Research Brief

Postsecondary credential outcomes for students who enroll in dual credit

This publication is an extension of the 2023 Annual ERDC Dual Credit Report and Dashboard. The companion 2023 Research Brief described the postsecondary enrollment outcomes of Washington high school graduates, while this publication aims to answer additional research questions identified in the 2023 annual report related to postsecondary credential earning.[1] This analysis uses the same cohort methodology and focuses on the six primary dual credit types in Washington[2] for students in the 2015 through 2021 cohorts who graduated from high school (approximately 71,000 students per cohort).

Dual credit types included:

- Advanced Placement (AP)
- International Baccalaureate (IB)
- Cambridge International (CI)
- College in the High School (CiHS)
- Running Start (RS)
- Career and Technical Education Dual Credit (CTE-DC)

This analysis is meant to describe student outcomes as they relate to the number of students receiving a postsecondary credential and the time to credential attainment. The analysis does not consider all factors that may impact those outcomes, such as students' intention to pursue postsecondary credentials after high school. Therefore, these data do not support causal relationships. The analysis also does not investigate other dual credit policy goals or all credential types that a student may earn, such as the CTE-DC goal of preparing students for careers directly after high school through the award of industry-recognized credentials.

Research questions

- What proportion of students who enrolled in dual credit (DC) were awarded postsecondary credentials after they graduated from a public K–12 school in Washington?
- How did enrollment in dual credit correlate with the amount of time/credits to attain a postsecondary credential?
- Were there differences in postsecondary completion by institution type, dual credit type, or student group?

Key findings

1. A growing proportion of high school graduates earned an associate award within three years of high school graduation, driven partially by those awarded during high school through Running Start (RS).
2. Graduates who enrolled in Advanced Placement (AP), International Baccalaureate (IB), College in the High School (CiHS), and RS had higher rates of earning at least one postsecondary credential within six years of high school graduation than the statewide average. The magnitude of this rate increase varied by student group and dual credit type.
3. Students enrolled in RS earned associate and bachelor's degrees sooner and with fewer average credits after high school than the statewide average and other dual credit types. RS was also more likely to have an associate degree as their highest credential than other dual credit types.

To view detailed result tables, see the Appendix file.

[1] In this brief, a postsecondary credential is defined as a certificate from a subbaccalaureate program of study, an associate degree, a bachelor's degree, or a graduate certificate or degree. It does not include industry-recognized credentials, apprenticeships, or licenses. These may be of interest in future research.

[2] For additional information on the student cohort and dual credit type descriptions, see the 2023 Annual Dual Credit Report and Dashboard.

Dual credit enrollment

While the majority of high school graduates enrolled in at least one dual credit course while in high school, the combinations of dual credit type vary greatly and affect this analysis.[3] Table 1 shows the distribution of graduates based on each dual credit type they enrolled in over the course of high school. The dual credit types include graduates who enrolled in only one type as well as those who enrolled in several types of dual credit.

Table 1: Washington graduates in 2015–2021 cohorts by dual credit enrollment

Total Graduates	No Dual Credit	AP	IB	CI	CiHS	RS	CTE-DC
497,715 ***100%***	38,102 *8%*	221,452 *45%*	29,556 *6%*	2,749 *1%*	126,039 *25%*	107,813 *22%*	366,016 *74%*

Across all cohorts, 65% of graduates enrolled in a postsecondary institution at some point after high school through the 2021–22 academic year.[4] However, this rate varies by dual credit enrollment and for those who did not enroll in dual credit (see Table 2). This variation affects the credential attainment metrics after high school among the dual credit types.

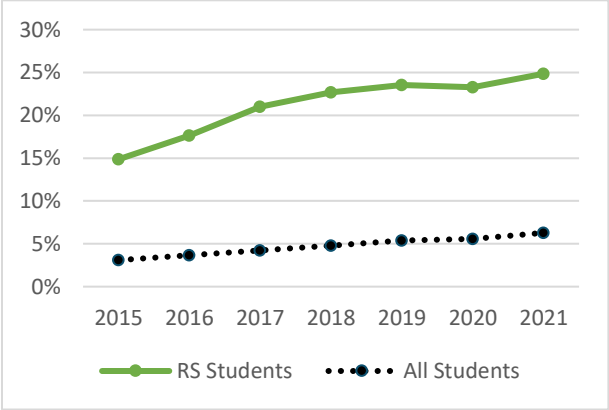
Table 2: Count and percent of graduates enrolled in a postsecondary institution at any point after high school by dual credit type

Total Graduates	No Dual Credit	AP	IB	CI	CiHS	RS	CTE-DC
324,066 ***65%***	14,791 *39%*	177,613 *80%*	22,921 *78%*	2,008 *73%*	93,606 *74%*	88,241 *82%*	234,101 *64%*

Postsecondary credentials awarded during high school

While all dual credit types allow students to earn postsecondary credits, *when* this occurs differs by dual credit type. As a dual enrollment program, all RS courses are transcribed concurrently with the K–12 credit. Although also a dual enrollment program, students enrolled in CiHS may elect to take a course for only K–12 credit. If the student enrolls with the postsecondary institution to take the course for postsecondary credit, it is transcribed concurrently with the K–12 credit. Students enrolled in CTE-DC must take additional action after the completion of the course to transcribe the credits at the postsecondary institution.

Figure 1: Rate of associate degree awarded during high school by cohort



Students completing all graduation and credit requirements may have a postsecondary credential awarded by the time they graduate from high school. Postsecondary certificates were awarded rarely during high school (0.3% of all graduates).[5] Nearly all postsecondary credentials awarded during high school were associate degrees earned through RS. The proportion of the graduates who enrolled in RS and earned an associate degree during high school steadily increased from 15% for the 2015 cohort to

[3] For additional information on the breakdown for all students, inclusive of non-graduates, see the 2023 Annual ERDC Dual Credit Report.
[4] This is a broader definition than direct enrollment after high school.
[5] In this brief, a postsecondary certificate refers to a credential from a subbaccalaureate program of study that provides professional-technical skills for specific fields. Not included here are industry-recognized credentials, which were earned by approximately 27,000 students in the 2021–22 academic year per OSPI.

25% for the 2021 cohort (see Figure 1).[6] There was only a slight slowdown in this trend during the COVID-19 pandemic for the 2020 cohort.

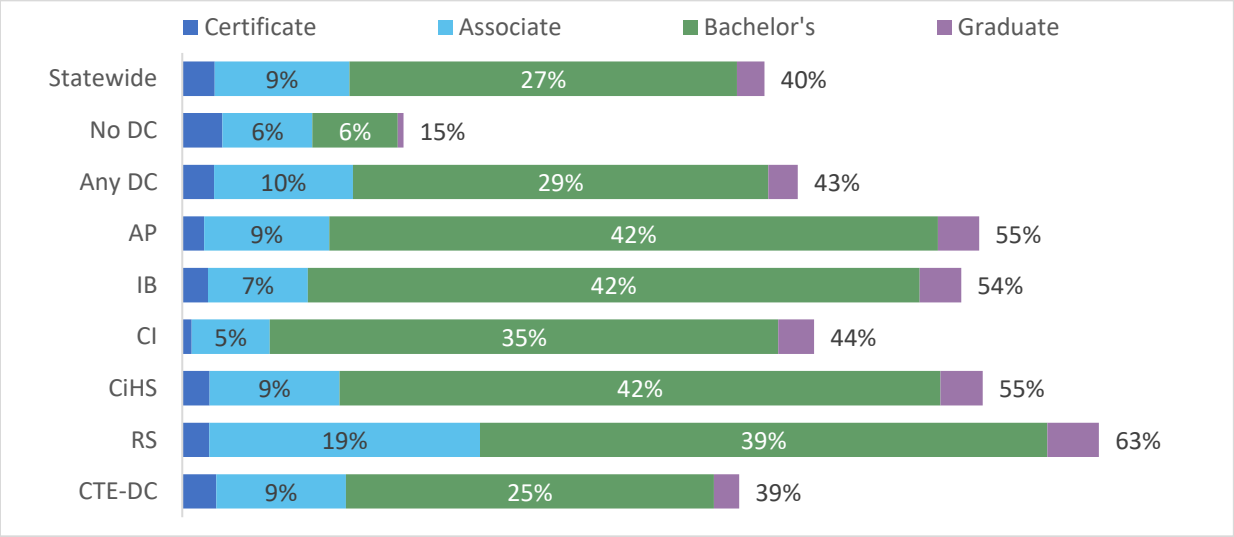
Postsecondary credentials awarded within six years of graduation

The majority of postsecondary credentials awarded to students in these cohorts through the 2021–22 academic year were associate and bachelor's degrees, making up 40% and 45% of all credentials, respectively. Postsecondary certificates made up 12%. There was insufficient time since high school graduation for students in most cohorts to have had the opportunity to complete graduate credentials. Therefore, this analysis focuses on associate and bachelor's degrees. To align the post-high school timeframes across cohorts, only the 2015–2017 cohorts are included to allow for at least six years after graduation, which is 150% of the typical bachelor's credential program duration.

Of students who earned a credential during high school, most earned a subsequent credential within six years of graduation.[7] The rate of earning a postsecondary credential within six years of graduation was much higher for students who enrolled in dual credit (43%) than students who did not enroll in any dual credit program (15%).[8] Students who enrolled in RS had the highest overall rate of earning at least one postsecondary credential within six years of graduation, at 63%. This rate was driven in large part by RS students earning an associate degree during high school (see Figure 1). The rates for students who enrolled in other dual credit types ranged from 39% to 55%.[9]

The highest level of postsecondary credential earned within six years of graduation varied by dual credit type (see Figure 2). The proportion of students having an associate degree as their highest credential was much higher for those who enrolled in RS at 19% than for those enrolled in other dual credit types (ranging from 5% to 9%). The proportion of students having a bachelor's degree as their highest credential were similar for AP, IB, CI, CiHS, and RS (ranging from 35% to 42%).

Figure 2: Rate of credential earning by highest level awarded within six years of HS graduation



[6] This analysis utilizes postsecondary records to determine the award of an associate degree while in high school. This will produce different counts and percentages than the K–12 data reported by school districts.
[7] See appendix table A-2a
[8] The lower postsecondary enrollment rate among students who did not enroll in any dual credit program drove some of this difference. See Table 2 and 2023 Research Brief.
[9] For associate and bachelor's degrees awarded within six years of high school graduation, the breakdown of broad primary concentrations of study was very similar across dual credit types. See appendix tables A-2b and A-2c.

Years to degree after high school

There are several ways to measure time to a postsecondary degree.[10] This analysis focuses on the number of academic years between high school graduation and postsecondary credential award. This definition is straightforward and allows for all credential records to be used in the analysis. However, it does not account for complexities in student trajectories such as gap years after high school, breaks between enrollment terms, or part-time credit loads. Future analysis may also benefit from disaggregation by primary majors and enrollment sectors.

Associate degrees: For the 2015–2020 cohorts, which each had at least three years since graduation, students who enrolled in RS obtained an associate degree within three years at substantially higher rates than all other dual credit types, which had similar rates to the statewide average (see Figure 3).

There was an increase in the statewide rate of students earning an associate degree within three years between the 2015 and 2018 cohorts.[11] The trend leveled off and began decreasing for the 2019 and 2020 cohorts. However, each cohort since 2017 had at least partial overlap with the COVID-19 pandemic in the three years following graduation, which likely impacted the trend.

Bachelor's degrees: For the 2015–2017 high school cohorts, which each had at least six years since graduation, Figure 4 shows that students who enrolled in RS, AP, IB, and CiHS obtained a bachelor's degree within six years at higher rates than the statewide average. In addition, more students who enrolled in RS obtained a bachelor's degree in less than the typical four years than all other dual credit types.

There was a decrease in the statewide rate of students earning a bachelor's degree within six years over these cohorts. However, each cohort had at least a partial overlap with the COVID-19 pandemic in the six years following graduation, which likely drove much of the trend.

Figure 3: Cumulative proportion of students earning associate degree within 0-3 years of HS graduation by dual credit type

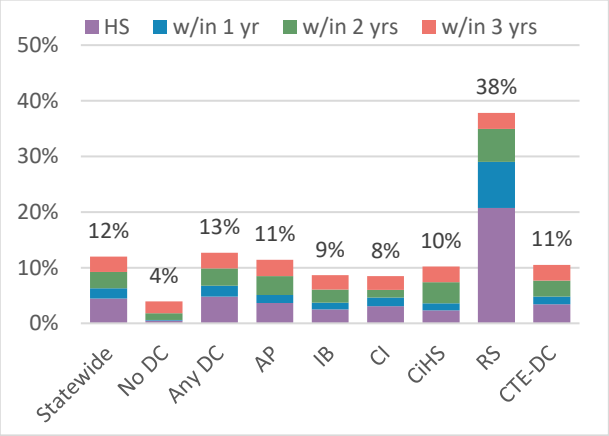
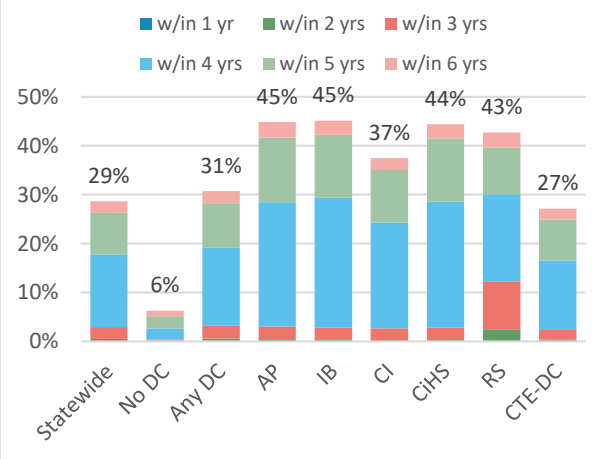


Figure 4: Cumulative proportion of students earning bachelor's degree within 1-6 years of HS graduation by dual credit type



[10] For example, some studies examine total time elapsed in calendar/academic years, while others measure only the time enrolled. Studies also vary in whether they measure from the time that a student graduates high school or enrolls in college. See, for example, National Student Clearinghouse's 2016 time to degree report, National Governor's Association guide on college completion metrics, or Haskell, R. E. (2016). Effects of dual-credit enrollment and early college high school on Utah public education. *Applied Economics and Finance*, 3(2), 54-72.

[11] See appendix table A-3b

Credits to degree after high school (Washington public institutions)

A second perspective on time to degree looks at the postsecondary credentials that were awarded and the number of postsecondary credits[12] that a student earned after high school graduation and prior to the credential award.[13] This definition has the benefit of not extending student trajectories that include gap years after high school, breaks between enrollment terms, or part-time credit loads. The primary drawback of this method is that credit attainment data is not available to ERDC for in-state private institutions and out-of-state institutions. Including students who only had postsecondary enrollments at Washington public institutions allows for analysis on approximately 83% of all associate degrees and 54% of all bachelor's degrees earned by these cohorts.

This analysis provides an initial examination of the total credit-earning experience of students during and after high school. It makes no adjustment for enrolled program credit requirements, changes to program of study, transfers among institutions, or the purpose of the credits (i.e., degree requirement, additional elective, repeating course). As with the years-to-degree measure, the analysis of associate degrees is limited to the 2015–2020 cohorts and analysis of bachelor's degrees is limited to the 2015–2017 cohorts.

With the exception of RS, the average number of credits earned after high school and prior to an associate and bachelor's degrees was similar to the statewide average for all dual credit types (see Table 3). On average, students who enrolled in RS earned 30 fewer credits after high school than the statewide average for associate degrees and 24 fewer credits for bachelor's degrees. The small subset of students who did not enroll in any dual credit type earned an average of 45 more credits than the statewide average for associate degrees and 16 more for bachelor's degrees.

Table 3: Postsecondary credits earned prior to the credential award by credential type and dual credit type

Credential Type	Statewide Average	No Dual Credit*	AP	IB	CI	CiHS	RS	CTE-DC
Associate Degree								
Credits earned after HS	55.5	100.1	61.9	66.2	51.4	69.0	25.2	62.9
Total credits earned	106.0	115.9	105.3	107.6	108.4	107.1	102.5	106.8
Proportion after HS	52%	86%	59%	62%	47%	64%	25%	59%
Bachelor's Degree								
Credits earned after HS	179.6	195.6	183.2	182.5	182.3	182.5	155.7	181.9
Total credits earned	202.3	207.7	198.8	195.7	195.1	200.6	216.8	201.0
Proportion after HS	89%	94%	92%	93%	93%	91%	72%	90%

** Students may have experienced other types of dual credit that are not part of this analysis (see 2023 Annual ERDC Dual Credit Report) or enrolled in postsecondary courses that were self-financed or otherwise did not use state basic education funding.*

Variation by student characteristics

The data for the four largest dual credit types[14] were disaggregated by various student demographics and program participation.[15] This was done to examine if the differences in postsecondary completion rates between students who *did* and *did not* enroll in dual credit varied by student group membership. As with the years-to-degree measure above, the analysis of associate degrees is limited to the 2015–2020 cohorts and analysis of bachelor's degrees is limited to the 2015–2017 cohorts. Figures 5 and 6 display the

[12] Credits are presented on a quarter system basis because the majority of Washington public institutions operate on a quarter system. Credits earned in a semester system were adjusted to be equivalent to quarter system credits.
[13] This reflects all credits, excluding basic skills and lifelong learning courses. The typical associate degree program is 90 quarter credits and the typical bachelor's program is 180 quarter credits, although program credit and course requirements can differ.
[14] Some dual credit types and student groups were excluded due to small populations (CI, IB; Transfer Status, Graduation Timing). For full results, see appendix Tables A-5a, A-5b, A-6a, and A-6b.
[15] All student groups examined are the same as those for the 2023 Annual ERDC Dual Credit Report. See that report's appendix for definitions.

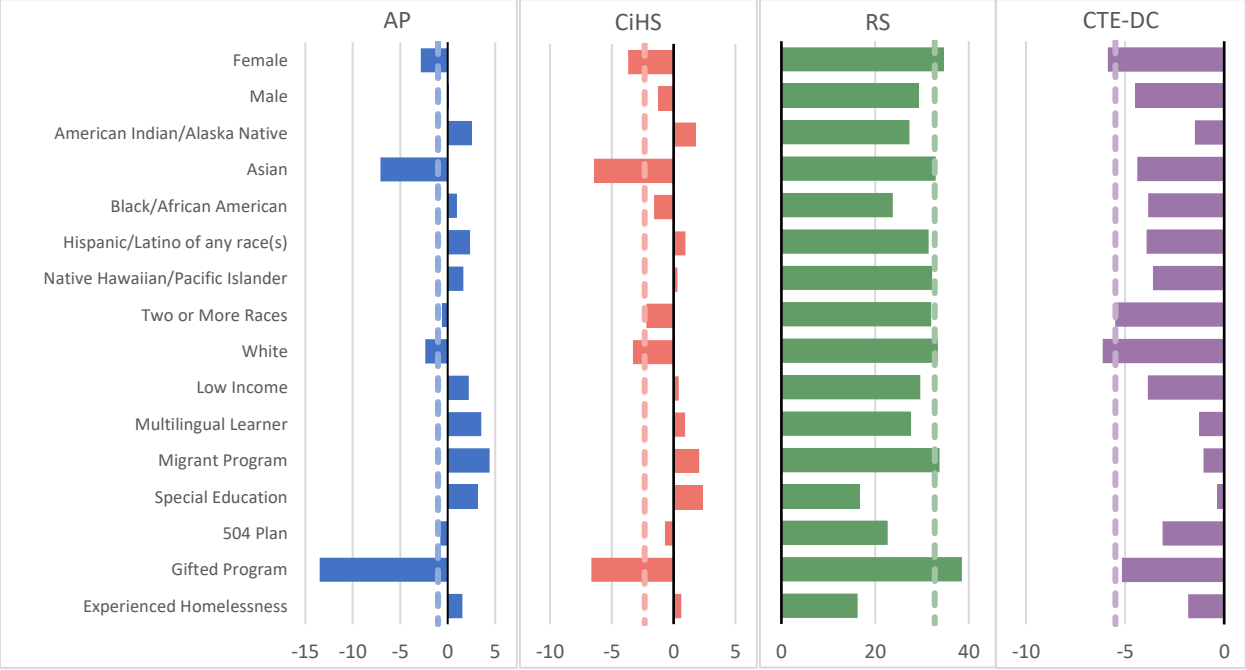
percentage point difference in postsecondary enrollment between those who did and those who did not enroll in each dual credit type.

A positive percentage point difference for a group in Figures 5 and 6 means that students who enrolled in that dual credit type had a higher degree attainment rate than students in that group who did not enroll in that dual credit type. Similarly, a negative percentage point difference means that students in that group had a lower degree attainment rate than students who did not enroll in that dual credit type. Experiencing a larger than average percentage point increase from enrollment in dual credit would work to narrow the achievement gap experienced by student groups that have lower postsecondary credential attainment rates than their peers.

Associate degree within three years of high school: Consistent with the statewide results above, all student groups who enrolled in RS had higher rates of earning an associate degree within three years than those who did not enroll in RS (positive percentage point difference).

Among students who enrolled in CiHS and AP, American Indian/Alaska Native, Hispanic/Latino and Native Hawaiian/Pacific Islander students experienced a higher rate of earning an associate degree within three years than students who were not enrolled in CiHS and AP (positive percentage point difference). For students enrolled in AP, CiHS, and CTE-DC, those identified as low income, multilingual learners, or experiencing homelessness, as well as those who participated in the special education or migrant programs experienced larger increases than the statewide average (percentage point difference to the right of statewide dashed line).

Figure 5: Percentage point difference in rate of Associate degree receipt within three years of high school between those who do and do not enroll in dual credit by dual credit type and demographic



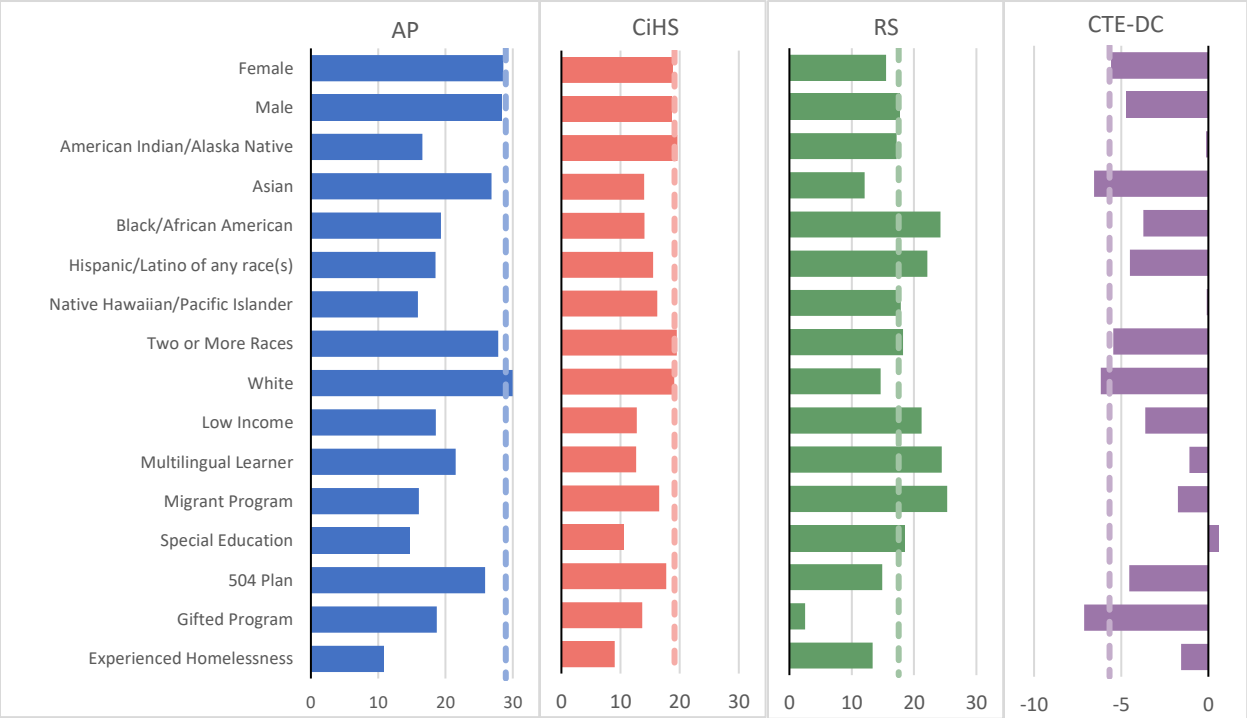
Note: Dashed lines represent the statewide average.

The student groups with negative percentage point differences indicate that students in these groups had lower rates of earning an associate degree within three years than students who did not enroll in that dual credit type. While it may seem counterintuative for enrollment in a dual credit to result in lower degree attainment, this relationship only applies to associate degrees, which are earned by fewer graduates than

bachelor's degrees (see Figures 3 and 4). It may be that some student groups are less likely to pursue associate degrees than other groups.

Bachelor's degree within six years of high school: Students who enrolled in AP experienced the largest increase in rate of earning a bachelor's degree within six years of high school across the dual credit types compared to non-participants (up to 30 percentage points). However, the magnitude of the increase varied widely across student groups. For AP and CiHS, historically disadvantaged federal racial and ethnic groups tended to experience smaller increases than the statewide average increase (ranging from 0 to 13 percentage points lower). Conversely, among those enrolled in RS, Black/African American and Hispanic/Latino students experienced the largest increases (6 and 4 percentage points above the statewide average, respectively).

Figure 6: Percentage point difference in rate of Bachelor's degree receipt within six years of high school between those who do and do not enroll in dual credit by dual credit type and student characteristics



Note: Dashed lines represent the statewide average.

Unlike the results for associate degrees within three years, all of the percentage point differences for AP, CiHS, and RS are positive, meaning there was an increase in the rate of earning a bachelor's degree with in six years for students who enrolled in those dual credit types. As with the results for associate degrees within three years, the percentage point difference is negative for students who enrolled in CTE-DC and may indicate a difference in student trajectories after high school, such as joining the workforce.

Data sources. The data for this publication came from the ERDC P20W data system. This data system links administrative records from several education state agencies. Data sources for this publication include:

- Office of Superintendent of Public Instruction (OSPI): Comprehensive Education Data and Research System (CEDARS) — For data on enrollment in AP, IB, CI, CiHS and CTE-DC during high school, student characteristics and K-12 program participation.
- Washington State Board for Community and Technical Colleges (SBCTC) — For data on enrollment in RS during high school, enrollment after high school, and postsecondary credentials awarded at a Washington public CTC.
- Public Centralized Higher Education Enrollment System (PCHEES) housed at the Office of Financial Management (OFM) — For data on enrollment in RS during high school, enrollment after high school, and postsecondary credentials awarded at Washington public 4-year institutions.
- National Student Clearinghouse (NSC) — For data on enrollment after high school and postsecondary credentials awarded at Washington State private and tribal institutions as well as Out-of-State institutions.

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To view more statewide dual credit data, visit our
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