential within four or five years of enrollment. Four-year completion rates allow us to fully follow Colorado high school graduate cohorts (2009-2011) through the college and career pipeline, and five-year completion rates allow us to better estimate bachelor's degree completion.

Earnings

Earnings are drawn from matched UI wage records from 2010 to 2016. UI wage records include the total quarterly wages for each job reported by employers to state UI agencies for each employee. They do not include wages of the self-employed, military personnel, federal government workers, employees of religious orders, and most independent contractors. Furthermore, wages are not included for Colorado high school graduates with out-of-state jobs. UI wage records were matched to postsecondary enrollment records—not high school records—so earnings of high school graduates who did not enroll in a Colorado public college are not available.

We follow Colorado high school graduates who enroll in Colorado public colleges and who stay in state to work by examining earnings outcomes one year after credential completion or final enrollment. One year after completion or final enrollment is defined as the first calendar year following the academic year Colorado high school graduates completed their credential or were last enrolled in college. Earnings data spans the years 2010 to 2016, which allows for following students who completed a variety of credentials, from less-than-one-year certificates to bachelor's degrees. We define Colorado high school graduates as working in the Colorado labor market one year after credential completion if they have any positive earnings during any quarter in that calendar year.

Following the US Census Bureau's Longitudinal Employer-Household Dynamics database,[3] we estimate and report full-time, full-year earnings. We impose two conditions for high school graduates to have full-time, full-year earnings. First, they must have wages for three or more quarters. Second, their annual earnings must be greater than the prevailing Colorado minimum wage multiplied by 30 hours and 50 weeks, which is equivalent to full-time work at minimum wage (Table D1). After wages were indicated as being full-time, full-year, all wages were converted to 2015 dollars using the Consumer Price Index Research Series Using Current Methods (CPI-R-US).

Table D1. Minimum wage and full-time, full-year earnings threshold by calendar year.

Calendar year	Colorado minimum wage	Full-time, full-year earnings threshold
2011	$7.36	$11,040
2012	$7.64	$11,460
2013	$7.78	$11,670
2014	$8.00	$12,000
2015	$8.23	$12,345
2016	$8.31	$12,465

Source: Colorado Department of Labor and Employment, https://www.colorado.gov/pacific/cdle/minimumwage.

3 https://lehd.ces.census.gov/data/pseo_beta.html#earnings.

Other Key Variable Definitions

We use two proxies to determine low-income students. First, students are defined as low income if they received FRP meals in high school. Second, students are defined as low income if they received Pell Grants during any time of their college enrollment. Pell Grants are a widely used proxy for low-income students. Nationally, over 70 percent of students who receive Pell Grants come from families with annual incomes of $30,000 or less.[4] We designate high school graduates as having received Pell Grants if the financial aid file indicates a positive dollar amount for a federal Pell Grant provided to the student.

All Colorado students take the ACT in the 11th grade of high school. While commonly known as the Colorado ACT, this is equivalent to all other ACT exams administered across the country and can be submitted for college entrance.[5] Because of this statewide ACT policy, ACT scores are available for 85 percent of all Colorado high school graduates and 93 percent of Colorado high school graduates who enrolled in a public Colorado college. Comparatively, the undergraduate applicant file (UAF) contains ACT scores for only 73 percent of Colorado high school graduates who enrolled in a public Colorado college since not all students are required to submit their ACT scores on their college application. If a student has multiple ACT scores—regardless of the source—we keep the highest score.[6] The composite scores were then translated into national percentile brackets for our enrollment period.[7] We define high ACT scores as those above 24, which would be considered in the top quartile nationally. ACT scores in the third quartile are those between 21 and 24, ACT scores in the second quartile are those between 17 and 20, and ACT scores in the bottom quartile are those less than 17.

We define students as requiring remedial education if UAF data indicate they needed remedial courses in mathematics, writing, or reading. Remediation flags were missing for 6 percent of Colorado high school graduates. We exclude a more in-depth analysis on this topic because the available data did not permit a full exploration of the impact of remediation on students throughout the college and career pipeline.

This report classifies colleges into three selectivity tiers based on *Barron's Profiles of American Colleges*: selective colleges, middle-tier colleges, and open-access colleges (see Table D2).[8]

- Selective colleges are those in the top three categories of the Barron's rankings: Most Competitive, Highly Competitive, and Very Competitive. The median SAT scores of students admitted to these colleges range between 1150 and 1600, and the median ACT scores are generally 24 and above.
- Middle-tier colleges are those in tiers 4 and 5 of the Barron's rankings: Competitive and Less Competitive. The median SAT scores of students admitted to these colleges range from below 1000 to 1140, and the median ACT scores range from below 21 to 23.
- Open-access colleges are either categorized by Barron's as non-competitive, or they are not categorized by Barron's. These colleges admit all students who demonstrate evidence of high school graduation.

4 Carnevale and Van Der Werf, *The 20% Solution*, 2017.
5 Colorado Department of Education, ACT: https://www.cde.state.co.us/postsecondary/grad-act.
6 We also looked at keeping the first ACT score provided in the UAF data or the ACT score that best corresponded with enrollment. Our results were unaffected by these different definitions.
7 ACT Profile Report, https://www.act.org/content/dam/act/unsecured/documents/Natl-Scores-2010-National2010.pdf.
8 *Barron's Profiles of American Colleges*, 2014.

Table D2. Colorado public colleges by level and selectivity.

Colorado public college	Level	Selectivity
University of Colorado Colorado Springs	Four year	Selective
University of Colorado Boulder		
Colorado School of Mines		
Colorado State University Fort Collins		
Adams State University	Four year	Middle tier
University of Colorado Denver		
Fort Lewis College		
Colorado Mesa University		
Metropolitan State University of Denver		
University of Northern Colorado		
Colorado State University Pueblo		
Western State Colorado University		
Colorado Mountain College	Four year	Open access
Colorado State University Global Campus		
Aims Community College	Two year	
Arapahoe Community College		
Colorado Northwestern Community College		
Community College of Aurora		
Community College of Denver		
Front Range Community College		
Lamar Community College		
Morgan Community College		
Northeastern Junior College		
Otero Junior College		
Pikes Peak Community College		
Pueblo Community College		
Red Rocks Community College		
Trinidad State Junior College		

Data on field of study are provided using the Classification of Instructional Programs (CIP) codes. Due to sample size constraints, we collapse two-digit CIP codes into broader field of study categories. Since the number of CIP codes varies by credential level, we define one field of study category for certificate and associate's degree programs (see Table D3) and another for bachelor's degrees (see Table D4).

Table D3. Fields of study for certificates and associate's degree programs by two-digit CIP code.

Field of study	Two-digit CIP
Industrial arts	01 – Agriculture, agriculture operations, and related sciences 03 – Natural resources and conservation 10 – Communications technologies/technicians and support services 46 – Construction trades 47 – Mechanic and repair technologies/technicians 48 – Precision production 49 – Transportation and materials moving
Health	42 – Psychology 51 – Health professions and related programs
Business and STEM	04 – Architecture and related services 11 – Computer and information sciences and support services 14 – Engineering 15 – Engineering technologies and engineering-related fields 22 – Legal professions and studies 41 – Science technologies/technicians 45 – Social sciences 52 – Business, management, marketing, and related support services
Consumer and public services	09 – Communication, journalism, and related programs 12 – Personal and culinary services 13 – Education 16 – Foreign languages, literatures, and linguistics 19 – Family and consumer sciences/human sciences 30 – Multi/interdisciplinary studies 31 – Parks, recreation, leisure, and fitness studies 43 – Homeland security, law enforcement, firefighting, and related protective services 50 – Visual and performing arts
Liberal arts	24 – Liberal arts and sciences, general studies and humanities

Table D4. Fields of study for bachelor's degree programs by two-digit CIP code.

Field of study	Two-digit CIP
Health	26 – Biological and biomedical sciences 51 – Health professions and related programs
STEM	04 – Architecture and related services 11 – Computer and information sciences and support services 14 – Engineering 15 – Engineering technologies and engineering-related fields 27 – Mathematics and statistics 40 – Physical sciences
Business	52 – Business, management, marketing, and related support services
Arts, liberal arts, and humanities	05 – Area, ethnic, cultural, gender, and group studies 16 – Foreign languages, literatures, and linguistics 23 – English language and literature/letters 24 – Liberal arts and sciences, general studies and humanities 30 – Multi/interdisciplinary studies 38 – Philosophy and religious studies 50 – Visual and performing arts 54 – History
Career-focused	01 – Agriculture, agriculture operations, and related sciences 03 – Natural resources and conservation 09 – Communication, journalism, and related programs 19 – Family and consumer sciences/human sciences 31 – Parks, recreation, leisure, and fitness studies 43 – Homeland security, law enforcement, firefighting, and related protective services 44 – Public administration and social service professions 49 – Transportation and materials moving
Social sciences and teaching	13 – Education 42 – Psychology 45 – Social sciences

Appendix E: Public-Use Data and Methodology

American Community Survey (ACS): ACS is a wide-ranging nationally representative survey conducted annually by the US Census Bureau. Each year the ACS is mailed to over 3 million households across the United States. We extracted publicly available data gathered by this survey to provide context and details that could not be estimated using the Colorado Department of Higher Education data. Depending on what is being analyzed, we use a variety of different data restrictions.

Colorado's educational attainment goal focuses on 25- to 34-year-olds. We use this age range to provide context on Colorado's progress in reaching its goal. For instance, we calculate educational attainment by race and ethnicity across states and the nation in order to determine the educational attainment gaps between Whites and Latinos. In Colorado specifically, we determine the likelihood of whether Whites and Latinos who were born in Colorado are still living in the state.

Parental educational attainment is estimated by calculating the educational attainment of parents who have children under the age of 18 living in their households.

Employment information is missing for Colorado high school graduates who did not enroll in a public Colorado college. In order to come up with estimates, we create a comparable group using 19- to 26-year-olds. This age range represents the ages of 99 percent of Colorado high school graduates when they enter the Colorado labor market. Since self-employed and armed forces are not included in unemployment insurance (UI) wage records, we also exclude them from employment analysis.

Integrated Postsecondary Education Data System (IPEDS): IPEDS collects a broad array of information on postsecondary institutions in the United States. IPEDS consists of 12 different survey components covering such topics as enrollment, student financial aid, institutional finances, and completion rates. This data is collected annually, and surveys are mandatory for all postsecondary institutions participating in federal financial assistance programs (Title IV of the Higher Education Act of 1965). This public data set was used to gather information on postsecondary institutional characteristics, enrollment patterns, and institutional finances.

Western Interstate Commission for Higher Education (WICHE): WICHE produces *Knocking at the College Door*, which contains projections of high school graduates. The latest data that projects high school graduates through 2032 was used to estimate the projected change in the number of high school seniors and high school graduates in Colorado. For more information about how WICHE estimates its projections see Appendix C: Technical Information and Methodology of *Knocking at the College Door*.

Rocky Mountain Divide: Lifting Latinos and Closing Equity Gaps in Colorado
can be accessed online at cew.georgetown.edu/Colorado

Georgetown University
Center on Education and the Workforce
3300 Whitehaven Street, NW
Suite 3200
Washington, DC 20007

GEORGETOWN UNIVERSITY
Center *on* Education *and the* Workforce
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