

DATA BRIEF

TO AND THROUGH

COMMUNITY AND TECHNICAL COLLEGE
PATHWAYS IN SOUTH SEATTLE AND
SOUTH KING COUNTY

OCTOBER 2018



*Community Center for Education Results,
supporting the Road Map Project*

ABOUT THE ROAD MAP PROJECT

The Road Map Project is a collective impact initiative that began in 2010 to improve student achievement from cradle through college and career in seven King County, Washington school districts: Auburn, Federal Way, Highline, Kent, Renton, (South) Seattle, and Tukwila. Together, this region is home to more than 127,000 students, of whom 71 percent are of color, 55 percent are low-income and 22 percent are English language learners.

Through multisector collaboration with hundreds of partners, the Road Map Project aims to increase equitable policies and practices in education systems by 2020 and for 70 percent of its region's youth to earn a college degree or career credential by 2030

ABOUT THE COMMUNITY CENTER FOR EDUCATION RESULTS

The Community Center for Education Results (CCER) is a nonprofit created to staff the Road Map Project, including providing data and research support. CCER developed and maintains an education data warehouse and conducts analysis and research on behalf of community partners working for student success. The team centralizes the wealth of information made available by educational institutions and governments to illuminate inequity, build better systems, and support continuous improvement.



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BACKGROUND

It is increasingly important in today's economy for young people to earn some kind of postsecondary credential—a bachelor's degree, associate degree, or technical certificate. Georgetown University researchers have found bachelor's degree holders make about twice as much annually as workers with only high school diploma (\$62,000 compared with \$36,000) and that associate degree holders make about \$11,000 more per year than workers with only high school diploma (Georgetown Center for Education & the Workforce, 2018). Researchers have also found that some short-term certificates can lead to stable, living wage jobs (Georgetown Center for Education and the Workforce, 2012).

A 2016 analysis by the Washington Roundtable projects that most of the 740,000 new jobs expected in Washington State between 2016 and 2021 will require some kind of postsecondary credential (Washington Roundtable, 2016). In the Puget Sound region, the demand for postsecondary skills is even greater than in the

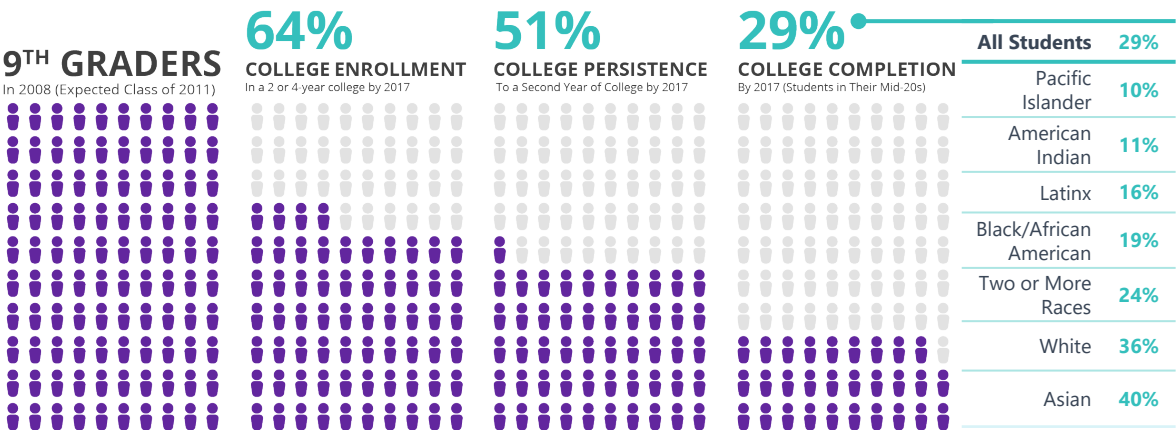
state overall. A recent University of Washington study estimates that more than half of the 62,000 annual job openings in King, Snohomish, and Pierce counties require some kind of postsecondary credential (Myers-Twitchell, et al., 2017).

Unfortunately, the education system in South Seattle and South King County—known in this report as the Road Map Project region—is a “leaky pipeline” that leaves many students unable to compete for stable, living wage jobs. As Figure 1 shows, less than 29% of ninth graders earn a two- or four-year degree by their mid-twenties. For many students of color, the rates of completing a credential is even lower.

While this paints a bleak picture it is important to acknowledge that the region is seeing steady progress in some areas. As summarized in Figure 2, student performance in the high school setting has been improving since 2010.

Following a cohort of ninth graders to and through college

Figure 1. Ninth graders of 2008, nine years later

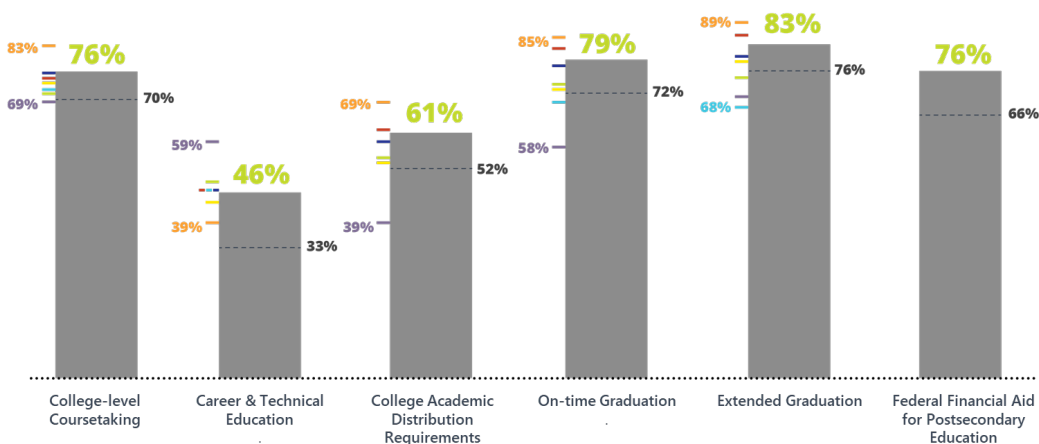


Source. CCER education data warehouse; OSPI CEDARS and NSC student-level via ERDC

Since then, more of the region's students have been taking college-level courses, finishing career and technical education programs, fulfilling the course requirements needed to get into a public four-year college in the state, graduating high school on time, and completing their Free

Application for Federal Student Aid (FAFSA). Though progress is still needed on each of these metrics—especially with regard to closing racial and ethnic opportunity gaps—the general trend since 2010 is positive and suggests that the region is heading in the right direction (Figure 2).

Figure 2. Coursetaking and high school graduation among Road Map Project region students

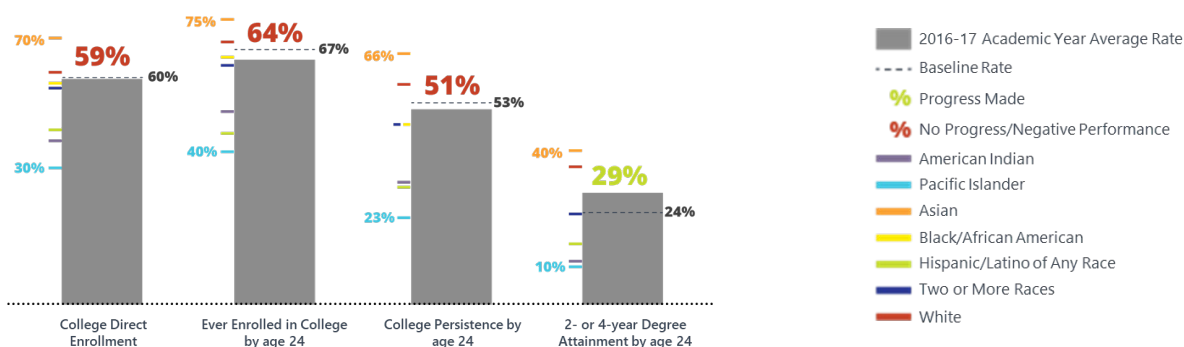


Sources: The BERC Group; National Student Clearinghouse (NSC) and OSPI CEDARS student-level data via ERDC; OSPI Report Card Data Files; U.S. Department of Education: Federal Student Aid Office. Prepared by CCER Data & Research Team

A look at Road Map Project region student enrollment and success in postsecondary settings, summarized in Figure 3, provides a decidedly different picture. Despite gains at the high school level since 2010, postsecondary enrollment and persistence rates have declined. Though there

have been modest improvements in degree attainment (from 24% to 29%), this rate of growth is far too slow. The region must also address unacceptable opportunity gaps by race and ethnicity, which remain substantial across all metrics.

Figure 3. College enrollment and success among Road Map Project region students



Source: CCER education data warehouse: OSPI CEDARS and NSC student-level via ERDC

If students in the Road Map Project region are going to be able to earn a living wage, education leaders will need to take action to improve postsecondary enrollment, persistence, and completion rates.

In order for these stakeholders to collaborate effectively, they need a clear sense of how the local education system is performing and clarity around which aspects are most in need of improvement.

ABOUT THE REPORT

In January 2016, the Community Center for Education Results (CCER) published a first-of-its-kind study on student trajectories through Road Map Project region community and technical colleges (CTCs). The report used data from the high school graduating class of 2011 and explored how rates of student success vary by race and ethnicity across a range of indicators (Avery & Thomas, 2016). In fall 2017, CCER initiated work on this report using newly available data on the high school graduating class of 2012. The goal of this report is to examine postsecondary outcomes among 2012 high school graduates. It is intended to support leaders at local CTCs, K-12 school districts, and schools as well as education advocates in their individual and collective efforts to improve student outcomes. To accomplish these goals, this analysis refines and expands the set indicators that were established by the Road

Map Project for the region's students in the 2016 report. The current report also includes a multivariate analysis that attempts to identify which indicators and student characteristics are most likely to predict on-time postsecondary credential completion in a local CTC.

The information shared in this report, it's companion dashboard, and presentation advance the goal of learning and practice improvement. We acknowledge that the analysis is not without limitations and we have tried to be as transparent as possible about our data and methodology so that others might be able to improve upon this work in subsequent analyses. Our hope is that this report provokes healthy dialogue to propel stakeholders and institutions to take action.

RESEARCH QUESTIONS

This report aims to answer six questions that emerged from discussions with the Puget Sound Coalition for College and Career Readiness, the Puget Sound College and Career Network (PSCCN) and institutional research staff at local community and technical colleges:

- 1 ► How many Road Map Project region high school graduates enroll directly in college? Where do they enroll?**
- 2 ► Who are Road Map Project region high school graduates that directly enroll in local CTCs?**
- 3 ► How many of the region's CTC enrollees persist to year two? How many complete or transfer within three years?**
- 4 ► To what extent is our system supporting students to reach key Indicators of Student Success at CTCs?**

- 5 ► What is the relationship between advanced coursetaking in high school and student success in CTCs?
- 6 ► What are the strongest predictors of on-time credential completion?



*Photo courtesy of
Reconnect to Opportunity's
#oyimworthit campaign.
For more: www.reopp.org*

DATA SOURCES AND
METHODOLOGY

Data for this report come from several sources. The analysis of student enrollment in college relies on data from the CCER longitudinal education data warehouse (see Appendix A: Data sources and definitions) as well as the Washington State Education Research and Data Center (ERDC) High School Feedback Report. The High School Feedback Report is published annually to help high school and school district leadership understand the postsecondary pathways of their recent high school graduates. The High School Feedback Report is comprised of information from the following sources: 1) Community and technical college enrollment is provided by the Washington State Board for Community and Technical Colleges; 2) Enrollment in public four-year colleges comes from the Public Centralized Higher Education Enrollment System (PCHEES) maintained by the Office of Financial Management (OFM), and; 3) Enrollment and completion data from private colleges in Washington State and out of state institutions come from the National Student

Clearinghouse.

Throughout this report, data are disaggregated by race and ethnicity. We acknowledge that *income-status matters too*, however the data available do not allow us to look at these detailed outcomes by free and reduced-price lunch (FRPL).

Additionally, the systemic inequities faced by our local youth are largely circumscribed by how racism operates in the education system. The race and ethnicity categories used in this report come from students’ high school records. When enrolling in school each year, students themselves, their parents, or in rare cases school staff, identify their race and ethnicity on school forms. This information is reported by high schools to the Office of Superintendent of Public Instruction (OSPI) once each year. OSPI guidelines adhere to federally mandated ethnic and racial categories, which are summarized in Table 1.

Table 1. Federally Mandated Ethnic and Racial Categories

Hispanic/Latino	A person of Cuban, Mexican, Puerto Rican, South or Central American or other Spanish culture or origin regardless of race
American Indian or Alaska Native	A person having origins in any of the original peoples of North and South America (including Central America) and who maintains tribal affiliation or community attachment
Asian	A person having origins in any of the original peoples of the Far East, South East Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.
Black/African American	A person of African descent, having origins in any of the Black racial group
Native Hawaiian or Other Pacific Islander	A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands
White	A person having origins in any of the original people of Europe, the Middle East, or North Africa

Source. OSPI Race Ethnicity Student Data Task Force (2017). *Race and Ethnicity Student Data: Guidance for Washington’s Public Education System*.

As others have noted, these racial and ethnic categories fail to capture the tremendous diversity of the student population (Cooley, 2017). Beginning in the 2018-19 school year, OSPI is requiring all K-12 school districts in the state report a new set of disaggregated racial and ethnic categories. Districts will have until the 2021-22 school year to fully implement the recommendations (OSPI, 2018). These categories feature several improvements including differentiation among students with African origin and students native to the United States with African ancestors, further disaggregation for Asian students and White students, and collection of racial and ethnic categories of “multiracial” students (OSPI Race Ethnicity Student Data Taskforce, 2017).

Additionally, CCER uses the term “Latinx” throughout this report to describe young people who identify as “Hispanic/Latino” on school forms. The term “Latinx” has emerged in recent years as a gender-neutral term that can, as researchers Salinas and Lozano (2017) put it, “disrupt traditional notions of inclusivity and shape institutional understandings of intersectionality.” CCER believes this term better represents Road Map Region students than “Hispanic/Latino.”

This analysis focuses primarily on three-year outcomes of students who graduate from Road Map region high schools and enroll directly into local community and technical colleges. Given lags in data reporting, this means the focus on the most recent cohort for whom three years of post-high school enrollment data were available, or, the graduating high school class of 2012. This analysis does not reflect the impact of policy or practice changes implemented since 2012 in the region’s high schools or CTCs.

Many local colleges and the State Board for Community and Technical Colleges are undertaking substantial efforts to improve student success and close racial/ethnic opportunity gaps including the use of “multiple measures” to improve assessment and placement accuracy, the use of “guided pathways” to create greater coherence for students and “completion coaching” to help students finish their credential. Other recent changes at the high school level, including increased access to rigorous courses and increased rates of financial aid completion, may be beneficial to students, but these improvements are not captured by this analysis. CCER plans to update this analysis on an annual basis and hopes to see progress on indicators outlined in this report as a result of college and high school system improvements currently underway.



Highline Public Schools

FINDINGS

QUESTION 1

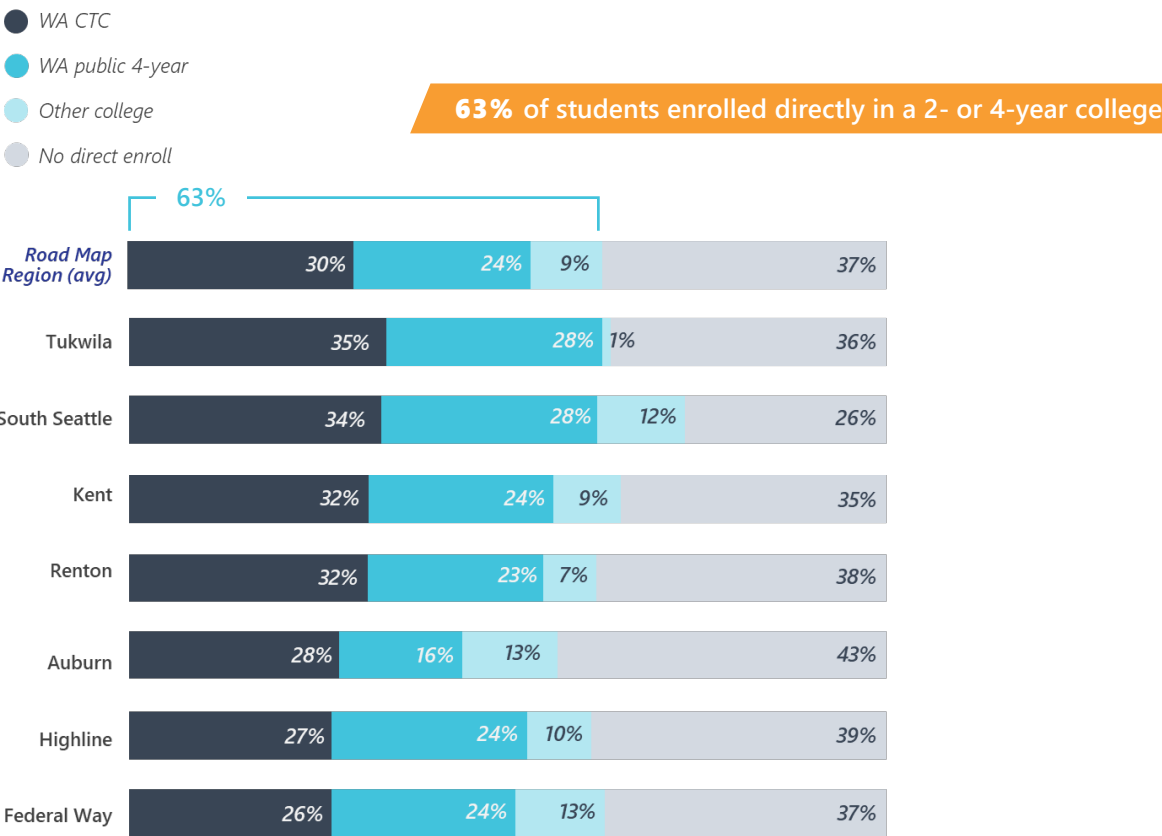
How many Road Map Project region high school graduates enroll directly in college? Where do they enroll?

Sixty-three percent of Road Map Project region students who graduated high school in 2016 enrolled directly in college. Almost one third of this group of graduates, enrolled in a Washington State community and technical college. Students from the region rely on the community college system.

Shown in Figure 4, below, rates of direct college enrollment vary by K-12 district from 74% to 57%.

As noted in the Road Map Project Region 2017 Annual Results Report, the rate of direct college enrollment has changed only minimally since the Road Map Project began in 2010 with regional rates mildly fluctuating from 59% to 63%.

Figure 4. Direct college enrollment among 2016 Road Map Project region high school graduates
By school district and college type



Source. ERDC HS Feedback Report (2016). Figures include some rounding to sum to 100. Note. South Seattle includes Chief Sealth, Cleveland, Franklin, Garfield, Rainier Beach and South Lake.

QUESTION 2

Who are Road Map Project high school graduates who enroll directly in local CTCs?

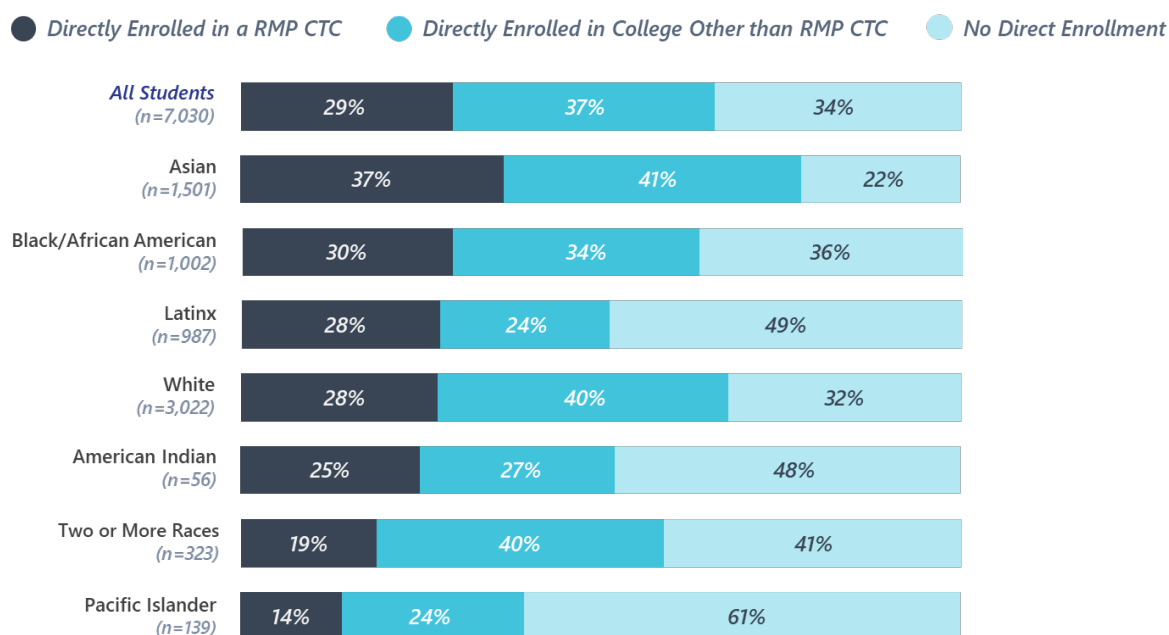
The prior section focused on direct college enrollment patterns for 2016 high school graduates. The following analysis focuses on students who graduated from a Road Map Project region high school in 2012 and enrolled in one of seven local community and technical colleges: Bellevue College, Green River College, Highline College, Renton Technical College, North Seattle College, Seattle Central College, and South Seattle College. The analysis follows this cohort of students three years from their time of first CTC enrollment (from 2012-2015). We acknowledge these data are older and that local K-12 districts and CTCs have been making efforts to boost student success in the intervening years. Even with the time lag, the analysis provides useful information that can help fuel conversation

and additional analysis when new data become available.

As summarized in Figure 5, 66 % of students in the Road Map Project graduating high school class of 2012 enrolled directly in college after high school — a rate that is slightly higher than that of the graduating class of 2016 summarized in the previous section of the report.

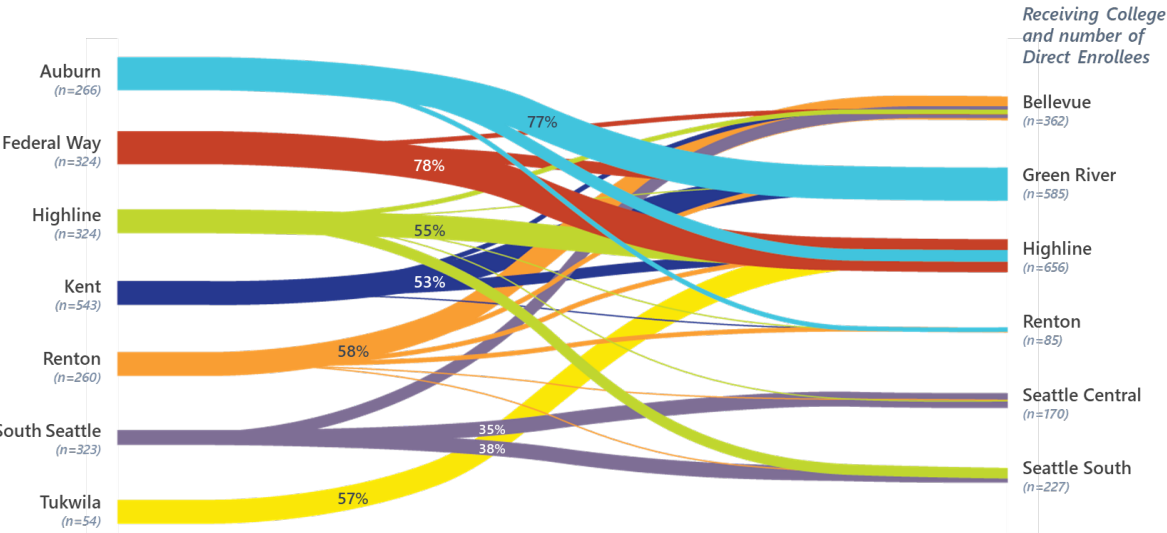
Twenty-nine percent of these students enrolled directly in local CTCs. Direct enrollment varies significantly by race/ethnicity. Seventy-eight percent of Asian students enroll directly compared with 64% of Black/African American students and 52% of Latinx students.

Figure 5. Direct college enrollment among 2012 Road Map Project region high school graduates
By school district and college type



Source. CCER education data warehouse: OSPI CEDARS student-level data via ERDC. National Student Clearinghouse (NSC) via ERDC. Note. South Seattle includes Chief Sealth, Cleveland, Franklin, Garfield, Rainier Beach and South Lake.

Figure 6. Community and technical college feeder patterns among Road Map Project region 2012 high school graduates who directly enrolled in a local CTC



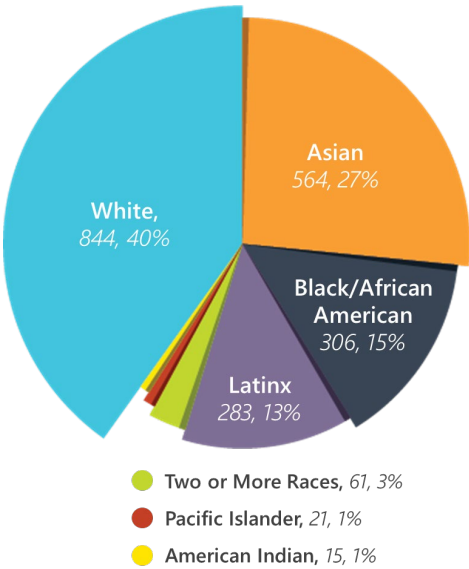
Sources. CCER education data warehouse: OSPI CEDARS and SBCTC student-level data via ERDC. Note. For the purposes of this analysis, we were looking to see if there were specific colleges in the local community that receive large shares - 20% or more - of direct college enrollees. While North Seattle College is included in the analysis, the results for this college have been suppressed –to ensure student privacy, results with fewer than 10 students are suppressed.

We also analyzed high school-to-college enrollment pathways of students who graduated high school in 2012. As summarized above, these relationships are unambiguous: For each K-12 school district, there is one community and technical college that receives the dominant share of all college-going graduates. Looking at this figure, it is clear that Road Map Project region students rely heavily on their local CTC.

More than 2,000 Road Map Project high school class of 2012 graduates enrolled directly in local CTCs. Figure 7 summarizes these students’ demographics. Students of color make up nearly 60% of this cohort and almost half (46%) were considered low-income at the time of high school graduation. Sixty-one percent of the cohort enrolled in college full-time.

Note. Race/ethnicity information come from CTC transcripts. Researchers free or reduced-price status from K-12 student enrollment as a proxy for income. Full time is calculated using each student’s CTC transcript data. Full time is calculated using student CTC data, A student is considered full time if she enrolls in an average of 12 credits per quarter of the three-year study period.

Figure 7. Student demographics among Road Map Project region 2012 high school graduates who directly enrolled in a local CTC



46%
low-income at the time of high school graduation

61%
enrolled full-time

QUESTION 3

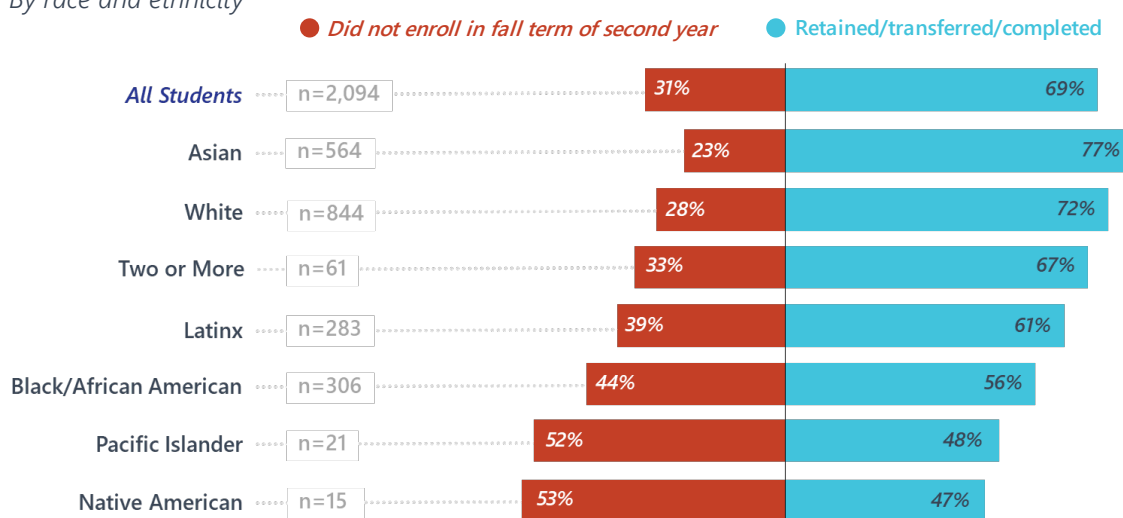
How many CTC students persist to year two? How many complete or transfer within three years?

Student persistence is the proportion of students in a cohort who continue to a second year of college or complete a degree or certificate during their first year in a CTC. Sixty-nine percent of students persist to a second year of college.

Looking at differences by race and ethnicity, students who identify as Black/African American and Latinx persist at lower rates than their White and Asian peers.

Figure 8. Persistence in year two among Road Map Project region 2012 high school graduates who directly enrolled in a local CTC

By race and ethnicity



Sources. CCER education data warehouse; OSPI CEDARS and SBCTC student-level data via ERDC

THREE-YEAR COMPLETION AND TRANSFER RATES

We also wanted to get a sense of how many students in the cohort complete any kind of postsecondary credential (one-year certificate, associate degree, etc.) and/or transfer to a four-year institution within three years. Research on student coursetaking has shown that students who are continuously enrolled on a full-time basis (or as close to full-time as possible) are more likely to complete than students who are enrolled part time and/or take breaks along the way (Shapiro, et al., 2016). The U.S. Department of Education uses 150% time to assess college completion rates. For community and technical colleges, three years is considered 150% time to

complete a two-year credential. We acknowledge that the three-year time horizon is not viewed by all stakeholders as a fair interval for understanding student outcomes. Many community college students enroll on a part-time basis and would, therefore, require at least four years to complete an associate degree and/or transfer to a four-year college. In an attempt to stay consistent with the previous CTC report, we stuck with the three-year time horizon for the purposes of this report. In future research, we hope to examine how student outcomes change when viewed at longer time intervals. In this context, we looked at three-year outcomes in five mutually exclusive categories clustered into “more desirable” and “less desirable” outcome categories (Figure 9).

Figure 9. Description of three-year outcomes used in the following analysis

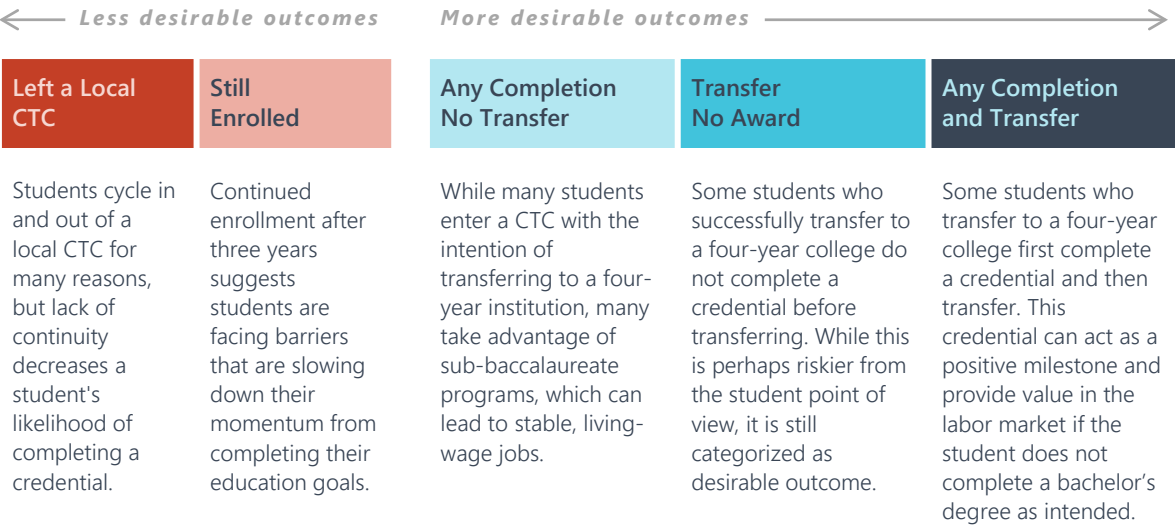


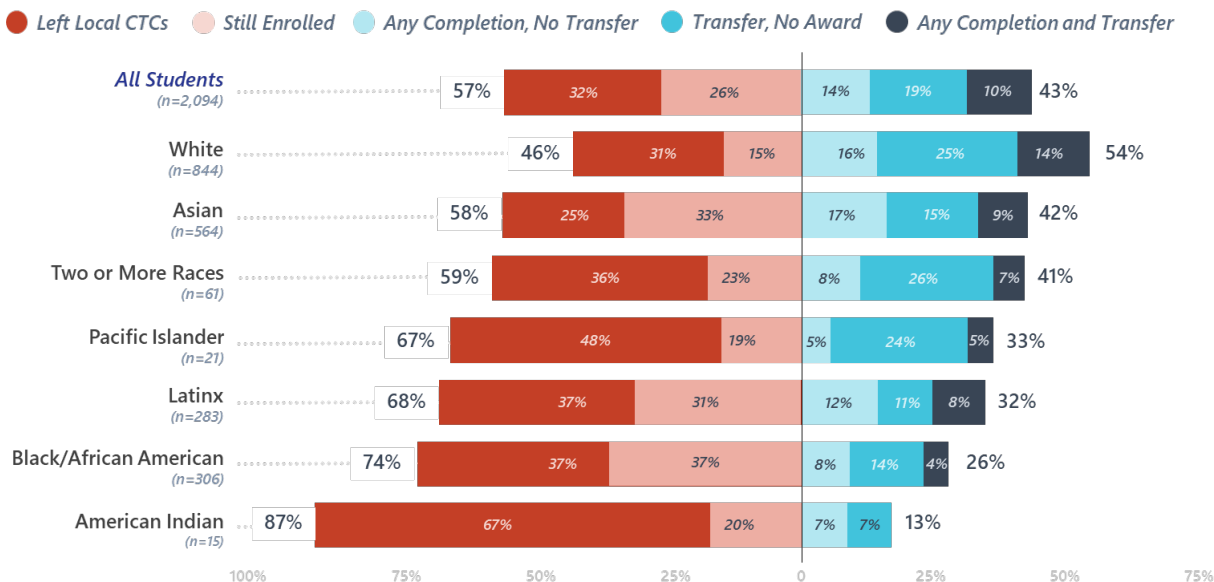
Figure 10 summarizes three-year outcomes for 2012 high school graduates who enroll directly in local CTCs. After three years, 43% of all students in this cohort had completed a credential and/or transferred. Rates significantly vary by race and ethnicity. It is worth noting that 19% of students in the “more desirable” outcome category have transferred, but not yet received any credential.

Previous research from other states suggests many students who transfer without a credential end up dropping out before earning a bachelor's degree, and that they are more likely to succeed if they earn some kind of credential before transferring to the four-year institution (Community College Research Center, 2013). A 2015 analysis by Seattle Colleges found that 73% of students who completed an associate degree before transferring to the University of Washington in Seattle went on to complete a bachelor's degree compared with only 58% of students who did not earn an associate before transfer, a 15-percentage point difference (Seattle Colleges, 2015).



Figure 10. Three-year outcomes among Road Map Project region 2012 high school graduates who directly enrolled in a local CTC

By race and ethnicity



Sources. CCER education data warehouse: OSPI CEDARS and SBCTC student-level data via ERDC

At first glance, these rates of three-year completion appear to align with statewide and national standards. Nationally, 24% of first-time, degree-seeking students entering public community and technical colleges in fall 2013 completed a credential within three years (National Center for Statistics, 2018). In Washington State, the rate for this same student population is 29% (Chronicle of Higher Education, 2018). It is important to note that the national and Washington State completion rates are constructed in adherence to federal graduation rate guidelines and should be lower than the rate for the sample of students in this analysis for a couple of reasons. First, the national and statewide completion rates reflect the rate of on-time completion of all students in the entering cohort regardless of their age at the time of enrollment. Previous research has demonstrated that students enrolling directly from high school complete postsecondary credentials at a rate that can be over 20 percentage points higher than older students (Shapiro et al., 2017)¹. Thus, one would assume

that students who are the focus of this study—direct enrollees from Road Map Project region high schools—should complete at rates that are higher than national and statewide completion rates. Second, the national and state figures are also likely depressed because those figures only count students who earn credentials at the institution where they first enroll as “completers” (i.e., if the student transfers to a different CTC and completes at the new college, she would not be counted as a completer). Our analysis is more inclusive in that we include students who transfer to and complete a credential at another college within the Road Map Project region as “completers.”

FULL-TIME ENROLLMENT

At the national level and within our own region there is growing focus on the importance of encouraging and supporting students to attend college full time.

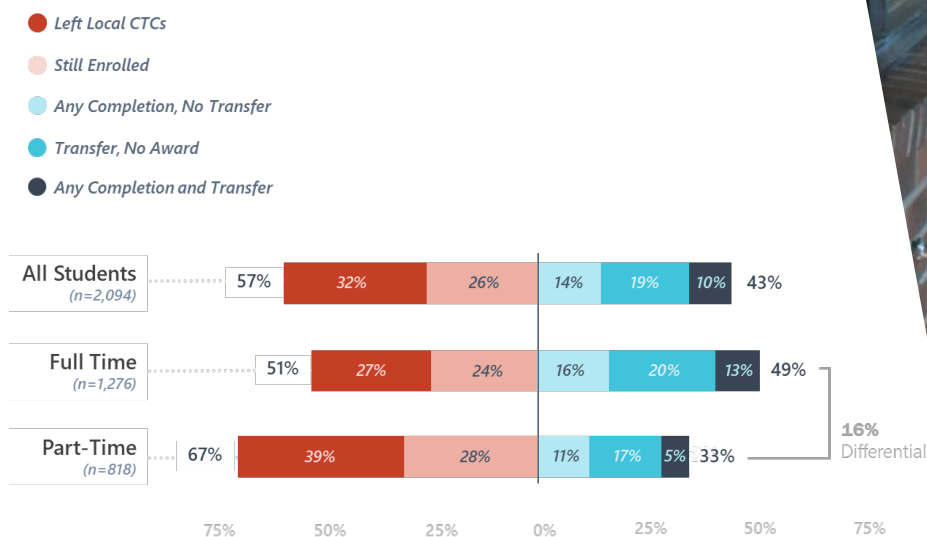
¹ Note. This analysis finds 25.3% of students under age 20 at time of first entry complete within six years compared to 40.9% of students over age 20 at time of first entry.

Previous research has demonstrated that students are more likely to succeed when they build and maintain “academic momentum” and that community college students who attend full-time are more likely to complete a credential than students who do not (Attewell & Douglass, 2014).

To investigate the role of full-time enrollment in the Road Map region, the CCER looked at differences in three-year outcomes for students who attend full time compared with those who attend part time. In this report, students are considered full time if their average per-quarter course load is 12 or more credits. To compute this, we divide a student’s total credits enrolled over the three-year period by their total number of enrolled quarters (omitting any credits and enrollments during summer quarters). As summarized in Figure 11, 49% of students who attend full time complete a credential or transfer within three years compared with 33% of students who attend less than full time.

Figure 11. Enrollment status among Road Map Project region 2012 high school graduates who directly enrolled in a local CTC

By full- and part-time enrollment status and three-year outcomes



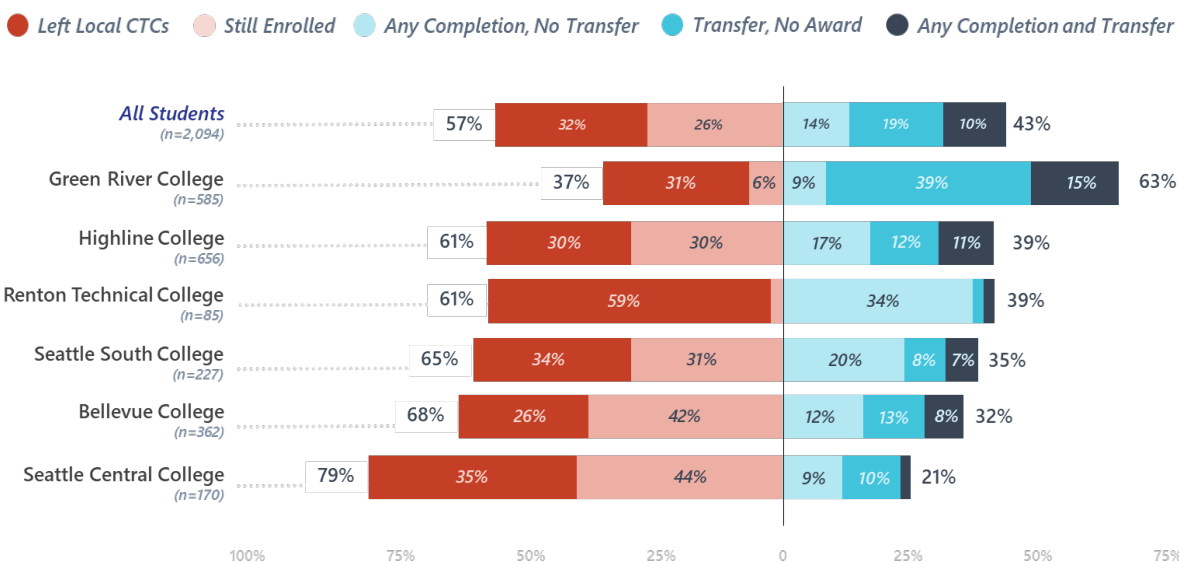
Sources. CCER education data warehouse; OSPI CEDARS and SBCTC student-level data via ERDC

VARIATION BY COLLEGE

While all community and technical colleges in Washington State are subject to a similar state policy context, college leaders make many institution-level policy and practice decisions that can influence student success. In an attempt to understand college-level variation in outcomes, researchers explored three-year outcomes by college. As summarized in Figure 12, three-year outcomes significantly vary by college.

To be noted in examining these outcomes, CTCs serve diverse student populations. These analyses only examine outcomes for a subset of students in each institution and should not be interpreted as a proxy for the broader student population. The median age of students enrolled in Washington CTCs is 26 (State Board of Community and Technical Colleges, 2018).

Figure 12. Three-year outcomes among Road Map Project region 2012 high school graduates who directly enrolled in a local CTC



Sources. CCER education data warehouse; OSPI CEDARS and SBCTC student-level data via ERDC



South Seattle College

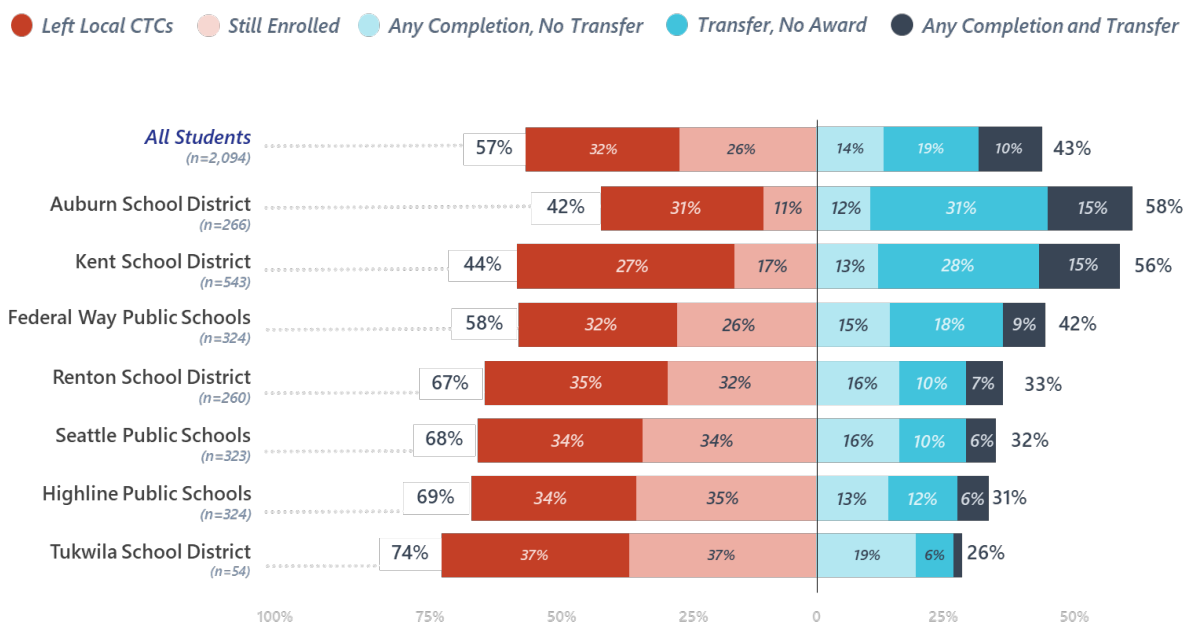
VARIATION BY K-12 SCHOOL DISTRICT

Postsecondary success is not work that colleges should be expected to do on their own. Other stakeholders, including the K-12 education system, have a role to play in making sure students are ready when they arrive. We analyzed

three-year outcomes by K-12 district in an attempt to understand the nature of variation across districts in the Road Map Project region. Results of this analysis are summarized in Figure 13. Similar to three-year outcomes by college, rates of on-time completion and/or transfer vary significantly by K-12 district.

Figure 13. Three-year outcomes among Road Map Project region 2012 high school graduates who directly enrolled in a local CTC

By K-12 school district



Sources. CCER education data warehouse; OSPI CEDARS and SBCTC student-level data via ERDC



Highline Public Schools

QUESTION 4

To what extent is our system supporting Road Map Project students reach key Indicators of Student Success at local community and technical colleges?

Persistence and completion rates of Road Map Project region high school graduates who enroll directly in local CTCs are low and gaps by race and ethnicity are significant. The region's community and technical college leaders are committed to improvement and are identifying and scaling breakthrough practices that can change outcomes in substantive ways. Looking at rates of persistence and completion on their own, however, is not enough to inspire practice change. These are high-level outcomes with many underlying factors, which can make it difficult for practitioners who want to take action know where to start. To assist practitioners, we sought to identify "key indicators" that are: 1) likely to boost rates of college completion if fulfilled, 2) influenceable by practitioners and students, and 3) measurable with readily accessible data in less than three years.

COLLEGE READINESS MEASURE

Developmental (also known as remedial or pre-college) education slows student time to completion and is costly to students, colleges, and the state. By taking these courses, students may feel stigmatized. Developmental education courses have been studied extensively and most studies find that these courses are costly and provide few, if any, benefits to students (Xu, 2017).

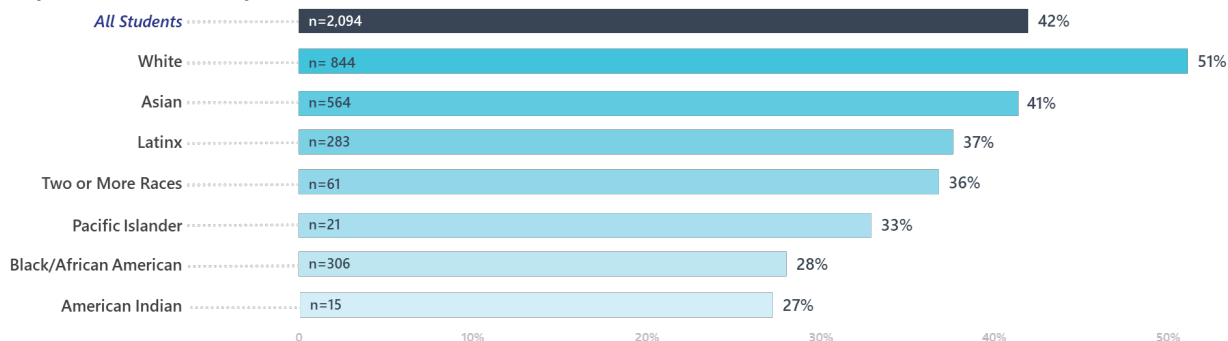
Whereas it might be understandable that students who are re-entering college might need a refresher before progressing to college-level coursework, one would reasonably expect that students enrolling directly from high school would be college ready at the time of enrollment.

Table 2. College Success Indicators

Indicator	Definition
College ready	Students who bypass remedial courses over three-years of enrollment
Complete 30 credits in the first year	Students who attempt and complete 30 or more credits by the end of their first year
Concentrate in the first year	Students who concentrate within a specific program of study in their first year –completing 15 credits in the same programmatic area.
Pass college-level math by the end of year two	Students who pass a college-level math class (received credit) by the end of their second year.

Figure 14. College readiness (basic measure) among Road Map Project region 2012 high school graduates who directly enrolled in a local CTC

By race and ethnicity



Sources. CCEr education data warehouse; OSPI CEDARS and SBCTC student-level data via ERDC

Basic college readiness measure. The most basic way of understanding college readiness is to identify students who do not enroll in any developmental math or English courses within three years of enrollment in a CTC. Figure 14 provides a summary of this more basic definition of college readiness by race and ethnicity. We find that 42% of direct enrollees from the high school class of 2012 are “college ready” and that readiness varies significantly by race and ethnicity.

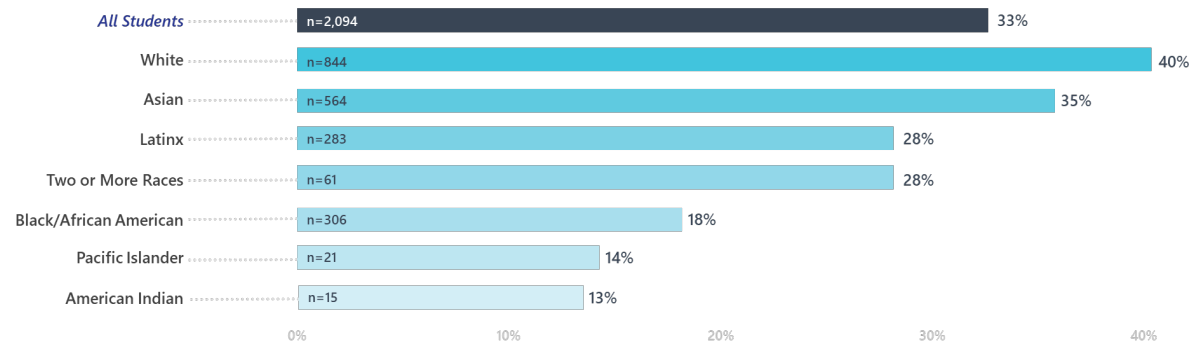
Refined college readiness measure. After consultation with research teams at local community and technical college, we learned that using this basic definition of college readiness was insufficient because it fails to capture students who are referred to developmental education, but simply delay their enrollment in these courses until sometime after the three-year period. To account for this, we added the condition that students who do not enroll in developmental education courses must also attempt at least one college-level math and at least one college-level English course over the three-year period in order to be considered “college ready.” Doing so would indicate that students were in fact “college ready” because they would not be allowed to enroll in college-level math or English courses before fulfilling

their developmental requirements. This refined definition, however, prompted a second definitional dilemma: What about students who are pursuing credentials that do not require college-level math or college-level English? While most programs do require a college-level math and a college-level English course, some do not. To account for this, we added an exception for students who do not take a developmental math or English course and do not enroll in a college-level math and English course over the three-year period, but they do concentrate in a specific program area in their first year. This condition acts as a proxy for students who are pursuing technical credentials that do not require college-level math or English.

Figure 15 provides an overview of college readiness using this revised definition of college readiness. About 33% of Road Map Project high school graduates from the class of 2012 who enrolled in local CTCs did not enroll in developmental courses during a three-year period and did attempt college-level math and English courses or concentrated in a specific program area. Consistent with our findings when looking at a more basic definition of college readiness, Figure 16 also makes clear that there are significant differences in college readiness by race and ethnicity.

Figure 15. College readiness (refined measure) among Road Map Project region 2012 high school graduates who directly enrolled in a local CTC

By race and ethnicity



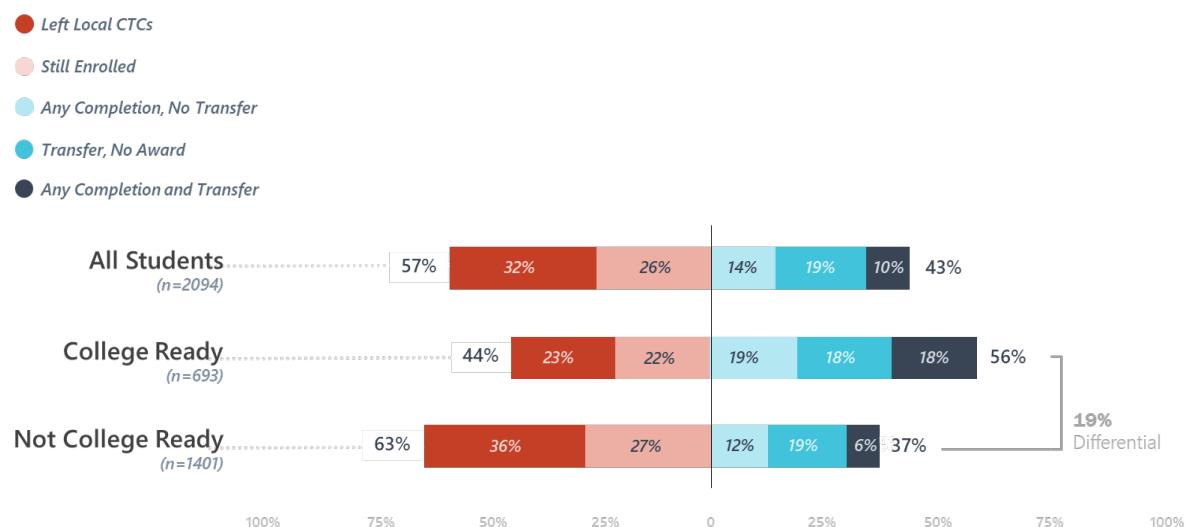
Sources. CCER education data warehouse: OSPI CEDARS and SBCTC student-level data via ERDC

Researchers then examined three-year outcomes among students who met this college ready definition compared with their peers who needed to take one or more developmental courses. As shown in Figure 16, after three years, 56% of

college-ready students completed and/or transferred compared with only 37% of students who took at least one developmental course, a 19-percentage point difference between the two groups.

Figure 16. College readiness among Road Map Project region 2012 high school graduates who directly enrolled in a local CTC

By three-year outcome and readiness



Sources. CCER education data warehouse: OSPI CEDARS and SBCTC student-level data via ERDC

COMPLETE 30 CREDITS IN YEAR ONE

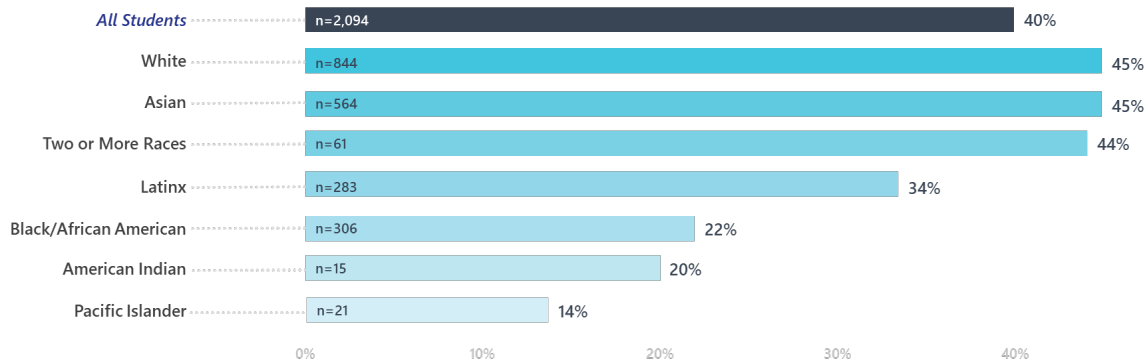
Previous studies of students in Washington State community and technical colleges have established that students who accumulate more credits in their first year are more likely to complete and earn more in wages after college (Jenkins, 2008, Jenkins & Bailey, 2017). This is an intuitive threshold (more credits completed means fewer credits to go) and, because it is easy to track with standard administrative data, it is also highly actionable for students and practitioners.

40% of students complete 30 or more college credits in year one

Among students who graduated from Road Map Project region high schools and enrolled directly in local CTCs, 40% completed 30 credits in their first year. As with other indicators, researchers found differences by race and ethnicity

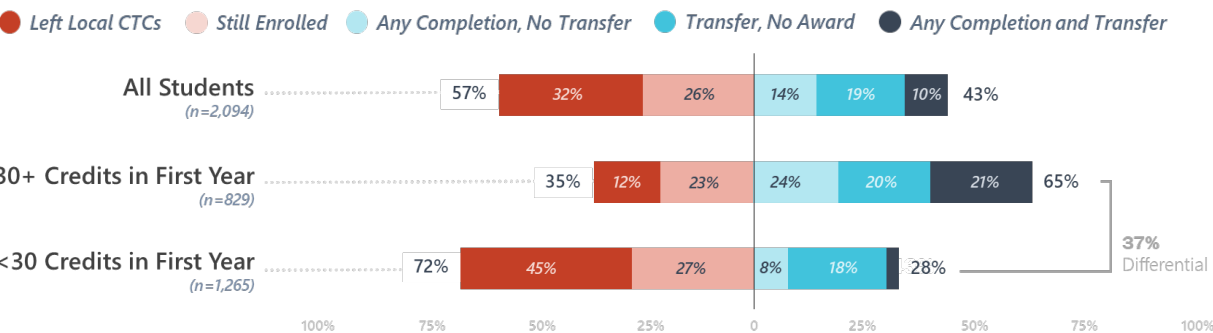
Examining this measure by three-year outcomes, we see that students who completed 30 credits in their first year complete a credential and/or transfer to a four-year college at rate that is 37 percentage points higher than their peers who do not (65% compared with 28%).

Figure 17. Completing 30 or more credits in year one among Road Map Project region 2012 high school graduates who directly enrolled in a local CTC
By race and ethnicity



Sources. CCER education data warehouse: OSPI CEDARS and SBCTC student-level data via ERDC

Figure 18. Completing 30 or More Credits in Year One among Road Map Project Region 2012 High School Graduates who Directly Enrolled in a Local CTC
By three-year outcome and 30 or more credits



Sources. CCER education data warehouse: OSPI CEDARS and SBCTC student-level data via ERDC

COURSE CONCENTRATION IN YEAR ONE

Persisting and taking 30 credits in the first year of college are important Indicators of Student Success, but they do not tell the full story. Completion of a credential requires students complete a specific sequence of courses that fulfill credential requirements established by the college. Researchers at the Community College Research Center (CCRC) have examined student enrollment patterns of those who take courses in a concentrated program area during their first year and those who do not and found that that concentrators have significantly higher rates of credential completion than non-concentrators.

Furthermore, the researchers find that, “students who do not enter a program within a year of enrollment are far less likely to ever enter a program and therefore less likely to earn a credential” (Jenkins & Cho, 2012).

This analysis uses a definition of course concentration that aligns with the definition CCRC

used in previous work on course concentration: Students who complete fifteen credits (usually three courses) in a program area are considered concentrators. We acknowledge that the 15-credit, three-course threshold is novel, but we believe it provides a useful sense of a student’s level of seriousness about pursuing a credential within a specific program area.

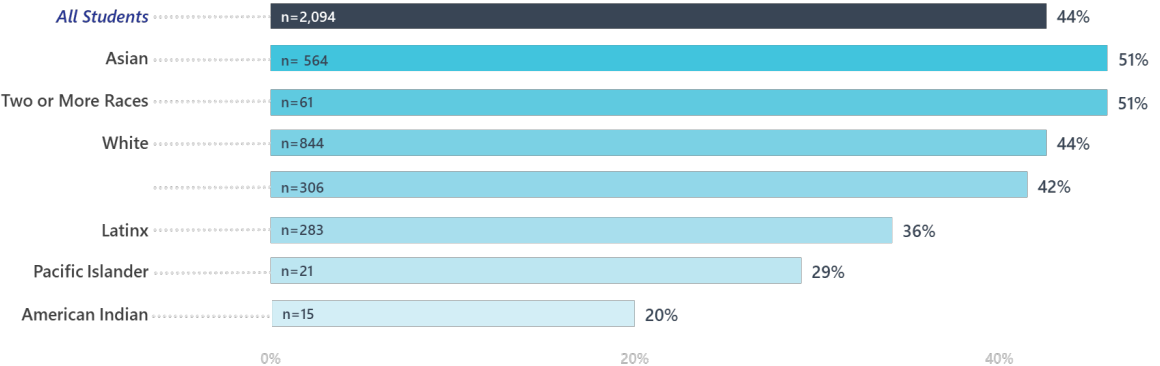
As summarized in Figure 19, 44% of Road Map Project region high school graduates from the 2012 cohort concentrated in a specific program area during their first year.

When examining outcomes by this “concentrator” measure, we see that students who concentrate in a specific program of study complete and/or transfer to a four-year college at a rate 22 percentage points higher than students who do not concentrate in year one –55% compared with 33% (Figure 20).

44% of students concentrated their first-year coursework in a program area

Figure 19. Concentration in a program of study during year one among Road Map Project region 2012 high school graduates who directly enrolled in a local CTC

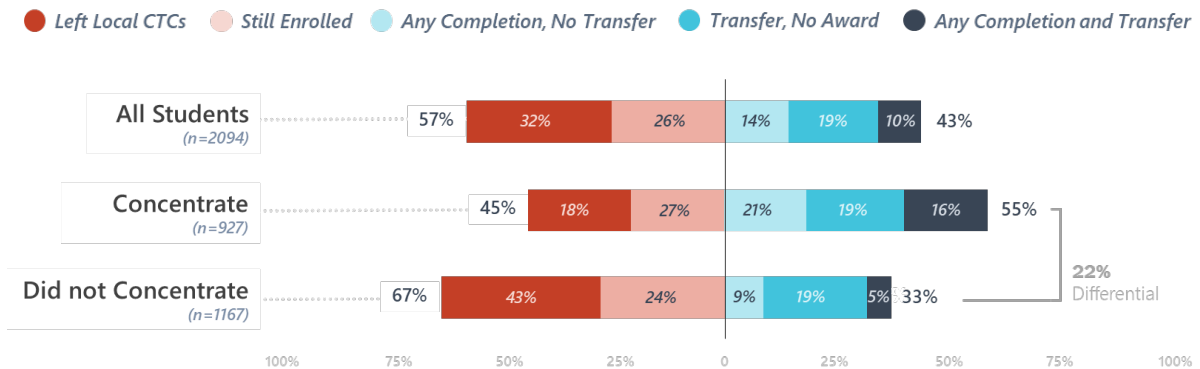
By race and ethnicity



Sources. CCER education data warehouse: OSPI CEDARS and SBCTC student-level data via ERDC

Figure 20. Concentration in a Program of Study During Year One among Road Map Project Region 2012 High School Graduates who Directly Enrolled in a Local CTC

By Three-Year Outcome and Course Concentration



Sources. CCER education data warehouse: OSPI CEDARS and SBCTC student-level data via ERDC

PASS COLLEGE-LEVEL MATH BY THE END OF YEAR TWO

College-level math is a requirement for almost all postsecondary credentials and it is a well documented gatekeeper to college completion (Bailey, Jeong, & Cho, 2009). In order to maintain momentum toward a credential, it is important that students fulfill their college-level math requirement quickly because delaying enrollment

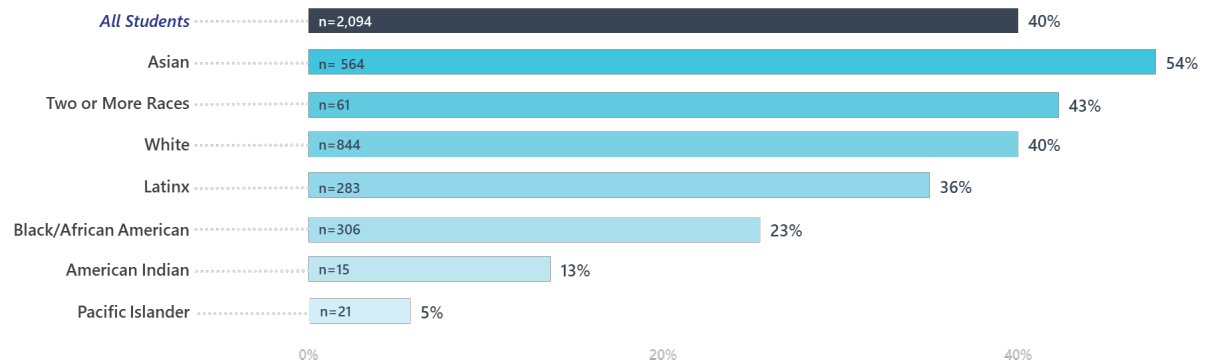
can lead to loss of key mathematical concepts and overall academic momentum.

As summarized in Figure 21, only 40% of 2012 high school graduates who enroll directly in Road Map area CTCs complete a college-level math course by the end of their second year.

40% of students complete a college math course by the end of year two

Figure 21. Taking a college-level math course by end of year two among Road Map Project region 2012 high school graduates who directly enrolled in a local CTC

By race and ethnicity



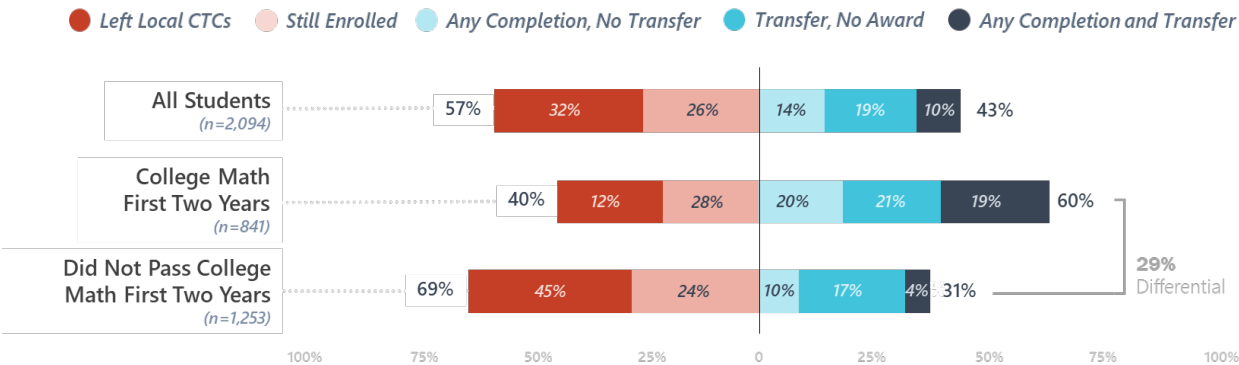
Sources. CCER education data warehouse: OSPI CEDARS and SBCTC student-level data via ERDC

As shown in Figure 22, the analysis found 60% of students who complete a college-level math course by the end of their second year complete

and/or transfer within three years compared with 31% of those who do not – a 29percentage point differential between these two groups.

Figure 22. Taking a college-level math course by end of year two among Road Map Project region 2012 high school graduates who directly enrolled in a local CTC

By three-year outcome



Sources. CCER education data warehouse; OSPI CEDARS and SBCTC student-level data via ERDC

QUESTION 5

What is the relationship between advanced coursetaking in high school and student success in local CTCs?

Students are increasingly enrolling in college-level courses in high school as a way to gain credit and early exposure to the kinds of courses they will encounter in the next phase of their educational journey. There are many programs that facilitate college-level coursetaking for high school students. This analysis looks at student participation in three such programs: Advanced Placement, International Baccalaureate, and Running Start.

ADVANCED PLACEMENT

Since the 1950s, the College Board has offered Advanced Placement (AP) courses as a way for students to gain early exposure to college coursework. While some have challenged the

benefits of the program (e.g., Tierny, 2012; Tugend, 2017), other studies have shown that these courses can have beneficial effects on rates of high school graduation and enrollment into a four-year college (Long, Conger, & Latarola, 2012). AP courses remain a popular option for a growing number of young people. Student participation has grown steadily each year and in the 2016-17 academic year, over 2.7 million students participated in AP courses across the country (College Board, 2017).

As summarized in Table 3, 33% of students who graduated from Road Map Project region high schools and enrolled directly in local CTCs participated in at least one AP course in high school.

Table 3. AP and IB coursetaking among Road Map Project region 2012 high school graduates who directly enrolled in a local CTC

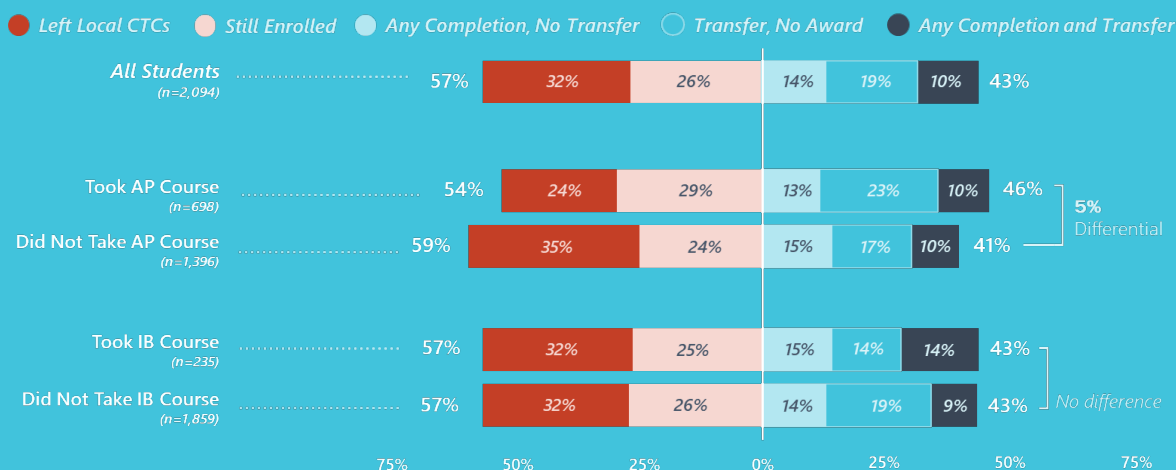
By race and ethnicity

	Total	Advanced Placement	International Baccalaureate
All Students	2,094	33%	11%
American Indian	15	20%	7%
Asian	564	38%	11%
Black/African American	304	25%	11%
Latinx	283	29%	13%
Pacific Islander	21	14%	14%
Two or More Races	61	43%	11%
White	844	35%	10%

Sources. CCER education data warehouse; OSPI CEDARS and SBCTC student-level data via ERDC

Figure 23. AP and IB coursetaking among Road Map Project region 2012 high school graduates who directly enrolled in a local CTC

By three-year outcome



Sources. CCER education data warehouse; OSPI CEDARS and SBCTC student-level data via ERDC

INTERNATIONAL BACCALAUREATE

The International Baccalaureate (IB) program was founded in the 1960s. The program, “aims to develop inquiring, knowledgeable, and caring young people who help to create a better and more peaceful world through intercultural understanding and respect” (International Baccalaureate, 2018). The program is designed for 3- to 19-year-olds including a high school module. There are over 1,800 IB schools in the US and courses are recognized by over 1,600 colleges. Figure 23 provides a summary of IB course participation

rates among students who graduated from Road Map high schools in 2012 and enrolled directly in Road Map region CTCs. 11% of students in the cohort participated in at least one IB course

As shown above, despite the enrollment in these courses, there are little differences in 3-year outcomes. No differences among IB courses and just 46% of students who participated in at least one AP course completed and/or transferred within three years –marginally above the 41% among students who did not.

RUNNING START

Established by the state legislature in 1990, the Running Start program is designed to give 11th and 12th grade students tuition-free access to college-level courses offered at the state’s public colleges and universities ². Running Start courses count toward high school and college credits, making it an efficient and affordable program for students and families. As outlined in state law, colleges work with school districts to establish specific admission standards for the program which often include a minimum GPA requirement and a college readiness assessment (Washington State Legislature RCW 28A.600.310., 2017).

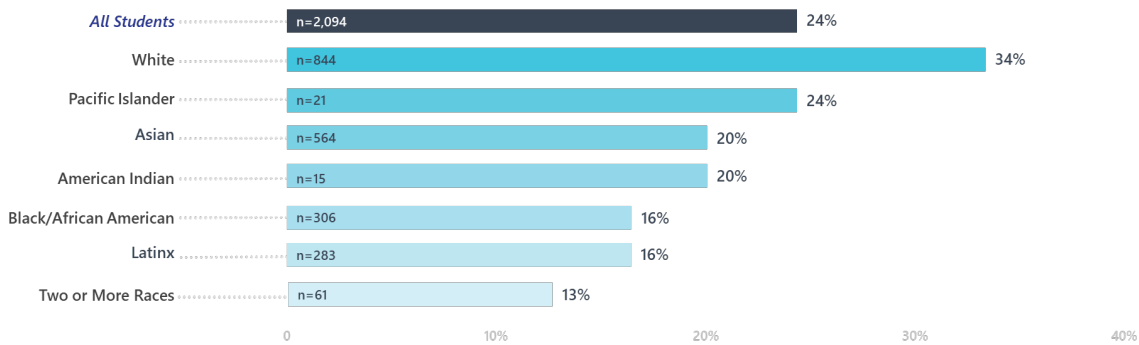
One in four Running Start high school graduates from the Road Map Project region directly enrolled in a local CTC (Figure 24). White students participated at twice the rate of Black/African American and Latinx enrollees. When it comes to completion outcomes, 62% of students who participated in Running Start completed a college credential and/or transfer to a four-year institution within three years compared with 37% of their peers who do not participate in the program (Figure 25).

² Note. Students are allowed to take courses at any of Washington’s 34 community and technical colleges, and at Central Washington University, Eastern Washington University, Washington State University, and Northwest Indian College.

24% of enrollees were in Running Start

Figure 24. Prior Running Start enrollment among Road Map Project region 2012 high school graduates who directly enrolled in a local CTC

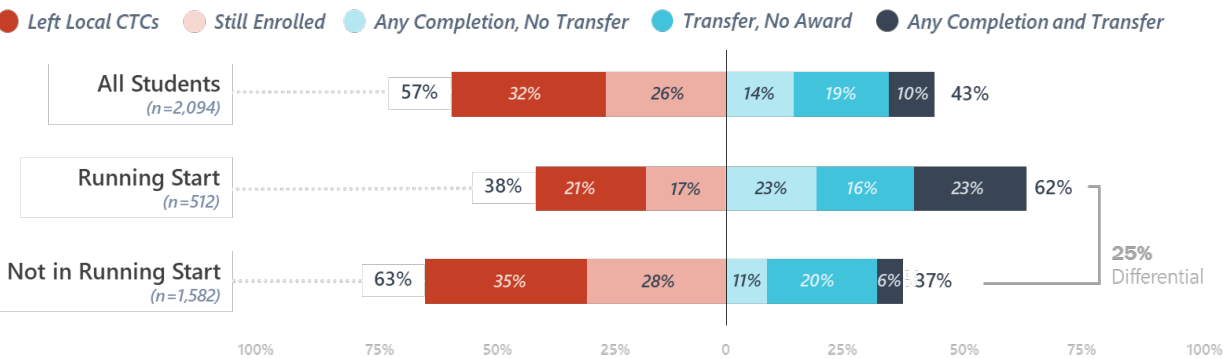
By race and ethnicity



Sources. CCER education data warehouse: OSPI CEDARS and SBCTC student-level data via ERDC

Figure 25. Prior Running Start Enrollment among Road Map Project region 2012 high school graduates who directly enrolled in a local CTC

By three-year outcome



Sources. CCER education data warehouse: OSPI CEDARS and SBCTC student-level data via ERDC

QUESTION 6

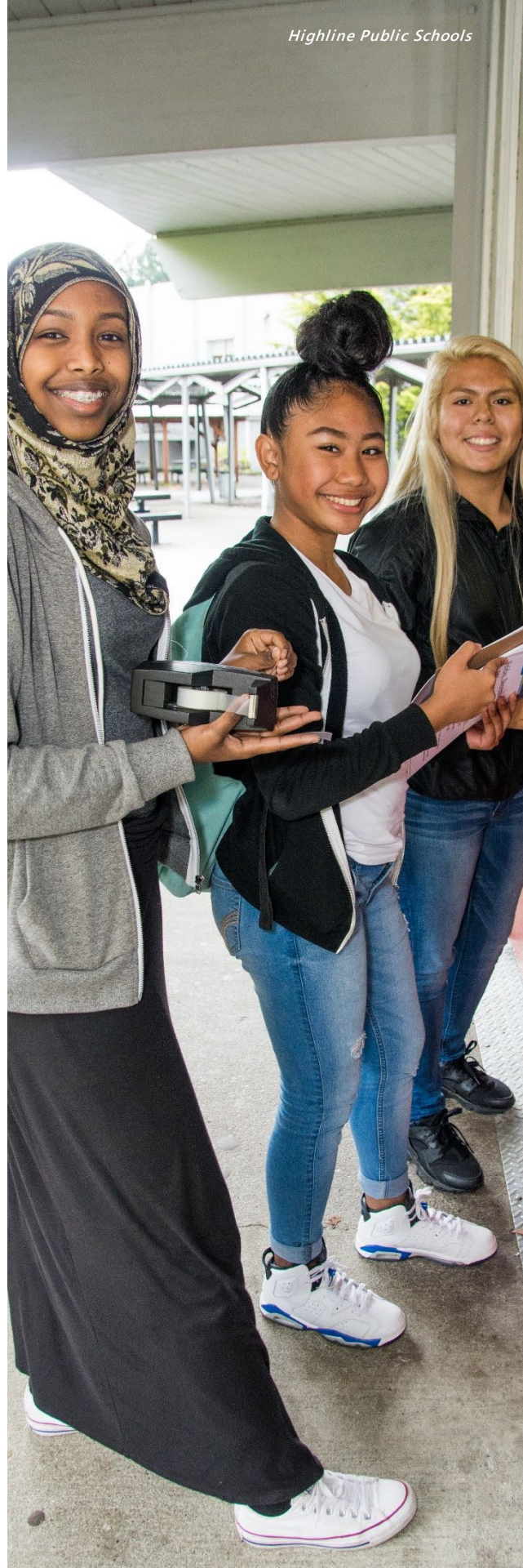
What are the strongest predictors of on-time credential completion?

Data science offers new approaches to derive insights from large data sets. The information summarized in the previous sections of the report gives us a snapshot of outcomes and indicators by student characteristic, but does not tell us which factors might be driving the outcome or indicator. For a deeper look, we constructed a logistic regression model, a type of statistical analysis, that looks at the probability of a student having a successful three-year outcome (i.e., complete an award and/or transfer to a four-year college) by controlling for several variables. This method tests the impact of the presence or the absence of a specified variable (i.e. Running Start, taking 30 or more credits in the first year, etc.) on a desired outcome. Variables included in the model are summarized in Table 4.

Table 4. Indicators Included in Logistic Regression

Domain and Definition	
High School	
•	Number of passed AP courses
•	Number of passed IB courses
•	Running Start participation
Community and Technical College	
•	Accumulate 30 or more credits in year one
•	Concentration in a field of study in year one
•	Complete college level math by end of year two
•	Full-time status
Demographics	
•	Gender
•	Race and ethnicity
•	Cohort year (2011 or 2012)

The model relies on data from 2012 and 2011 Road Map Region high school graduates. While the model is imperfect, standard statistical tests increase our confidence that it is reliable. Area Under the Curve (AUC) = 78% (helps determine how well model is capturing the variance accurately, ideal is +80%). Classification error = 19% (Cross validated measure for generalizability. Ideal is 20%). The model found no cohort effect.



Students who participate in Running Start have over a 56% probability of completing an award or transferring compared with a 36% probability for those that do not participate.

Students who complete 30 or more credits in their first year have a 54% probability of positive outcomes compared with only about 36% for those who do not complete that credit threshold.

Students who enroll and completed a college-level math course in their first two years of college have a 45% probability of positive outcomes compared with only a 36% probability for those who do not enroll and pass a college-level math course within the first two years.

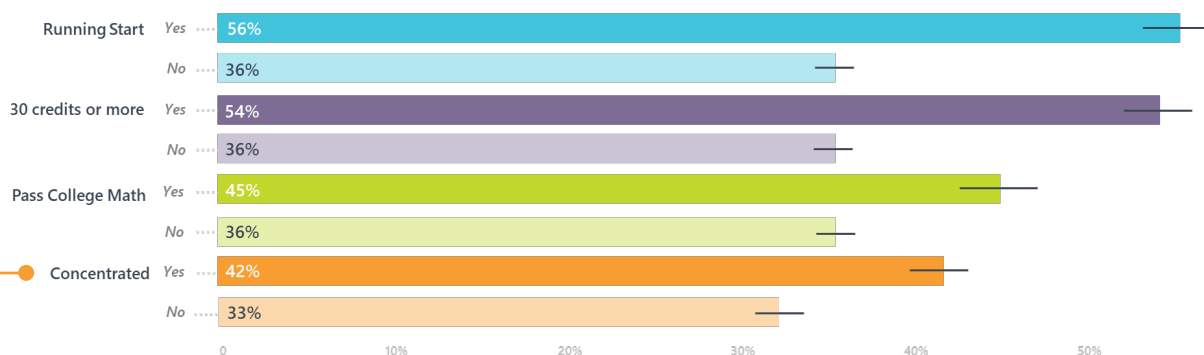
Students who concentrated in a course subject (students who have accumulated 15 credits or more in a specific subject area during their first year) have a 42% probability of positive outcomes compared with only 33% for those who do not concentrate.

Model interpretation. It is important to note that the other variables that were included in the logistic regression model (number of passed IB courses, full-time status, gender, race/ethnicity and cohort year) had no statistically significant impact on student outcomes³. This is not to say that these variables are unimportant, but rather that they did not register significance in this particular model.

Shown below, students who concentrated in a course subject during their first year have a **42% probability of completing** an award or transferring to a 4-year college, much higher than their peers who did not concentrate

Figure 26. Predicted likelihood of CTC completion among Road Map Project region 2012 high school graduates who directly enrolled in a local CTC

By indicator



Sources. CCER education data warehouse; OSPI CEDARS and SBCTC student-level data via ERDC. Predictive model run by CCER.

³ Note. There are other variables not included in this model that can impact a student's likelihood of college success (e.g., participation in college planning, orientation and/or support activities, non-cognitive characteristics, first-generation college going, etc.). We are unable to include these variables here because they are not captured in our database. This is an area that is ripe for additional exploration and could generate additional insights.

RECOMMENDATIONS

Our region must work to improve rates of college enrollment, persistence, and completion. Road Map Project partners and leaders within the region must act boldly to help address systemic inequities at play and improve the life trajectories of low-income young people and young people of color.

Improving student success will require substantial, sustained partnership between K-12 and community and technical college leadership. Together, they should work to achieve the following:

WORK TO ELIMINATE UNACCEPTABLE RACIAL AND ETHNIC OPPORTUNITY GAPS

Current gaps by race/ethnicity are the result of an educational system that has historically been designed to meet the needs of predominantly White, middle-class students. As many school districts and colleges in the region have already acknowledged, we must confront institutionalized racism in our policies, practices, and the very culture of our institutions. The Community Center for Education Results encourages Road Map Project area districts and colleges to conduct internal audits of their resource allocation practices to ensure that students who need additional support are receiving it. District and CTC leadership should also explore processes, such as the University of Southern California's Equity Scorecard (2018), that can help them assess how their organization can become more supportive for students and communities of color.

IMPROVE RATES OF DIRECT COLLEGE ENROLLMENT

Currently, only 59% of Road Map Project region high school students enroll in any type of postsecondary institution within one year of high

school graduation. This report demonstrates that each of the seven K-12 districts has a single CTC that enrolls a dominant share of its high school graduates. These "feeder patterns" provide a great starting point to deepen collaboration. Partners should set measurable targets for improving direct enrollment rates and collaborate to reach those targets. Additionally, K-12 and CTC leaders should explore opportunities to remove administrative barriers to enrollment and/or deploy promising behavioral interventions designed to reduce "summer melt," or students who intend to continue directly to college, but do not (Castleman & Page 2014).

INCREASE THE NUMBER OF STUDENTS WHO ARE "COLLEGE READY" AT THE TIME OF ENROLLMENT

There is a lack of consensus in the field and within the Road Map Project region around how to define and measure "college readiness." Practitioners will, no doubt, take issue with the definition used in this report and say it overstates (or even understates) the magnitude of the problem. Regardless of which definition one wants to use, the fact remains: too many students who enter college directly from high school need to take developmental courses before they can proceed to college level courses. Thankfully, this is an area where colleges, systems and states across the country are innovating at scale with a wide range of approaches. Some colleges are using "multiple measures" (e.g., high school GPA and course taking) for assessment and placement purposes. Others are using "co-requisite" remediation models that allow students to enroll directly in credit-bearing, college-level courses with added supports and are helping to evolve the traditional model for placing and educating students (Bellefield, Jenkins & Lahr, 2016).

Highline College's changes to its assessment and placement practices led to a 24% increase in the share of incoming students who are "college ready" in math (Highline College, 2018). CCER urges leaders to develop and commit to a robust, regionwide plan to eliminate or significantly reduce the need for developmental education.

INCREASE THE NUMBER OF STUDENTS WHO COMPLETE 30 CREDITS IN YEAR ONE

The model included in this report finds a statistically significant, positive relationship between accumulation of 30 credits in the first year and successful three-year outcomes. A student's ability to earn 30 credits in her first year is, of course, partially contingent on her ability to enroll on a full-time basis. Students lead complex lives and it is unrealistic to think that we would ever reach a point where 100 percent of the student population would be able to attend on a full-time basis, but helping more students enroll as close to full-time as possible would certainly help. College should explore strategies to increase full-time enrollment by improving communications around the benefits of full-time enrollment and/or encouraging enrollment during the summer (MDRC, 2018). Though a student's decision to enroll in college on a full-

time basis may seem to be outside of the control of the K-12 system, this is not entirely the case. It is important that high school counselors and others who help students plan for and enroll in college communicate the benefits of full-time enrollment and early credit accumulation.

BUILD A BETTER UNDERSTANDING OF STUDENT EXPERIENCES WITH RUNNING START

It is clear that Running Start is an appealing option for students and participation can lead to higher rates of completion and/or transfer to a four-year college. However, we know that there are dramatic differences in program participation by race/ethnicity and income that must be addressed. These gaps in access to Running Start are well documented—they have been consistently called out in the news and state-funded research reports dating back to 1991 (Long, 2018; Washington State Board for Community and Technical Colleges, 1991; Washington Student Achievement Council, 2014). The state's response to this clear and long-standing equity gap remains unclear and there is a lack of current evidence around basic questions such as: what are the biggest barriers to broader and more equitable participation in Running Start? What types of courses are students taking through Running Start and how do they perform in these courses? Does student course taking via Running Start align with the student's eventual program of study or is coursetaking more exploratory in nature? We encourage K-12 and college leaders to identify high-priority research questions, explore this topic in more depth, use that knowledge to ensure equitable access to the Running Start program, and to scale up program participation.



In addition to the collaborative actions outlined previously, we recommend CTC leaders take additional steps to **explore and address barriers to credential completion that happens before a student transfers to a four-year institution.** A large number of students—nearly 20%—transfer from local CTCs to four-year colleges without first earning a credential. Additionally, there are students who have fulfilled enough credits to earn a credential, but did not complete the process required to receive a credential, or they may have filled out

the paperwork, but have library fines or other infractions that prevent them from receiving their credential (Hechinger Report, 2016). Faced with similar issues, many states and institutions are using a practice known as reverse transfer, or automatically awarding an associate degree to a transfer student when she completes the requirements (Taylor & Bragg, 2015). CCER encourages further inquiry into this topic and a consideration of approaches that can ensure that students who have completed courses necessary to earn a credential receive them.

Strategies for K-12 and CTC leaders...

Results	Strategies
Eliminate unacceptable racial and ethnic opportunity gaps	<ul style="list-style-type: none"> Conduct internal audits of resource allocation to ensure that students who need additional support are receiving it (for example, ensure equitable access to college advising services, information about Running Start, etc.)
Improve rates of direct college enrollment	<ul style="list-style-type: none"> Strengthen “feeder” district-college collaboration to develop and set measurable targets for improving direct enrollment rates Consider strategies that can minimize administrative barriers to enrollment and improve/increase access to information about college-going behaviors associated with higher rates of completion and transfer
Increase the number of students who are “college ready” at the time of college enrollment	<ul style="list-style-type: none"> Develop and commit to a robust, regional plan to eliminate the need for developmental education. Consider use of proven approaches, such as the use multiple measures in college assessment and placement and “co-requisite” developmental education models that eliminate these courses, provide access to college-level math and English courses with support.
Increase the number of students who accumulate 30 credits in first year	<ul style="list-style-type: none"> Encourage/support students to enroll as close to full-time as possible Encourage/support students to enroll in summer courses Improve advising in high school (such as High School & Beyond Planning) Improve/increase advising “touch points” in first year of college Implement guided pathways and/or other research-based approaches that can improve coherence for students
Build understanding of Running Start access and student experiences	<ul style="list-style-type: none"> Conduct further quantitative and qualitative analyses Ensure equitable access to Running Start and scale up participation as appropriate
Address barriers to credential completion before transferring to a four-year institution	<ul style="list-style-type: none"> Conduct further quantitative and qualitative analyses Consider strategies to automatically award credentials to students who meet requirements (such as reverse transfer)

GUIDED PATHWAYS AND PROMISE PROGRAMS: NEAR-TERM OPPORTUNITIES FOR ACTION

Confronted with many of the same challenges that K-12 districts and colleges in our region face, education leaders across the country are looking to take bold and comprehensive action. Two efforts that are gaining traction in Washington State and the Road Map Project region—guided pathways and promise programs—have the potential to accomplish many of the aforementioned recommendations and should be taken up by local leadership.

Guided pathways. Inspired by a body of research conducted by the Community College Research Center and others, a growing number of colleges and state systems are embracing the “guided pathways” model to boost rates of student success. This work is built on the premise that “students are more likely to complete a degree in a timely fashion if they choose a program and develop an academic plan early on, have a clear road map of the courses they need to take to complete a credential, and receive guidance and support to help them stay on plan” (Community College Research Center, 2015). Unlike other program models that CTCs have experimented with in the past, guided pathways is a comprehensive approach that requires substantive change to all aspects of college operations. As researchers are careful to point out, successful implementation of guided pathways requires significant technical and adaptive changes that need serious college-wide commitment over many years (Community College Research Center, 2015).

With support from the state legislature, the Washington State Board for Community and Technical Colleges is actively working to encourage more colleges to embrace the guided pathways approach. The SBCTC’s efforts compliment a recent \$7 million investment in guided pathways by College Spark Washington at ten colleges across the state. Additionally, four colleges in Washington State are working alongside peers from other states to implement

guided pathways as a part of the American Association of Community Colleges Pathways Project (SBCTC, 2018). Two local colleges, South Seattle College and Renton Technical College, are among the “early adopters” of guided pathways in Washington State and could offer lessons learned for other colleges in the region considering similar approaches.

Promise programs. States and localities across the nation have been turning to “promise” and other place-based scholarships and enhanced student supports as a strategy to help boost rates of college access and success. The University of Pennsylvania maintains a database of over 240 active promise programs in the US (Perna, & Leigh, 2017). The promise concept has been replicating at an especially rapid pace in recent years. There were over 23 promise programs in the state of California alone as of August 2016 and 13 of these programs were established in 2016 (Perna & Leigh (in-prep)). Many programs that are emerging nationally are “place-based” scholarships inspired by the Kalamazoo Promise, created in 2005 by anonymous donors and provided young people who attended Kalamazoo Public Schools with financial support to cover the costs of college. Other programs included in the University of Pennsylvania database include “free community college” programs that have been implemented in Tennessee, Oregon, and elsewhere. The University of Pennsylvania has looked extensively at these programs and conclude that these programs have the potential to increase attainment and address inequitable outcomes by race and ethnicity and student income. However, the researchers caution, “whether promise programs achieve this goal will likely depend on how programs are structured and designed” (Perna & Riepe, 2016). Research into promise programs has found, for example, that it is important to pair student financial support with enhanced student services.

Promise programs are starting to replicate and grow in the Road Map Project region presenting an opportunity for system-level change across a range of the results outlined in the recommendations.

South Seattle College has operated the 13th Year Promise Scholarship since 2008. The program started as a small-scale partnership with one high school and has grown to include four high schools that serve over 120 students per year. In November 2017, Seattle Mayor Jenny Durkan signed an executive order to modify the 13th Year program and to expand it across the City of Seattle. As outlined in the executive order, the program's goal is to, "provide the support necessary for all eligible graduates of Seattle Public Schools to attend up to two years (90 credits) of courses at the

three Seattle community colleges" (Durkan, 2017). The program is now included as a part of the Families, Education, Preschool, and Promise Plan that will go before Seattle voters as a property tax levy November 2018. Seizing on this interest, members of the Puget Sound Coalition for College and Career Readiness and the Puget Sound College and Career Network are endorsing a plan for a King County Promise Scholarship and Support System that would provide financial and other supports specifically targeted at boosting outcomes for historically underserved students.

CONCLUSION

Students in the Road Map Project region deserve a world class education system that can help them access living wage jobs and contribute to the dismantling of longstanding inequities by race and ethnicity. Despite broad commitment to student success in the Road Map Project region, our collective efforts are not moving the needle on college enrollment, persistence and completion. Our system simply does not equitably or adequately support students, especially students of color, to earn postsecondary credentials or transfer to a four-year institution within three years. Understanding the Indicators of Student Success—college readiness, completion of 30 credits, concentration and completion of college level math—and paying attention to high school coursetaking are strategies that can help local educators better understand current gaps in the system as well as the highest leverage opportunities for improvement. There are specific steps that K-12 district and CTC leaders can and should take together to change these outcomes, but small-scale responses or responses that address only one part of the student

experience are unlikely to bring about significant changes in results. Comprehensive, system-wide approaches—such as guided pathways and promise programs—require focused, sustained commitment, but provide the best opportunity for bringing about the system that students in the Road Map Project region deserve. K-12 and CTC leadership should take advantage of pre-existing collaborative structures, including the Puget Sound Coalition for College and Career Readiness and Puget Sound College and Career Network as these groups continue to guide this important work.



RESOURCES

RESOURCE

URL

Projects Page: Washington State Board of Community and Technical Colleges

<https://www.sbctc.edu/colleges-staff/programs-services/student-success-center/>

The Encouraging Additional Summer Enrollment (EASE) Project.

<https://www.mdrc.org/project/encouraging-additional-summer-enrollment-ease-project#overview>

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APPENDICES

APPENDIX A DATA SOURCES AND COHORT

Data Sources

The CCER longitudinal, education data warehouse combines students' K-12 school records with CTC school records and National Student Clearinghouse (NSC) college enrollment records. K-12 school districts submit their data to the Office of the Superintendent for Public Instruction (OSPI) CEDARS statewide student-level database.

CTCs submit their data to the State Board for Community and Technical Colleges (SBCTC). ERDC links and transforms these datasets to establish a data source that protects student privacy. ERDC provides CCER with data on students from Road Map Project region schools, and assists CCER with collecting NSC data for these students by providing the necessary data linking that ensures the same level of student data privacy.

Cohort Definition

Our cohort includes high school graduates, and only those who enroll in CTCs within one year of graduating high school (called "direct enrollees"). We include students who enroll in the fall, and also include students enrolling in winter, spring or summer. For students who first enrolled in summer of their high school graduation, we also require that they enroll in an additional quarter during their first-year academic year to be included. Although these definitions make our rates difficult to directly compare to other colleges' and to state and national statistics, they more comprehensively identify the group of recent high school graduates we seek to understand. We currently have two cohorts of students that we can measure in terms of their

three-year outcomes after high school (classes 2011 and 2012).

Completing College Level Math in the First Two Years

This indicator measures the proportion of students that were college-ready in math by the end of their second year (i.e. Student enrolled and passed a college-level math course either in year one and/or by the end of the second year).

- *Numerator.* The number of students that enroll and pass one or more college math courses during their first two years.
- *Denominator.* All students included in the cohort (see section 'Student Cohort Selection')

Completing 30 College Credits Within Year One

A student meets this indicator if they complete 30 or more college-level credits within one full academic year of their first enrollment.

- *Numerator.* The number of students that earn 30 or more college-level credits during their first year.
- *Denominator.* All students included in the cohort, as described earlier.

Concentration in First Year

This indicator measures whether students have an accumulation of 15 credits or more in a specific subject area as defined by the Classification of Instructional Programs (CIP) course codes.

- *Numerator.* Students that accumulated 15 or more credits in a specific subject area by the end of their first year (i.e. Science, Math, English, etc.).
- *Denominator.* All students included in the cohort, as described earlier.

APPENDIX B OUTCOMES MEASURES

Completing a Degree or Transferring to a 4-year College Within 3- Years

This indicator shows student status at the end of three full academic years following high school graduation. As a result, students who first enroll in winter or spring terms are given less time between their first enrollment and the time their outcome is measured, as compared to students first enrolling in the fall term. Completions include all types of 2-year associate degrees and workforce degrees as well as short-term (fewer than 45 credits) and long-term (45 credits or more) certificates.

Outcome Categories for Completing a Degree or Transferring to a 4-Year

Any Completion No Transfer. Student has completed a degree or credential but has not transferred to a 4-year college by their third year.

Any completion and transfer to 4-year. Student has completed a degree or credential and has transferred to a 4-year college by their third year. Students are considered to have transferred to a 4-year college if they do not enroll in a local CTC during their third year and enroll in a 4-year college during any academic year after their final enrollment year in a local CTC, but prior to the end of their third year. We use National Student Clearinghouse enrollment and completion records to determine whether a student has enrolled in a 4-year college outside of local CTCs.

Transfer to 4-year (no completion). Student has not completed a degree or credential but has transferred to a 4-year college by their third year. See above bullet for a definition of transfer to 4-year college.

Still enrolled. Student has not completed a degree or credential, has not transferred to a 4-year college by their third year, and is still enrolled in a local CTC in their third year.

Left CTCs. Student has not completed a degree or credential, has not transferred to a 4-year

college by their third year, and is no longer enrolled in a local CTC in their third year.

Model Parameters and Specification

Student outcomes for the most recent cohort of students were assessed using a logistic regression model, which looked at the probability that a student will receive any type of award or transfer, conditional on a set of predictors, below.

logit(P(AwdT = 1|X)) = B0 + BiXi^T

AwdT = 1 = Student gets an award or transfers within 3 years.
0 = Student is still enrolled or has left the RMP CTC system.

When,

X^T [Gender_i, Race/Ethnicity_i, Fulltime_i, nAP_i, nIB_i, RS_i, CoMath Pass2_i, 30Credits_i, Concentration_i]

and,

Variable	Indicator
Gender	Student reported gender
Race/Ethnicity	Student reported race/ethnicity where 'White' in the reference category
Fulltime	Fulltime status flag
nAP	The number of passed AP courses during high school
nIB	The number of passed IB courses during high school
RS	Running Start flag
CollMathPass2	Completing college level math in the first two years as compared to the cohort
30Credits	Completing 30 college credits within one year
Concentration	Accumulation of 15 credits or more in a subject area

For more technical notes and information visit:
https://github.com/CCER-RMP/CTC_Report

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