

RESEARCH REPORT

NOVEMBER 25, 2019

EQUITY IN COLLEGE PREPARATORY PROGRAMS WITH EXAMS (CPPE)

Introduction

College Preparatory Programs with Exams (CPPEs) include academically-rigorous high school classes that culminate in standardized exam-based assessments. Students take the classes as part of their high school schedule and apply them toward their graduation requirements, typically whether or not they take the exams at the end. Without the exam, students still apply the class grade to their high school GPA. However, taking the standardized exam may enable a student to apply the exam score for college credit for an identified comparable college course or a college-level elective (depending on the course and the score). CPPE programs include Advanced Placement (AP), International Baccalaureate (IB) and Cambridge International 'A' Levels (CLE).

Because of the potential to apply these high school courses for college credit, they are an attractive option for many students and parents. The appeal of CPPE has many components – they can equate to college credit and thereby save tuition costs or accelerate through prerequisites, they often carry additional weighting for high school GPAs, and are attractive to selective schools' admissions offices. It would appear that CPPEs would offer students from underserved populations an opportunity to get a 'head start' on college while at high school. However, CPPEs have not typically been consistently available to students from disadvantaged groups.¹

The reasons for that are not clearly understood. Research suggests that access to CPPE in high schools may be affected by:

- Variation in perception of demand for CPPE opportunities across schools serving different demographic groups
- Cost of programs and/or exams to students, although many states offer aid to economically disadvantaged students
- Implicit bias² of districts, schools, and teachers in evaluating aptitude for CPPE, such as determining AP readiness by prior GPA
- Lack of familiarity with or confidence to undertake CPPE courses by students,³ often reflect in

¹ College Board, [10th Annual AP Report to the Nation](#), February 2014

² For a brief explanation of 'implicit bias,' how it manifests in education, and related resources, see <https://poorvucenter.yale.edu/ImplicitBiasAwareness>

³ Klugman, 2013.

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parents' prior education⁴

However, AP participation overall is growing, and comparable programs from Europe (International Baccalaureate and Cambridge International) are providing even more alternatives for students seeking to earn college credits while staying at their high school.

CPPE should offer an opportunity for disadvantaged students to access tuition-free college credit while at high school. Unlike Running Start⁵ where classes are delivered at a college, CPPE does not require additional transport to the college, purchase of books, and it also enables students to stay on site to access existing support mechanisms and participate in extra-curricular programs such as athletics. In 2018-19, CPPE saved Washington students approximately \$1.4 million in tuition fees at community and technical colleges (CTCs) (based on number of CPPE college courses transcribed; 3,141 courses x 5 credits x \$90 per credit).

However, CPPE availability does not necessarily equate with college credit outcomes, especially across different demographic groups. For the purposes of this report, we will look at the application of CPPE to course credit in Washington state community and technical colleges only (which is a subset of the CPPE course and exam taking behavior) and application for college credit. With that in mind, there are a number of factors that are outside the scope of this research:

- Breadth of CPPE access in high schools – availability of CPPE to students depends on whether CPPE is offered in high schools or through online high school options. Not all high schools have a CPPE offer.
- Participation rates in CPPE where available – as mentioned above, there is the potential for students to be disadvantaged in access to CPPE through factors such as implicit bias in perception (including self-perception) of ability to succeed, cost of exams or availability of internet access, or range of courses offered at CPPE schools.
- Success rates in CPPE – while general, state-wide success rates (attaining a CPPE exam score that equates to college credit) are available, the community and technical colleges (CTC's) do not collect data on enrolled students who either took the class but did not take the exam, or students who sat the exam but did not attain a transferable score. Therefore, it is difficult to determine how many CTC-bound students participated in CPPE but could not attain college credit.
- Whether or not students who could apply CPPE for credit at a CTC actually do - this is discussed in more detail later in this report, but not all students who take CPPE classes will apply those credits at a CTC. Many students opt out, or apply at private or four-year institutions instead.

Washington CPPEs included in the study

In this report, we include students who successfully obtained credit at a Washington CTC using AP, IB or CLE exams in the last three years (2016-17 through 2018-19).

Some schools – but very few - offer more than one CPPE program. Students that applied for credit through more than one CPPE program are counted for each program, although those numbers are extremely small.

⁴ Malkus, 2016. Nationally, students whose parents did not attend any college attain AP class credit at a rate almost half that of students with parents who graduated from college.

⁵ <https://www.k12.wa.us/running-start>

Advanced Placement (AP)

Advanced Placement exams are available at just under half of all Washington High Schools, with over 400 high schools offering AP exams.⁶ AP is the most widely available CPPE option. In 2018-19, 53,517 Washington state high school students took at least one AP class. Those students took, on average, 1.7 exams per student per year (92,346 AP exams in spring 2019), roughly in line with the national average of 1.8 exams per student.⁷

Those students that do take the AP exams in Washington, scored a 3 or better (the most common credit acceptance threshold) at a rate of 63.4%, which ranks Washington 18th in the nation for AP scores of 3 or higher.⁸

International Baccalaureate (IB)

IB exams are assessed in a progressive manner from a 'subsidiary' to a 'higher' level, although subsidiary curriculum is rarely a prerequisite for higher level courses and exams. At the time of writing, 22 schools in Washington offered International Baccalaureate:

- AC Davis Senior HS (Yakima)
- Annie Wright Schools (Tacoma - private)
- Capital HS (Olympia)
- Chief Sealth Intl HS (Seattle)
- Columbia River HS (Vancouver)
- Edmonds Woodway HS (Edmonds)
- Henry Foss HS (Tacoma)
- Inglemoor HS (Kenmore)
- Ingraham HS (Seattle)
- Interlake HS (Bellevue)
- Kennewick HS (Kennewick)
- Kent-Meridian HS (Kent)
- LT General Harrison Prep School (Lakewood)
- Mount Rainier HS (Des Moines)
- Rainier Beach HS (Seattle)
- Renton HS (Renton)
- Saint George's School (Spokane - private)
- Skyline HS (Sammamish)
- South Kitsap HS (Port Orchard)
- Sumner HS (Sumner)
- Thomas Jefferson HS (Auburn)
- West Sound Academy (Poulsbo - private)

Cambridge 'A Level' (CLE)

Cambridge International AS and A level exams are modeled on British standard AS- and A-level exams. The A

⁶ <https://secure-media.collegeboard.org/digitalServices/pdf/research/2019/School-Report-Exams-2019.pdf>

⁷ <https://research.collegeboard.org/programs/ap/data/participation/ap-2019> data by state, Washington.

⁸ <https://secure-media.collegeboard.org/digitalServices/pdf/research/2018/School-Report-11th-and-12th-2018.pdf>

level is the ‘advanced’ assessment, with the AS a reduced curriculum. They are designed for international transferability in 55 subject areas. At the time of writing, three schools in Washington offered Cambridge A/AS level:

- Federal Way High School (Federal Way)
- Juanita High School (Kirkland)
- Bethel High School (Roy)

Cost of credit by exam

For academic year 2019-20, AP classes are offered as part of the high school academic program and free to high school students; however, there is an exam fee of \$94 per exam. Cambridge exam fees vary by level from \$99 to \$154. IB students pay a \$172 program registration fee, and while there is no charge per course, there is a \$119 exam fee.

A Test Fee Waiver Program is available for students eligible for Free or Reduced-Price Lunches (FRPL). The Office of the Superintendent of Public Instruction (OSPI) covers all AP, IB, and CLE test fees for FRPL-eligible students as well as offering other grants to reimburse for IB and CLE exams. As with other high school classes, essential books and transport from home to the high school campus are supplied free of charge to students.

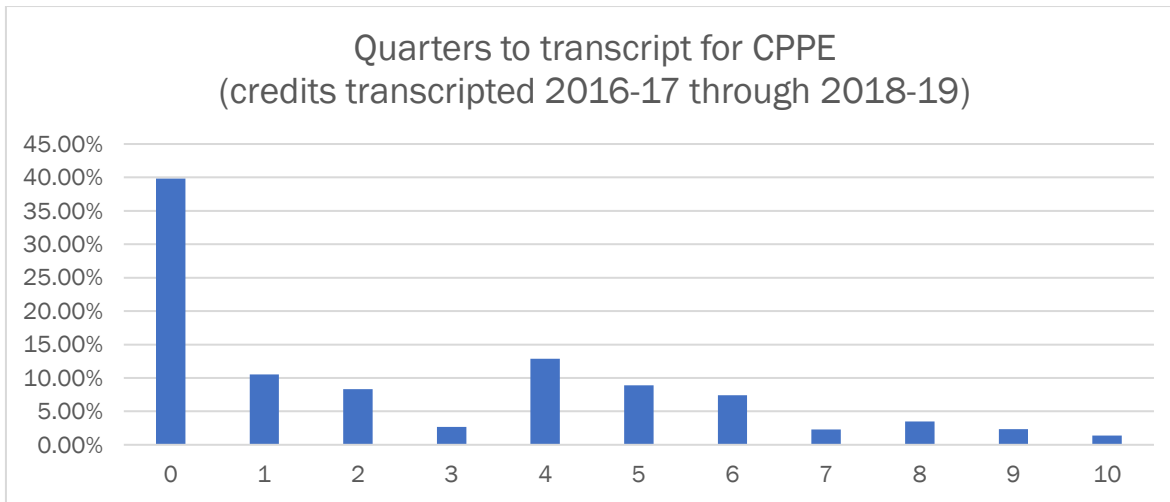
Application of exams to credits in the community and technical colleges

Transcripts

In order to obtain college credit for CPPE, students typically submit their exam scores directly from the examining body to their receiving institution. For example, students request an AP score transcript from the College Board to be sent directly to the college where they are enrolled. The college then receives the report, evaluates the scores, and awards credit for course equivalencies as appropriate.

Many students may not submit scores for credit during their first quarter of enrolment; some students may wait several quarters before submitting scores for equivalency. Figure 1 shows the delay in transcription of CPPE scores by quarters for the last three years. While 40 percent of student’s transcript CPPE credits in the first quarter, 25 percent waited five quarters or more. Late submission may be due to students discovering graduation requirements or necessary prerequisites after starting their program, or simply not being aware of the process until well into their college program. The high numbers of late submissions of CPPE suggest that this exam to credit equivalency may at times be overlooked in entry advising.

Figure 1. Quarters to Transcript by CPPE students in CTCs.



It is important to remember that not all students who have scores eligible for college credit apply to have that credit transcribed. However, it is worth considering advising and admissions structures that encourage students with eligible CPPE scores to apply at the time of admission, and develop support systems to guide them through the process. Capturing the available credit early ensures it is transcribed for return to college in the event they do not retain, and that course equivalencies are considered in the design of the student's planned curricular pathways.

Equivalencies

The course equivalency and the credit value per exam has historically varied across higher education institutions. Like other transfer credit, it has been up to the receiving institution to determine equivalencies. However, in May 2019 the CTC system, through the Articulation and Transfer Council (ATC), established a set of common course and credit equivalencies for AP exam scores.⁹ A similar general understanding for IB and CLE equivalencies has also been established, although more work is underway by the ATC.

For AP exams, a minimum score of 3 is required for a single (5 credit) course equivalency. In some cases, higher scores offer a wider range of equivalencies, more advanced course credit, or multiple course credit. No AP exams equate to more than ten quarter credits.

Typically, only IB scores of 5 or higher (for either Subsidiary or Higher level exams) and CLE 'A' level are accepted for subject matter course equivalencies, although IB scores of 4 are often accepted for general elective credit.

⁹ <https://www.sbctc.edu/resources/documents/colleges-staff/programs-services/transfer/ap-test-scores-course-equivalencies.pdf>

Courses

In 2018-19, the most common course equivalencies through CPPE for AP were MATH&151 (Calculus I) at 7.7 percent of all AP equivalencies, followed by English &101 (7.3 percent), History &146 (5.7 percent) History &126 (4.6 percent) and Psychology &100 (4.1 percent). IB was applied in 11 divisions, with English, History, Math and Spanish the most common. CLE was applied in 5 divisions, including Art, Biology, Chemistry, Math and Physics.

Participation in credit by exam through Washington community and technical colleges

Basic numbers of students, credits, and courses

The data for CPPE in CTC's only reflects a single stage in a student's CPPE journey. For that reason, there are some limitations to an equity gap analysis as students may experience disadvantage at points outside of their CTC enrollment.

First, CPPE access depends on the availability in the high schools. Washington state has a very broad distribution of AP opportunities, while IB and CLE are much less available. Even so, as we will see later in the report, it appears that availability of CPPE is more limited in very rural areas. While many online high school programs also include AP classes that could reach students whose schools don't offer CPPE, some students are unable to access online high school in general due to cost of technology or availability of internet access.

Next, students need to be encouraged and able to enroll in available AP classes. Even for students in schools that offer CPPE, social disadvantage and implicit bias may affect students' access to and confidence in both taking a CPPE class and attempting the exam. For students taking CPPE classes, social and economic factors outside of school, such as the need to work or limited internet access, may influence a student's decision to take a CPPE class or affect their performance in the class and consequently their preparedness for the exam.

In evaluating CPPE participation, it is important to recognize that the application of CPPE to CTC credits is a small subset of the high school graduating CPPE population. Students may 'drop out' of the CPPE process for CTCs at any of several stages:

- Students take CPPE classes at their high school but do not take the exams,
- Student take the exams but don't attain a credit-equivalent score, and
- Students attain a credit-equivalent score but don't apply it for college credit

Of course, many students may successfully take the exams and attain a credit-equivalent score but apply for entry directly at 4-year, private, or out of state institution, bypassing the CTC system. CPPE students are likely to be college bound while in high school, consequently most CPPE credit is applied at 4-year institutions. In 2018, 18 Washington 4-year public or private institutions received approximately 8,500 AP student transcript requests, and CTCs received approximately 1,350. Almost 800 out-of-state institutions received AP transcript requests from Washington state students.¹⁰

¹⁰ <https://research.collegeboard.org/programs/ap/data/participation/ap-2018> - Washington state report. Note that college-bound students may send CPPE transcripts to multiple institutions, particularly students applying to institutions with selective admissions.

Only students that have applied for credit equivalency at CTCs are included in the data for the analysis in this report.

Demographics

In looking at the demographic data on CPPE utilization at CTC’s, it is important to recognize that there are many potential intersections across demographic factors. However, when considering equity in CPPE at CTC’s, it is useful to identify some areas where demographic factors are – or are not – affecting CPPE utilization.

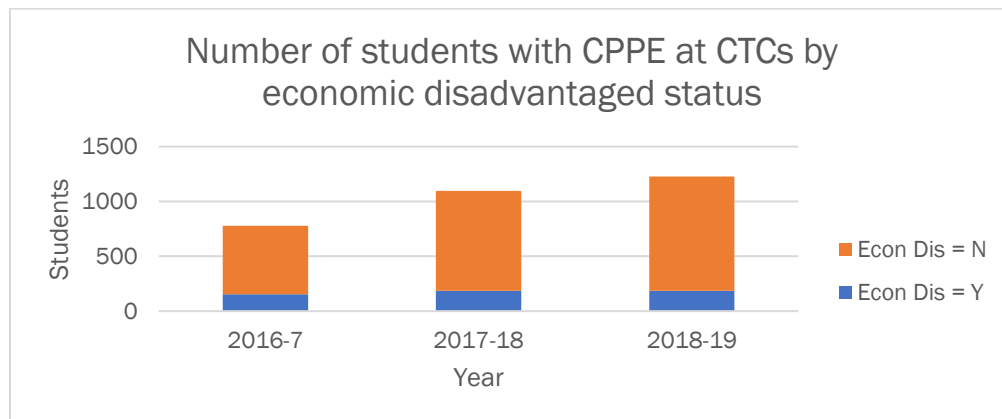
Drawing conclusions and planning actions would benefit from additional research, particularly utilizing school-level data. Some potential areas for deeper investigation are discussed at the end of this report.

Economic disadvantage

The population of students who are economically disadvantaged¹¹ that are using CPPEs at CTC’s has stagnated over the last two years, while that of students who are not economically disadvantaged has grown significantly (see Figure 2). Given that CPPE is a route to very low cost college credit, this outcome is concerning. It may be that economically disadvantaged students are opting to participate in Running Start rather than CPPE, but the possibility that these students predominantly attend schools that do not offer CPPE should be considered, while non-economically disadvantaged students attend schools where the CPPE offers are growing.

Nationally, increases in AP courses offered at schools has been found to be driven primarily by parent demand with growth in AP course offers occurring primarily in more affluent school districts.¹² As noted earlier about the significance of parent education on CPPE participation and success, it may be that students’ economic disadvantage correlates to some degree with parent education, and consequently the demand for CPPE in their schools and districts.

Figure 2. Students utilizing CPPE for credit at CTC’s by economic disadvantage status



¹¹ ‘Economic Disadvantage’ refers to students that are receiving Need-Based Aid, Need-Based Waivers, or enrolled in WorkFirst, BFET, or Displaced Homemaker programs.

¹² Klugman, 2013.

In addition, these students may be less likely to consider themselves college-bound, or that they are impacted by implicit bias within the schools as part of selection and advising for CPPE classes. More data at the school level is needed to determine where exactly economically disadvantaged students are losing the opportunity for CPPE, or if there is a preference among this group for Running Start.

That said, economically disadvantaged (ED) students who have access to and utilize CPPE do so at a rate close to that of non-disadvantaged students. In 2018-19 ED students averaged 2.26 classes per student through CPPE, and non-ED averaged 2.47. So where these students participate in CPPE, they typically take and attain almost as many CPPE credits as non-ED students.

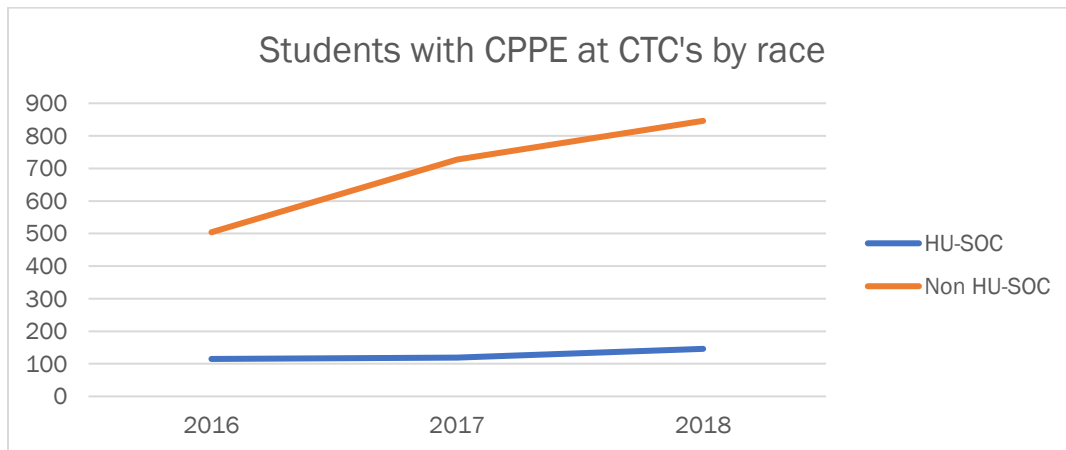
Race

Equity gaps by race in CPPE, especially AP, have been the subject of much national scrutiny.¹³ Nationally, historically underserved students of color (HU-SOC) have not had access to, performed as well in, or transferred as much credit from CPPEs as white and Asian students.

In Washington in 2018, the average AP test score for White and Asian students was 3.14, while that for HU-SOC was only 2.58. For each HU-SOC demographic (American Indian/Alaskan Native, Black, Hispanic/Latinx, and Native Hawaiian/Pacific Islander), more students scored a 1 or 2 on their AP exams than scored 3 or more. The pass rate (3 or higher) for Asian students (70.5 percent) and White students (66.4 percent) far exceeds that of Hispanic/Latinx (44.4 percent), American Indian/Alaska Native (38.8 percent), Black (32.5 percent), and Native Hawaiian/Pacific Islander students (28.7 percent).

This affects HU-SOC CPPE participants in a number of ways. It diminishes self-perceptions of ability to succeed and sense of belonging in college, removes the financial benefits for utilizing CPPE for college credit, and increases the equity gaps for CTC's among new students utilizing CPPE for credit and prerequisites. Figure 3 illustrates the growing equity gap at CTC's in the number of students utilizing CPPE for credit.

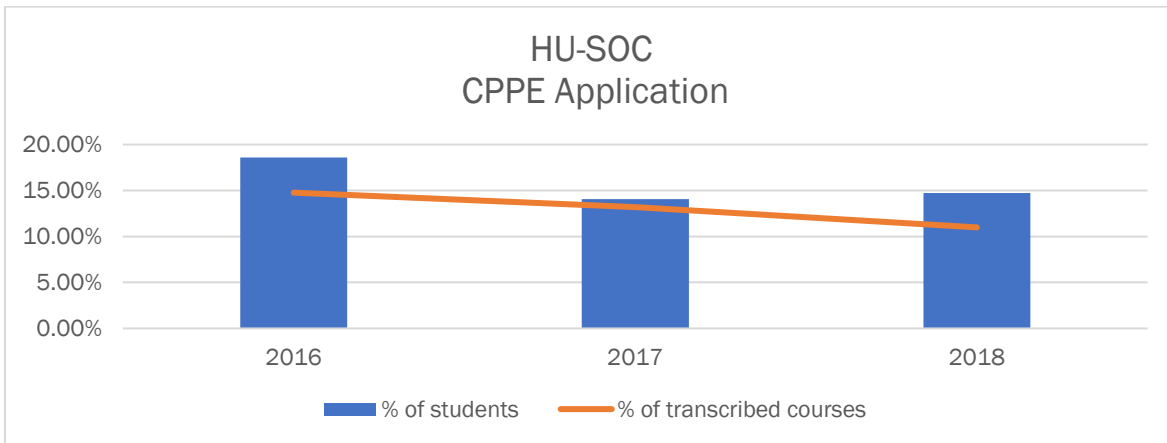
Figure 3. Headcount of CTC students utilizing CPPE for college credit by race



¹³ Kolluri, 2018.

Access to CPPE, confidence to take exams, and capacity to score well enough to earn college credit also limits the amount of credits earned by HU-SOC compared to non-HU-SOC students. This indicates a lost opportunity for financial benefit for the most underserved populations, and the impact of this is growing over time. Figure 4 illustrates that while the percent of CPPE students at CTC’s that are HU-SOC is struggling as the participation gap increases, the number of classes they are earning CPPE credits for has been dropping at an even greater rate.

Table 4. CPPE students and CPPE earned courses by HU-SOC as a percent of total CPPE population at CTC’s



This is likely a combination of access to CPPE and the lower success rate of HU-SOC students on exams. This pattern does reflect data on equity in AP nationally, and there is significant research on addressing the causes of equity gaps in AP access and success¹⁴. The research suggests the following possible causal factors for the gaps at a national level:

- academic preparedness gaps prior to and during high school, including academic skill development
- variations in school resources, student support, and faculty development to deliver CPPE courses
- lack of cultural inclusiveness in the CPPE curriculum and pedagogy
- implicit bias and institutional disadvantage in the K-12 school systems, particularly as it affects CPPE availability

This research also proposes ways in which schools and higher education could collectively further research into CPPE equity gaps for consideration in other states. Recommendations for future work based on these findings include localized (State and District) level studies to get more accurate understandings of the equity gaps and identify causal factors, and more detailed evaluations of CPPE curriculum and pedagogy.

Sex

Female students outnumber male students by headcount in the application of CPPE at CTC’s. However, male students apply more courses for CTC credit than female students do. Figures 5 and 6 illustrate how the two data sets reverse for male and female students.

This ratio reflects overall state-wide participation in AP, where female AP exam takers (29,688 in spring 2018) outnumber male (24,507) by 55 to 45 percent. Similarly, statewide, female AP students took only

¹⁴ Kolluri, 2018.

1.67 exams per student on average, compared to 1.77 by male AP students. Male AP test scores averaged 3.10, while that of female AP students averaged only 2.92.¹⁵

If the lower number of CTC AP credits by female students reflects lower pass rates, that may warrant further investigation. Working with College Board and school-level data on female participation and success in AP exams could give insight into whether female students are systemically disadvantaged in AP exams.

Figure 5. Headcount of application of AP CPPE to CTCs by sex

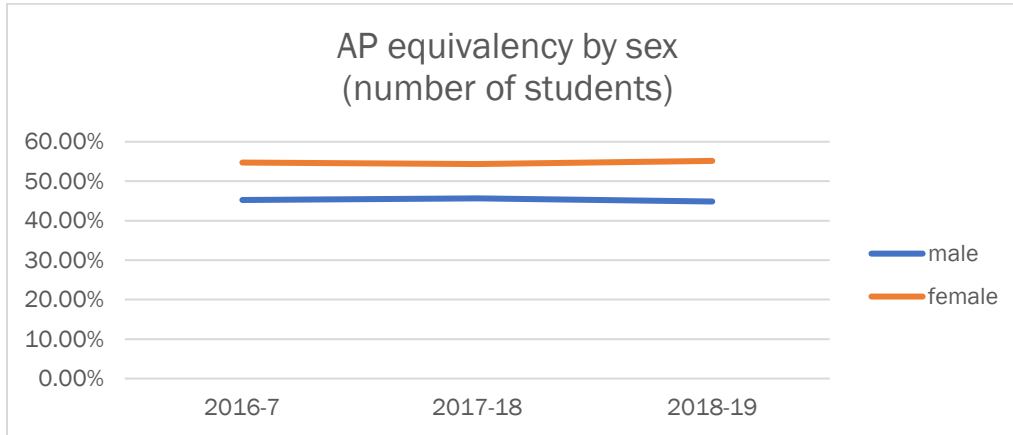
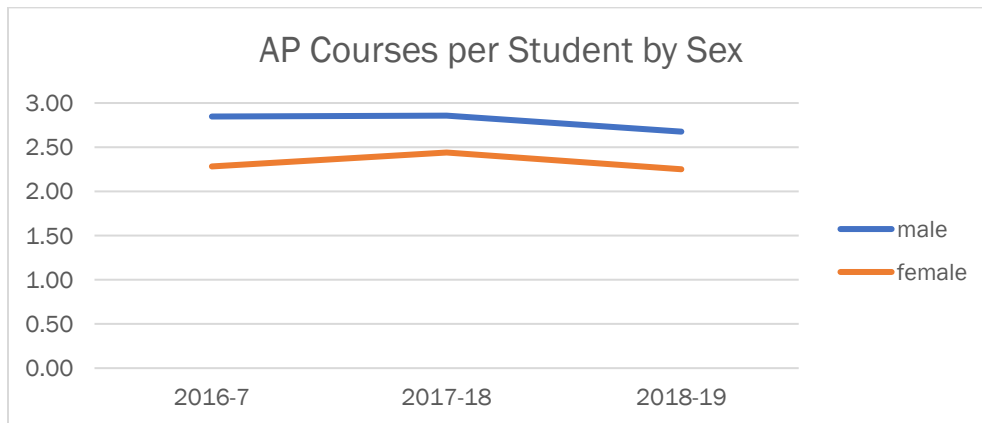


Figure 6. Average number of courses applied for AP at CTCs by sex.



Rurality

Location likely affects access to CPPEs for students. Figure 7 shows the application of CPPE at CTCs in the last three years. Significantly more students attending colleges in urban regions utilize CPPE for credit. While this likely also reflects CTC enrollment patterns more generally, it also suggests that CPPE may be less available in rural school districts, or, as with other demographic inequity, that exam pass rates for CPPE may

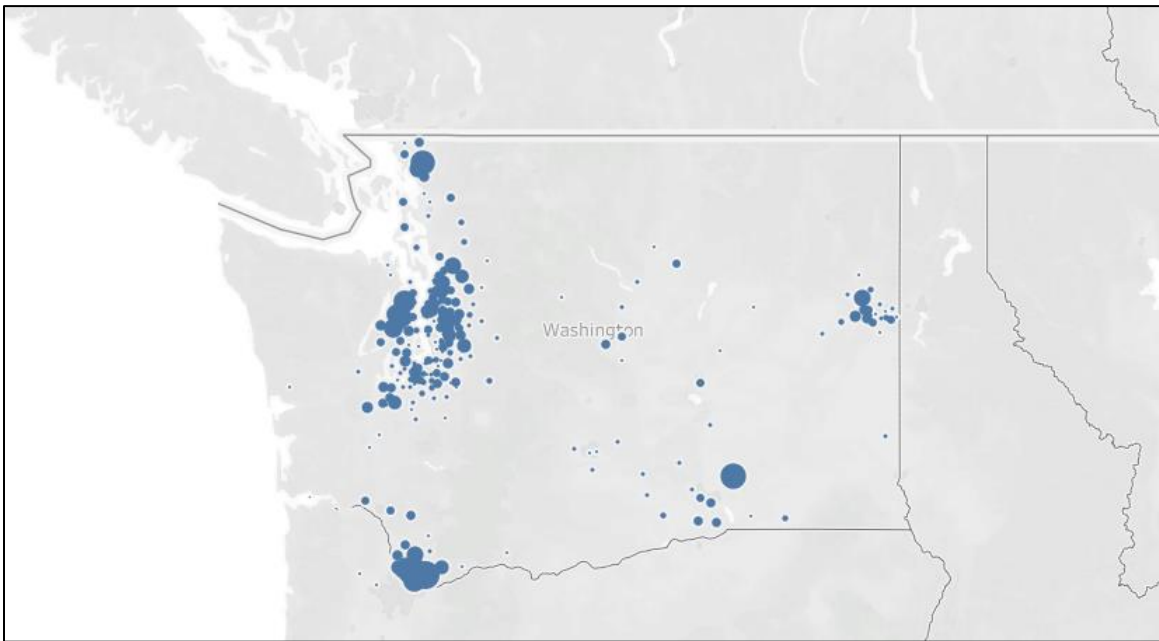
¹⁵ College Board, Washington Summary 2018

be lower among rural CPPE students.

It is worth evaluating alternative availability of CPPE to students in rural high schools. Many Washington high schools have online programs that offer AP options for students off their main campus, but in very rural areas reliable internet access may limit or even exclude these students from online options. However, online AP classes could give rural students wider access to classes, and in some cases exams as well, especially for students for whom distance to their nearest CTC makes Running Start impractical for them.

Improving CPPE attainment for rural students would, however, need to be developed alongside improving overall access to CTCs for very remote students. Online course offers are widely available in CTCs, however the need to access other services on campus, such as financial aid, enrollment, and bookstores or libraries, negates much of the option for rural students to benefit from an entirely online college experience. That said, there is scope to expand CPPE availability in rural areas as a pathway for remote students to gain college credit while still in high school, especially where Running Start is not readily available.

Figure 1. Map of CPPE application at Washington CTCs, 2016/17- 2018/19



Nationally, rural students tend to take fewer AP courses, and score lower on exams, than their suburban and urban counterparts¹⁶. Research highlights many factors comparable to that of HU-SOC – in particular the impact of disadvantaged schools and districts less financially able to provide the resources and faculty development needed to support AP exam success.¹⁷ That said, studies show that AP courses are increasingly available to rural students (partly through online programs), and that some states have

¹⁶ College Board and Education Commission of the United States, August 2017.

¹⁷ Gagnon and Mattingly, 2016.

mandated that all schools offer at least one AP class. Even so, participation and success rates in AP for rural students still significantly lag that of suburban and urban students.¹⁸

Observations from the data

CPPE in Washington state CTC's tends to reflect national outcomes regarding equity gaps in both access to CPPE and ability to benefit. More research in partnership with schools and districts is necessary to better understand the factors affecting equity in CPPE and to design effective strategies to remedy disadvantage. Generally, however, the data demonstrate that there are significant demographic gaps in Washington state in access to, and ability to attain credit from CPPE. Given that CPPE is a very low-cost route to attaining college credit, and therefore should be particularly beneficial to disadvantaged students, these gaps are meaningful and warrant further investigation.

It is interesting to note that within this data set, which includes all students applying CPPE at CTC's, that the average number of AP exams applied to CTC's for credit significantly exceeds the state exam-taking average. A student who identifies early as college bound is likely to take more CPPE classes - and sit the exams - than students who are participating in CPPE via a single course or without a clear higher education plan. It may also be that exam scores of 3 or higher could encourage some students to take more courses and exams or to consider college as a post-high school option where they might not otherwise have.

What CTC's can do independently however is ensure that entry advising encourages students with CPPE exam scores eligible for college credit apply those credits to their college transcript in their first quarter. This ensures that students can make best use of credits to meet prerequisites and as part of their curricular planning. In addition, those credits are captured on the transcript should a student leave their program and return at a later date. It may be that more comprehensive application of CPPE would also change the data if underserved students are also less likely to apply for CPPE credit overall.

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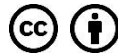
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National and Washington State AP data is available at <https://research.collegeboard.org/programs/ap/>



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