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**California Community College Students' Achievement:
the difference between short-, medium-, and long-term
success**

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SUMMARY:

Community colleges were established to provide a democratic access point to higher education and training, particularly for underserved populations. In states such as California, historically, the system has enrolled a significant percent of the entire college-going population. As such, policymakers and legislators have had a longstanding interest in understanding how “successful” the system is doing and have enacted various types of legislation over the years to increase their “success” rates. However, this paper argues that the potential over-emphasis on measuring “success” has created structures within the system that both privilege students who are already in a better academic position, but also create, potentially, racial inequalities due to the way in which “success” has thus far been defined. The authors conclude that greater disaggregation of outcome metrics by race, more recent reporting on earnings and placement statistics, and more fine-grained reporting types of achievement statistics could help policymakers and legislators understand opportunities for and actual effects of varying types of policy interventions.

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California Community College Students' Achievement: the difference between short-, medium-, and long-term success

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Introduction

Community colleges and their predecessors, the junior college, were established to be a democratic way to provide access to higher education for those previously underserved. However, while the intent was to provide greater access, there are issues with determination of how to define “success.” Because community colleges draw from the entire population, students who enroll do so with a range of expectations, which creates a potentially distorted view of “success,” depending on what metrics are used (Goldrick-Rab, 2010). Questions of equity also arise in the definition and measurement of “success” within the community college. These questions become important for the consideration of equity, as these institutions have been the most accessible gateway to higher education for low-income, non-traditional, and people of color (Price, 2004; Goldrick-Rab, 2010; Nora, 2000).

Since the 1970s, community colleges have enrolled a significant proportion of the higher education population – from over half of all first-time freshmen in the early 80s (Brint and Karabel, 1991) to over 40% of all undergraduate students in 2020-2021.¹ In states with particularly large systems, like California, community college students have accounted for the overwhelming majority of those enrolled in higher education (Bragg, 2001). While in California there have been reports about declining enrollment, and with some limitations to the rebounds in enrollment post-Covid,² the state’s community colleges continue to enroll far more students than the University of California and California State University systems combined (fall 2023 counts: CCC system: over 1.5 million,³ UC system: slightly over 295,000,⁴ CSU: slightly over 454,000⁵).

Policymakers have had a longstanding interest in increasing the California community college system’s success. Legislation such as the Student Success Act of 2012 aimed to address student and system performance toward increasing completion rates and system efficiency. As part of this shift, efforts were made to help students “identify their specific educational goals (such as a program major) as early as possible and develop a course-taking plan to reach those goals” (Taylor, 2014, p. 6).⁶ However, the Act as envisioned has not always translated into implementation that remains true to the equitable intent of the community college system. Measures such as limiting the amount of state support a college can receive for students who fail to pass a course, implementing a time or unit limit for setting an educational goal, changing enrollment priority for first-time students to now be linked with several requirements, as well as changing enrollment priority for continuing students to prioritize those who have fewer degree-applicable semester units and are in good academic standing, have the potential to aid students who were already in a more privileged position.

A 2014 Progress Report on the Student Success Act of 2012 noted that providing basic skills instruction has been and remains a persistent problem. Two issues are important here. First, the report notes that most students entering community college are unprepared for the work in reading, writing, and/or Math. Second, the report notes that few reach proficiency during their time in the system. Developmental, or remedial education, is intended to address this issue. These courses are

¹ <https://www2.ed.gov/about/offices/list/ovae/pi/cclo/index.html>, accessed May 14, 2024.

² <https://calmatters.org/education/higher-education/2023/09/community-college-enrollment-3/>, accessed May 14, 2024

³ https://datamart.cccco.edu/Students/Enrollment_Status.aspx

⁴ <https://www.universityofcalifornia.edu/news/uc-enrolls-record-setting-number-california-students-fall-2023>

⁵ <https://www.calstate.edu/csu-system/about-the-csu/facts-about-the-csu/enrollment>

⁶ <https://lao.ca.gov/reports/2014/education/ccc-student-success/progress-report-SSA-070114.pdf>; accessed May 21, 2024

designed to help students increase their skills, ideally putting them in a better position when they do enroll in a course for credit. However, there have been issues with implementation of developmental education. According to a 2018 report by Ganga et al., tests that determine whether a student should be in a developmental class are often inaccurate (i.e., many more are flagged for remediation than need to be), and many that are put into developmental courses do not finish. In 2017, California passed AB705, which requires California community colleges to have students enter and complete transfer-level English and Math within a year. To facilitate this, AB705 requires community colleges to make their placement decision based on high school coursework, grades, and/or GPA.⁷ The California Community Colleges system has posted data showing that completion rates for both English and Math increased after the passage of AB705.⁸ On the implementation side, findings are mixed. A 2019 Campaign for College Opportunity report showed that while several community colleges were making the transition away from developmental course offerings and to transfer-level courses, many continued to offer these options.⁹ However, it is important to note that the Campaign report (and also the PPIC report it quotes,¹⁰ showing similar gains in completion rates post-AB705) talks about completion or “throughput”, and not about how well a student did in the course.

Currently, considerable emphasis by policy makers and practitioners is placed on dual enrollment options. Dual enrollment enables high school students to take college level courses and obtain college credit before high school graduation. Both Vision 2030¹¹ from the California Community College system and California Governor Newsom’s multi-year roadmap for student success¹² have identified dual enrollment as a way to create a clearer pathway from high school to college. From an equity standpoint, dual enrollment raises several questions. Dual enrollment can potentially provide significant benefits for students including financial savings (i.e., earn college credit while in high school) and progress toward degree or certificate completion. However, similar to the observation of policy that equates completion with success for developmental education, there are policy implications of dual enrollment, specifically how to measure success. As is discussed below, simply passing a course compared to passing a course with a high grade can result in different educational options.

This study focuses on understanding and explaining “success” in California’s community colleges. We propose that while “success” has often been defined rather narrowly, a time-tiered approach may be more beneficial for policymakers in understanding the link between policy and outcome. We propose three stages that can be considered for student attainment or achievement: Short-term, medium-term, and long-term.

Short-term achievement

Although California state legislation aimed at providing greater access to higher education has well-meaning intentions, the content of legislation focuses more heavily on short-term success (i.e., course completion). Furthermore, short-term success can be both misleading and inaccurate. Short-term success can be the completion of one course, no matter the quality of performance (that is, letter grade). Additionally, what constitutes a passing grade at one college may not be identical to a

⁷ https://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=201720180AB705; accessed May 21, 2024

⁸ <https://www.cccco.edu/About-Us/Chancellors-Office/Divisions/Digital-Innovation-and-Infrastructure/research-data-analytics/data-snapshot/equitable-placement>; accessed May 21, 2024

⁹ <https://files.eric.ed.gov/fulltext/ED602771.pdf>; accessed May 21, 2024

¹⁰ <https://www.ppic.org/wp-content/uploads/what-happens-when-colleges-broaden-access-to-transfer-level-courses-evidence-from-californias-community-colleges.pdf>; accessed May 20, 2024

¹¹ <https://www.cccco.edu/About-Us/Vision-2030/introduction>; accessed May 22, 2024; and <https://www.cccco.edu/About-Us/Vision-2030>; accessed May 22, 2024

¹² <https://dof.ca.gov/wp-content/uploads/sites/352/Programs/Education/CCC-Roadmap-May-2022.pdf>; accessed May 22, 2024

passing grade at another college. To make meaningful change, that is also equitable, policymakers should consider the longer-term effects of their policies; in this case, that grades matter more for access to future opportunities than the simple completion of a course (since that could be as low as a D).

Legislation such as AB705 and AB1705 (which also mandates placement into transfer-level coursework)¹³ focuses outcomes based upon course completion. However, while completion means a passing grade, a barely passing grade, that is a D, will not allow a student to progress much further in their studies. For example, a student's quality of work, represented by a grade, is a reasonable indicator of both transfer success and subsequent performance at a university. That is, students who achieve a B or an A grade in university transferable Mathematics and English courses are the most likely students to transfer to a university and those students who will have the best opportunity to attain a baccalaureate degree. On the equity front, students of color (e.g., Latinx, African American, Native American) who complete a course or courses but who do not achieve the same or better grade in these courses as White or Asian students will have limited future opportunities for academic and career attainment. That is, a student of color who achieves a D or C grade in Mathematics and English courses is in jeopardy of limited future academic attainment compared to a White or Asian student who achieves a B or an A grade. Yet, both groups of students are judged to have succeeded by passing a course or courses. If short-term achievement is represented by passing one or more courses, passing college level Mathematics or college level English, or the attainment of 9 units in Career-Technical, then the quality of performance is ignored. There is considerable difference in further education and training advancement and opportunity in employment between student attainment of passing grades of D or C and grades of B or A.

Medium-term achievement

Medium-term achievement can be thought of as the completion of a particular course of study and obtaining an Associate's degree or a certificate. Although these attained markers of completion can help with career advancement and higher earnings, these achievements of certificates and degrees do not represent the quality of learning or skills; rather they indicate that the student passed required courses for credit to attain a certificate or degree. For students intent on further education and training, including transfer to a university, performance in courses must be greater than simple completion with a D or C grade.

The identification of medium-term success, such as short-term success, is problematical. For example, increased interest in completion has resulted in policymakers emphasizing completion by tying it to funding. Although the most common completion outcomes are Associate's degrees and certificates, questions remain about what completion yields in actuality (e.g., post-achievement wage gains, potential to transfer to a university, attainment of a baccalaureate degree) [Li & Kennedy, 2018]. This tie to policy legislation and funding formulas can be particularly tricky to unpack as certificates can typically be awarded at a much faster pace due to the shorter amount of time needed.

Long-term achievement

Students who complete certificate programs or Associate's degree programs are viewed by legislation and policy makers as successful students. Yet, research has indicated that there is considerable variation in employment opportunities and in career earnings based upon the field for which the certificate or degree is intended. The Associate's degree, for example, leads to various careers, but there are several fields where there are more opportunities for employment and certainly higher

¹³ <https://www.cccco.edu/-/media/CCCCO-Website/Files/Educational-Services-and-Support/ab-1705-implementation-guide-3-14-23-a11y.pdf>; accessed May 28, 2024

salaries and long-term career earnings. Nursing is one of these high yielding fields, as are some technology fields. Similarly for certificates, electrical fields can bring graduates not only employment but also substantial career earnings. However, certificate holders and graduates in human services fields often cannot attain the same employment opportunities or the same level of earnings as those in other fields. Therefore, long-term achievement of degrees and certificates can yield highly different outcomes. Moreover, the equity front suggests that there will be considerable differences in fields of certificate and associate degree attainment among racial groups.

For Associate's degree holders who are transfer students and transfer students without Associate degrees, long-term achievement cannot be determined solely by the act of transfer to a university alone. First, a student who transfers but has less than B or A grades in the community college will have difficulty with persisting at a university. Furthermore, a student who persists but whose grades hover around a 2.0 GPA (or C level) will have limited opportunities to move on to graduate studies or professional programs such as Engineering or Education. In addition, student grades at a community college can determine the university to which a student can transfer, and thus further educational and career opportunities may be affected. On the equity front, students of color tend to transfer to public state teaching institutions, such as California State University, more so than to research intensive universities such as the University of California. Therefore, students of color in baccalaureate attainment have different further education (such as graduate school) and career opportunities than their White or Asian counterparts.

Recent research (Mejia et al., 2021, 2022) contends that California legislation has yielded positive outcomes for students. Yet, such claims are based upon students' enrollment in a particular course and students' completion of a course, with the comment that Black and Latino students do not complete at the same rate. Additionally, their measure of success is course completion, and this does not explain the actual outcomes of performance. Legislation, such as the Student Success Act of 2012, which gives priorities to full-time students, can be both counter-productive and discriminatory. Legislation can privilege certain populations (such as affluent students who can enroll full-time) and coerce certain populations into courses for which they are unprepared and thus either drop-out or fail, or if they pass, pass with a grade that is not an opportunity for further education. Even if more students enroll in college level and transferrable English and Mathematics, that does not mean that their performance, even if they do pass (and early dropouts are lost in data sets), is sufficient to provide good opportunities for further education and training, and long-term opportunities for baccalaureate degree completion or careers.

Data

As part of our exploration of varying ways to define "success", we took a closer look at the various types of Approved Chancellor's Office awards (i.e., certificates and degrees) and their outcomes. Due to several equity issues surrounding the ways short-term success is defined, and data are collected and measured, this analysis focuses on a combination of the medium-term and long-term outcomes outlined above. For example, we examined data on certificates: how their award rate compares to Associate's degrees and how their pre- and post-award earnings compare. We additionally explored the earnings change by the lowest earners prior to award, as well as fields that had the most awards. All data below were gathered from the California Community College Chancellor's Office Data Mart, the University of California, and the California State University system.

Awards

We looked at the distribution of awards over time, to understand outcomes by type. From an equity standpoint, certificates have historically been primarily thought of as paths to vocational

occupations, whereas Associate's degree earners may be considering transferring (though they do not need the degree to transfer). For the analysis of data on outcomes, the percentage of Associate of Arts degree (A.A.) awarded as percentage of all awards has decreased since the 2010-2011 AY. However, students who transfer to a university just need the requisite credits to transfer and do not need to obtain an Associate's degree of any kind. Thus, the data do warrant some caution in terms of identifying the number of Associate's degrees conferred as a marker of achievement.

For certificates, the data show that the percentage of those awarded that require 30-60 units has remained relatively steady over the past decade. However, the percentage of certificates awarded that require 10-30 units has increased substantially since data are first reported for its award in 2016 (see Figure 1 for percentage share by award type, and corresponding data in Table 1).

Figure 1. Chancellor's Office Approved awards, by type and year

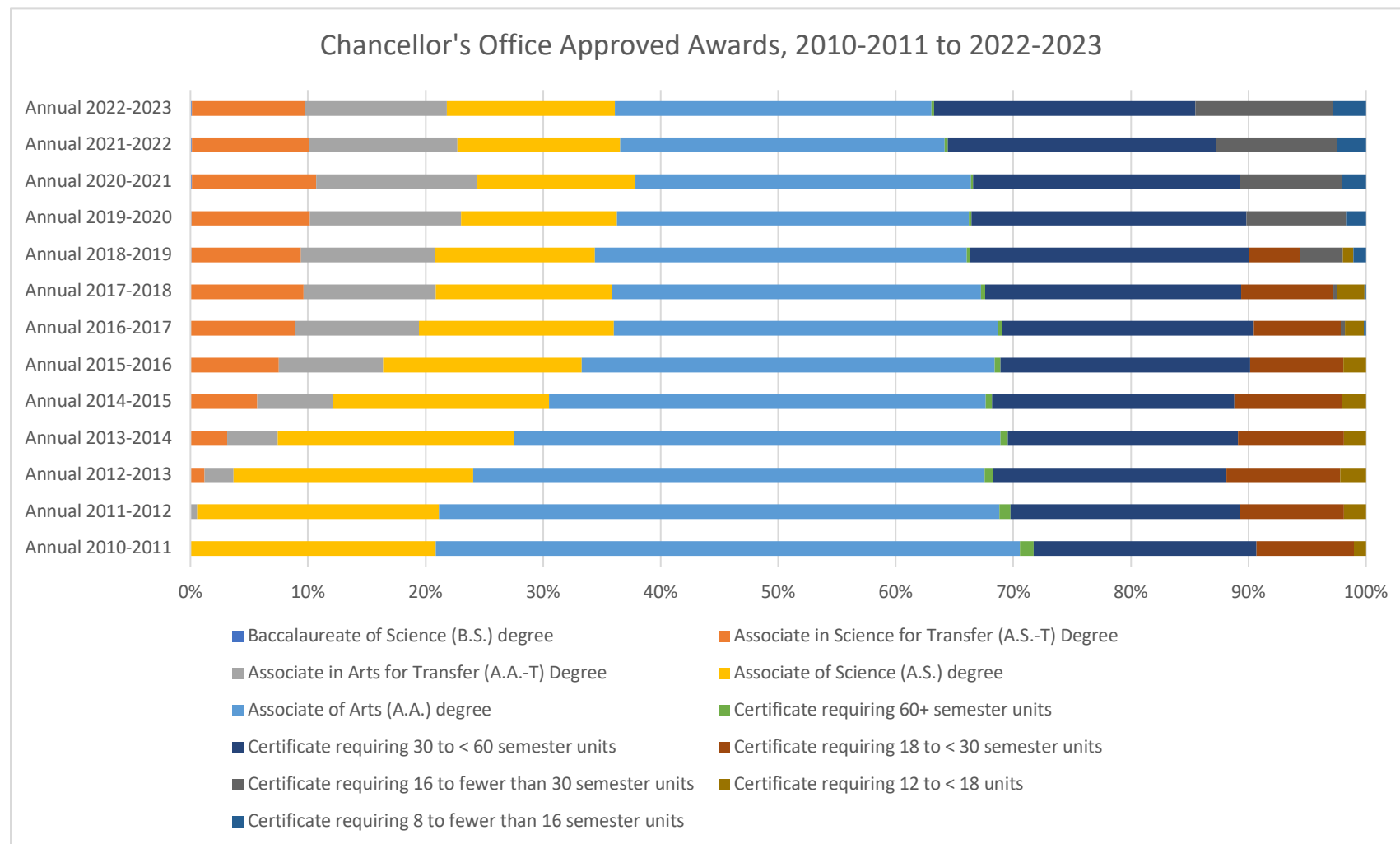


Table 1. Total awards by (annual) year

	2010- 2011	2011- 2012	2012- 2013	2013- 2014	2014- 2015	2015- 2016	2016- 2017	2017- 2018	2018- 2019	2019- 2020	2020- 2021	2021- 2022	2022- 2023
<i>For-credit total</i>	121329	131221	143220	155720	171197	191440	205853	239470	284440	297824	305140	310496	298981
Baccalaureate of Science (B.S.) degree								113	263	258	317	341	308
Associate in Science for Transfer (A.S.-T) Degree		72	1717	4879	9753	14360	18370	22946	26485	29954	32344	30932	28767
Associate in Arts for Transfer (A.A.-T) Degree	23	677	3511	6700	11007	17019	21673	26904	32325	38367	41841	39216	36202
Associate of Science (A.S.) degree	25325	26993	29211	31239	31501	32340	34085	35926	38752	39427	40963	43035	42734
Associate of Arts (A.A.) degree	60274	62573	62338	64494	63580	67225	67234	75184	90075	89165	87172	85661	80400
Certificate requiring 60+ semester units	1388	1200	1040	983	900	979	785	845	710	671	576	833	758
Certificate requiring 30 to < 60 semester units	23000	25675	28386	30504	35319	40686	44061	52131	67453	69747	69133	70784	66423
Certificate requiring 18 to < 30 semester units	10066	11588	13858	13968	15617	15131	15247	18828	12445				
Certificate requiring 16 to fewer than 30 semester units							689	747	10384	25117	26701	32065	34971
Certificate requiring 12 to < 18 units	1253	2443	3159	2953	3520	3700	3339	5502	2501				
Certificate requiring 8 to fewer than 16 semester units							370	344	3047	5118	6093	7629	8418

We then explored which fields produced the greatest number of awards. While the traditional logic is that an Associate's degree might lead to transfer to a university, fields such as Nursing and Electrical/electrician are popular, and often entered into by certificate holders. Table 2 shows the top 10 fields by number of approved awards given out.

Table 2. Top 10 fields by number of approved awards (analysis includes degrees, Chancellor's office certificates, and local certificates)

		Award Years 2010-2011 to 2014-2015	Award Years 2010-2011 to 2014-2015	Award Years 2010-2011 to 2014-2015	Award Years 2010-2011 to 2014-2015
		Median Wage 2 Years Before Award	Median Wage 2 Years After Award	Median Wage 5 Years After Award	Total Awards
Registered Nursing-123010	AA/AS Degree Recipient	\$24,017	\$80,151	\$94,079	9,170

Liberal Arts and Sciences, General-490100	AA/AS Degree Recipient	\$19,215	\$29,882	\$42,063	6,385
Transfer Studies-490110	Chancellor's Office Approved Certificates Recipient	\$16,442	\$25,692	\$47,516	3,544
Biological and Physical Sciences (and Mathematics)-490200	AA/AS Degree Recipient	\$17,655	\$32,773	\$53,052	3,041
Social Sciences, General-220100	AA/AS Degree Recipient	\$18,369	\$29,972	\$43,101	2,877
Business Administration-050500	AA/AS Degree Recipient	\$24,680	\$34,453	\$51,145	2,688
Administration of Justice-210500	Locally Approved Certificates Recipient	\$82,778	\$86,948	\$89,443	2,550
Humanities and Fine Arts-490310	AA/AS Degree Recipient	\$16,040	\$25,200	\$38,814	1,664
Child Development/Early Care and Education-130500	AA/AS Degree Recipient	\$18,522	\$22,770	\$28,159	1,465
Accounting-050200	AA/AS Degree Recipient	\$25,326	\$39,014	\$48,283	1,443

In general, most awards conferred are either an AA or an AS. Only one, transfer studies, was a certificate, and this is a special case, set up to facilitate transferring.

We then drilled down into the data to analyze certificates. While fields such as Nursing and Electrician are popular and typically pay well, we hypothesized that they were likely outliers and did not represent the full spectrum of potential earnings for certificate holders. Table 3 lists the top 10 majors by number of approved certificates awarded.

Table 3. Top 10 Certificates awarded by Field by total number of awards, 2010-2011 to 2014-2015

	Award Years 2010-2011 to 2014-2015 Median Wage 2 Years Before Award	Award Years 2010-2011 to 2014-2015 Median Wage 2 Years After Award	Award Years 2010-2011 to 2014-2015 Median Wage 5 Years After Award	Award Years 2010-2011 to 2014-2015 Total Awards	% Change in Earnings
Transfer Studies-490110	\$16,442	\$25,692	\$47,516	3,544	189%
Cosmetology and Barbering-300700	\$15,630	\$19,167	\$26,589	1,152	70%
Accounting-050200	\$27,953	\$38,377	\$47,902	1,053	71%
Paralegal-140200	\$32,005	\$46,096	\$58,373	936	82%
Child Development/Early Care and Education-130500	\$15,156	\$21,972	\$26,236	893	73%
Electrical-095220	\$47,484	\$82,728	\$93,513	873	97%
Registered Nursing-123010	\$21,298	\$78,238	\$90,934	722	327%

Culinary Arts-130630	\$13,124	\$27,486	\$33,251	650	153%
Automotive Technology-094800	\$15,092	\$31,782	\$41,278	560	174%
Environmental Control Technology-094600	\$32,968	\$48,179	\$61,329	532	86%

Note: "Percent Change" is calculated as the percentage difference between the median wage 2 years before award and the median wage 5 years after award

Child development, which is among the top 10 by number of approved certificates awarded, had among the lowest 5-year post-award wages, and although wages did increase after the award, the 5-year post-award wages are just a little over \$26,000.

If we expand this to examine the top 20 by number of approved certificates awarded (see Table 4), there are a few notable takeaways when we look at the associated earnings. Of the top 20, Dental Assistant, Culinary Arts, and Office Technology are among the lowest for pre-award wages. While wages do increase post-award, they are still low; for both Dental Assistant and Culinary Arts, the 5-years post-award wages are under \$35,000, and office technology shows 5-years post-award earnings at just under \$30,000. Child Development had among the lowest of the 5-year post-award wages. While wages did increase post-award, wages were still just over \$26,000.

Table 4. Top 20 Certificates awarded by Field by total number of awards, 2010-2011 to 2014-2015

	Award Years 2010-2011 to 2014-2015 Median Wage 2 Years Before Award	Award Years 2010-2011 to 2014-2015 Median Wage 2 Years After Award	Award Years 2010-2011 to 2014-2015 Median Wage 5 Years After Award	Award Years 2010-2011 to 2014-2015 Total Awards	% Change in Earnings
Transfer Studies-490110	\$16,442	\$25,692	\$47,516	3,544	189%
Cosmetology and Barbering-300700	\$15,630	\$19,167	\$26,589	1,152	70%
Accounting-050200	\$27,953	\$38,377	\$47,902	1,053	71%
Paralegal-140200	\$32,005	\$46,096	\$58,373	936	82%
Child Development/Early Care and Education-130500	\$15,156	\$21,972	\$26,236	893	73%
Electrical-095220	\$47,484	\$82,728	\$93,513	873	97%
Registered Nursing-123010	\$21,298	\$78,238	\$90,934	722	327%
Culinary Arts-130630	\$13,124	\$27,486	\$33,251	650	153%
Automotive Technology-094800	\$15,092	\$31,782	\$41,278	560	174%
Environmental Control Technology-094600	\$32,968	\$48,179	\$61,329	532	86%
Police Academy-210550	\$31,142	\$60,567	\$80,543	507	159%
Alcohol and Controlled Substances-210440	\$18,400	\$33,026	\$38,563	453	110%

Licensed Vocational Nursing-123020	\$19,745	\$42,802	\$49,464	439	151%
Business Administration-050500	\$22,851	\$34,416	\$51,499	435	125%
Psychiatric Technician-123900	\$19,637	\$67,889	\$71,688	433	265%
Radiologic Technology-122500	\$15,897	\$75,490	\$90,059	392	467%
Medical Assisting-120800	\$13,356	\$28,565	\$37,526	354	181%
Administration of Justice-210500	\$22,932	\$39,219	\$49,521	353	116%
Dental Assistant-124010	\$14,450	\$30,305	\$34,723	350	140%
Office Technology/Office Computer Applications-051400	\$12,003	\$22,225	\$29,178	345	143%

Note: "Percent Change" is calculated as the percentage difference between the median wage 2 years before award and the median wage 5 years after award

If we look at certificates by the top 10 in terms of wages 5-years post-award, the fields shift drastically (see Table 5).

Table 5. Top 10 Fields for Certificates by wages 5 years after award

	Award Years 2010-2011 to 2014-2015 Median Wage 2 Years Before Award	Award Years 2010-2011 to 2014-2015 Median Wage 2 Years After Award	Award Years 2010-2011 to 2014-2015 Median Wage 5 Years After Award	Award Years 2010-2011 to 2014-2015 Total Awards	% Change in Earnings
Electrical Systems and Power Transmission-093440	\$100,734	\$131,157	\$159,160	238	58%
Physicians Assistant-120600	\$29,042	\$121,566	\$141,727	251	388%
Paramedic-125100	\$31,396	\$67,103	\$112,609	80	259%
Diagnostic Medical Sonography-122700	\$23,839	\$95,046	\$111,504	145	368%
Public Works-210210	\$86,859	\$100,481	\$102,898	46	18%
Surveying-095730	\$64,751	\$89,511	\$100,629	75	55%
Drywall and Insulation-095280	\$53,489	\$82,203	\$97,261	144	82%
Electrical-095220	\$47,484	\$82,728	\$93,513	873	97%
Registered Nursing-123010	\$21,298	\$78,238	\$90,934	722	327%
Biomedical Instrumentation-093460	\$43,984	\$64,161	\$90,873	23	107%

Note: "Percent Change" is calculated as the percentage difference between the median wage 2 years before award and the median wage 5 years after award

Unsurprisingly, graduates in electrical-related and medical-related fields had high post-award earnings. However, there are a few caveats to this. Biomedical instrumentation had a substantial increase in wages from 2-years prior to award to 5-years post-award, but only accounted for 23 awards. Public works had one of the higher pre-award wages, but also only accounted for 46 awards. Electrical systems had the highest 5-years post-award wages and accounted for a comparatively substantial number of awards at 238, but also had the highest pre-award wages. It is likely that for several of those fields for which the 5-years post-award wages were particularly high that students were primarily there to obtain a credential for financial advancement and career promotion, as they also had notably high wages pre-award.

There is also the issue of students who achieve awards, but for extremely low-paying occupations. As Grubb put it in 1997, “Some programs prepare their students for such poorly paid occupations that there is no real economic advantage to attending a community college or technical institute” (Grubb 1997, p. 238). While the data analyzed here above are dated by a few years (the earnings data available only reports on the median over the years 2010-2011 to 2014-2015), there are many fields for which certificate holders continue to make low wages even after the award.

For approved certificates for which the wages prior to award were the lowest (see Table 6), several fields stand out as extremely popular choices. Although wages 5-years post-award are higher than that reported 2 years pre-award, all were under \$40,000, with one, Office Technology, under \$30,000.

- Culinary Arts had 650 awards, with a post-5 year median salary of \$33,251
- Medical Assistant had 354 awards, with a post-5 year median salary of \$37,526
- Dental Assistant had 350 awards, with a post-5 year median salary of \$34,723
- Office Technology had 345 awards, with a post-5 year median salary of \$29,178

Table 6. Top 20 Certificates for which the wages 2-years prior to award were the lowest, 2010-2011 to 2014-2015

	Award Years 2010-2011 to 2014-2015	Award Years 2010-2011 to 2014-2015	Award Years 2010-2011 to 2014-2015	Award Years 2010-2011 to 2014-2015	
	Median Wage 2 Years Before Award	Median Wage 2 Years After Award	Median Wage 5 Years After Award	Total Awards	% Change in Earnings
Animation-061440	\$6,863	\$12,466	\$26,723	42	289%
Automotive Collision Repair-094900	\$7,524	\$29,665	\$36,076	98	379%
Parks and Outdoor Recreation-011510	\$9,469	\$25,021	\$33,524	16	254%
Television (including combined TV/Film/Video)-060420	\$10,155	\$15,785	\$20,952	41	106%
Medical Office Technology-051420	\$10,257	\$25,693	\$27,364	135	167%
Restaurant and Food Services and Management-130710	\$10,709	\$31,976	\$39,613	119	270%

Multimedia-061410	\$11,428	\$31,669	\$38,517	105	237%
Speech Communication-150600	\$11,606	\$22,815	\$40,444	25	248%
Office Technology/Office Computer Applications-051400	\$12,003	\$22,225	\$29,178	345	143%
Construction Crafts Technology-095200	\$12,802	\$51,965	\$53,901	66	321%
Architecture and Architectural Technology-020100	\$12,980	\$24,747	\$43,263	64	233%
Culinary Arts-130630	\$13,124	\$27,486	\$33,251	650	153%
Animal Science-010200	\$13,247	\$21,911	\$33,055	56	150%
Piloting-302020	\$13,294	\$16,392	\$35,624	21	168%
Medical Assisting-120800	\$13,356	\$28,565	\$37,526	354	181%
Preschool Age Children-130540	\$13,364	\$23,029	\$27,383	162	105%
The School Age Child-130550	\$14,180	\$24,369	\$30,517	55	115%
Heavy Equipment Maintenance-094720	\$14,391	\$53,769	\$56,619	22	293%
Dental Assistant-124010	\$14,450	\$30,305	\$34,723	350	140%
Diving and Underwater Safety-095910	\$14,453	\$22,729	\$60,256	28	317%

Note: "Percent Change" is calculated as the percentage difference between the median wage 2 years before award and the median wage 5 years after award

One metric we wanted to explore was the earnings difference between the varying types of awards. The conventional thought is that an Associate's degree could lead to transfer, and there is substantial evidence that a four-year degree leads to much higher lifetime earnings. However, we wanted to understand if certificates, which are not typically thought of as associated with high-earnings potential (except for certain fields, for example nursing), may be able to play a greater role in creating economic equity. In particular, while the historical focus on community college outcomes has been on either the Associate's degree or transfer to a university, certificates have started to factor more prominently in terms of outcomes. Table 7 shows the top 20 fields in terms of median wage 5 years after award.

Table 7. Top 20 fields by highest median wage 5-years post-award

		Award Years 2010-2011 to 2014-2015 Median Wage 2 Years Before Award	Award Years 2010-2011 to 2014-2015 Median Wage 2 Years After Award	Award Years 2010-2011 to 2014-2015 Median Wage 5 Years After Award	% Change in Earnings
Electrical Systems and Power Transmission-093440	Chancellor's Office Approved Certificates Recipient	\$100,734	\$131,157	\$159,160	58%
Physicians Assistant-120600	AA/AS Degree Recipient	\$30,363	\$129,426	\$144,225	375%

Physicians Assistant-120600	Chancellor's Office Approved Certificates Recipient	\$29,042	\$121,566	\$141,727	388%
Educational Technology-086000	Locally Approved Certificates Recipient	\$80,674	\$97,141	\$124,377	54%
Electrical-095220	Locally Approved Certificates Recipient	\$61,142	\$103,753	\$119,918	96%
Paramedic-125100	Chancellor's Office Approved Certificates Recipient	\$31,396	\$67,103	\$112,609	259%
Diagnostic Medical Sonography-122700	Chancellor's Office Approved Certificates Recipient	\$23,839	\$95,046	\$111,504	368%
Fire Technology-213300	Locally Approved Certificates Recipient	\$46,375	\$86,448	\$106,303	129%
Public Works-210210	Chancellor's Office Approved Certificates Recipient	\$86,859	\$100,481	\$102,898	18%
Surveying-095730	Chancellor's Office Approved Certificates Recipient	\$64,751	\$89,511	\$100,629	55%
Diagnostic Medical Sonography-122700	AA/AS Degree Recipient	\$23,997	\$91,532	\$99,441	314%
Drywall and Insulation-095280	Chancellor's Office Approved Certificates Recipient	\$53,489	\$82,203	\$97,261	82%
Industrial and Occupational Safety and Health-095670	AA/AS Degree Recipient	\$35,008	\$51,113	\$96,978	177%
Registered Nursing-123010	AA/AS Degree Recipient	\$24,017	\$80,151	\$94,079	292%
Surveying-095730	AA/AS Degree Recipient	\$73,749	\$76,050	\$93,964	27%
Electrical-095220	Chancellor's Office Approved Certificates Recipient	\$47,484	\$82,728	\$93,513	97%
World Wide Web Administration-070900	Locally Approved Certificates Recipient	\$25,742	\$42,374	\$91,395	255%
Electro-Neurodiagnostic Technology-121200	AA/AS Degree Recipient	\$19,470	\$72,843	\$91,267	369%
Registered Nursing-123010	Chancellor's Office Approved Certificates Recipient	\$21,298	\$78,238	\$90,934	327%
Biomedical Instrumentation-093460	Chancellor's Office Approved Certificates Recipient	\$43,984	\$64,161	\$90,873	107%

Note: "Percent Change" is calculated as the percentage difference between the median wage 2 years before award and the median wage 5 years after award

Analysis of available data shows some interesting results. While some fields, such as Electrical Systems and Power Transmission had particularly high pre-award earnings, others such as Physicians' Assistant had notably low pre-award earnings and high post-award earnings. Indeed, Physicians' Assistants saw an over 300% increase in income, for both the AA/AS degree recipients as well as the certificate recipients. Although the fields that showed the highest 5-year post-award earnings are unsurprisingly in healthcare and healthcare-adjacent fields and in electrical and electrical-adjacent, what is also notable is that certificate holders were able to realize high 5-year post-award earnings. Thus, while the conventional thought has been to push transfer to university to achieve higher earnings, the available 5-year post-award data illustrate significant opportunity for earnings for certificate holders. Considering that certificates are often much more cost-

effective and require less time than a degree (either an Associate's or a Bachelor's), they may provide increased access to opportunity for a wider slice of the population.

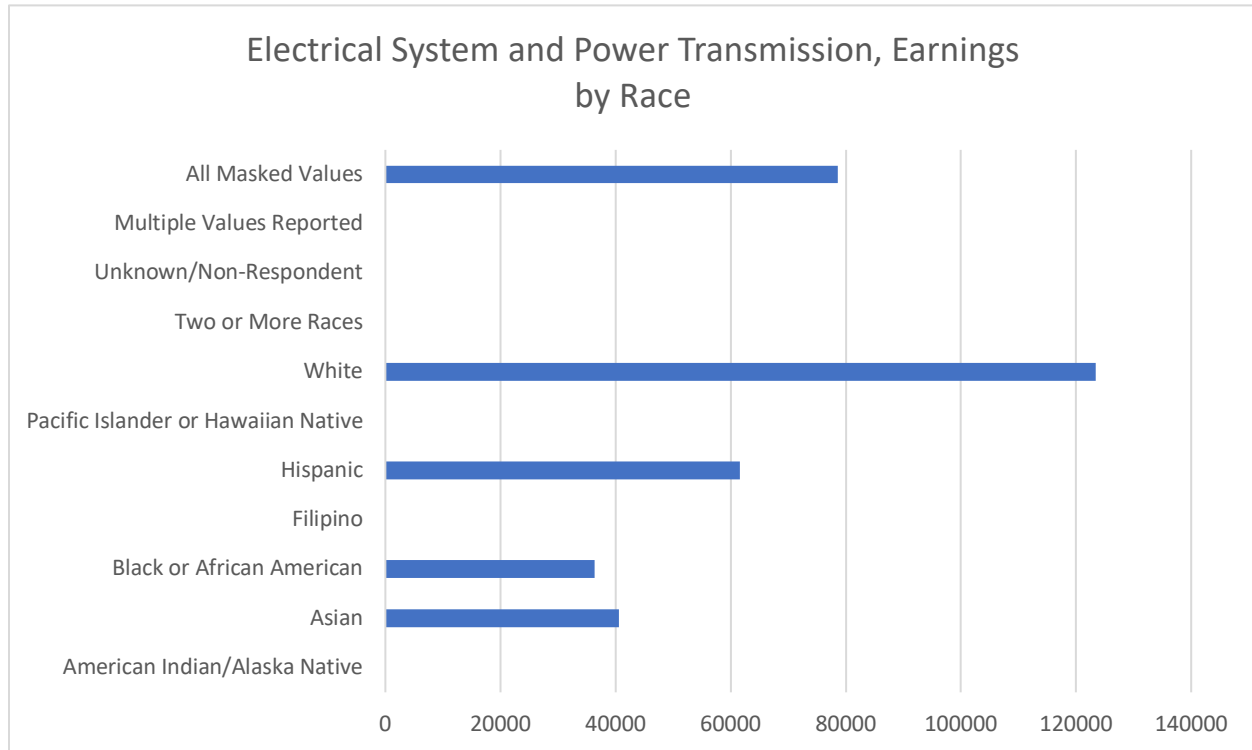
Race

The Chancellor's office has a Strong Workforce Program dashboard (i.e., workforce development, or certificates), which breaks down major by race on a variety of metrics. However, for many of the fields detailed above, there are limited data available on earnings by race by field.

We did want to provide some analysis of racial breakdowns in earnings based on what is available. All data provided below are based on 2015 data for earnings outcomes (the earnings outcomes data analyzed above report median earnings based on data from 2010-2015) and are matched to the respective field (matched by their 6-digit TOP ["Taxonomy of Programs"] code). When we break median annual earnings for SWP students down by race, we see that there are differences in reported earnings.

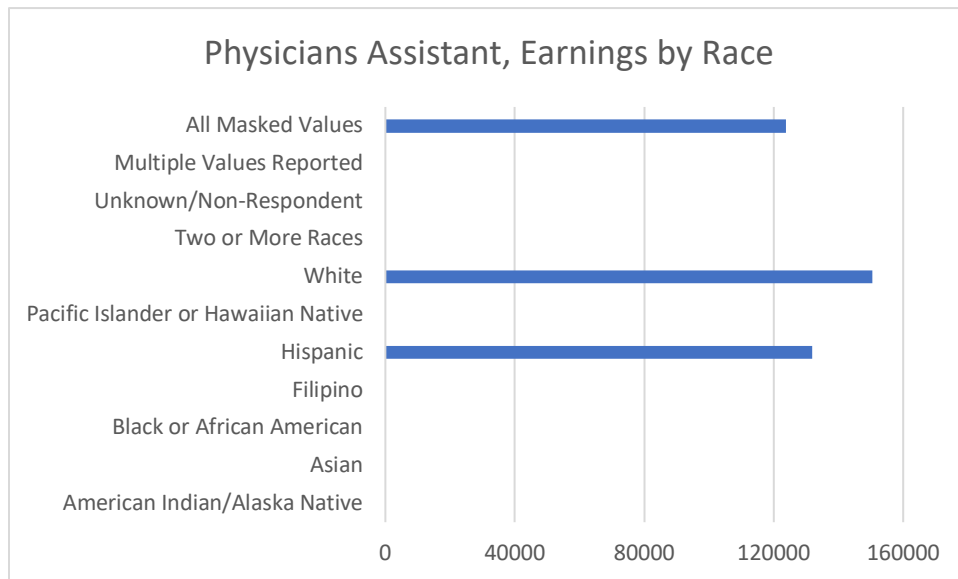
For example, for Electrical Systems and Power Transmission (see Figure 2) which reported the highest 5-year post-award earnings from the most recent data available, for AY2015 we find that Whites had the highest reported median earnings at \$123,403, while Blacks have reported median earnings of \$36,300. Importantly, the earnings reported are the median, meaning that it is *not* the average of all values (i.e., the mean), but instead the middle value out of all reported values. Additionally, almost 4 times as many White exiting students reported wages compared to Black exiting students, significantly limiting the amount of analysis that can be done at this point.

Figure 2. Electrical System and Power Transmission earnings by race



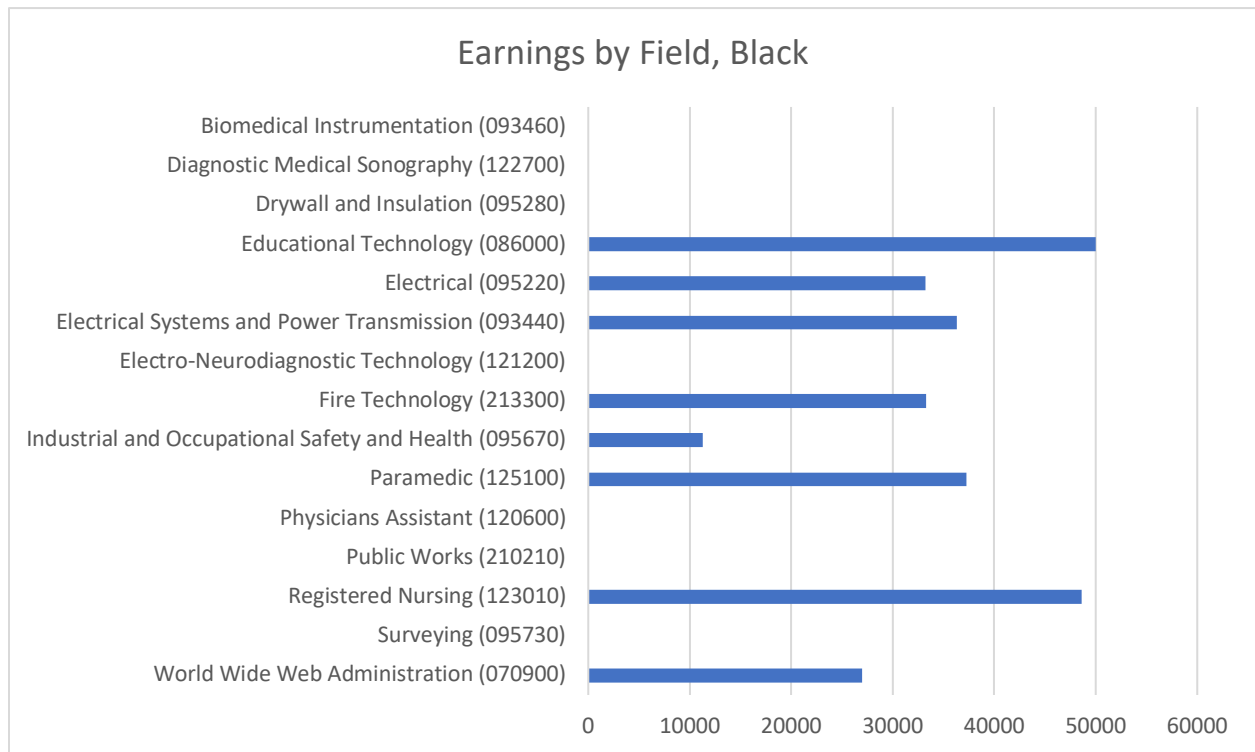
For the next highest 5-year post-award earnings, and the highest post-award earnings where the pre-award earnings were significantly lower, Whites and Latinx made the most as Physicians Assistants (see Figure 3), although few other races had sufficient students report to be able to disaggregate other races further. The number of students reporting was also similarly low (23 Whites, 14 Latinx, and 11 All Masked Values), limiting possible analysis.

Figure 3. Physicians Assistant earnings by race



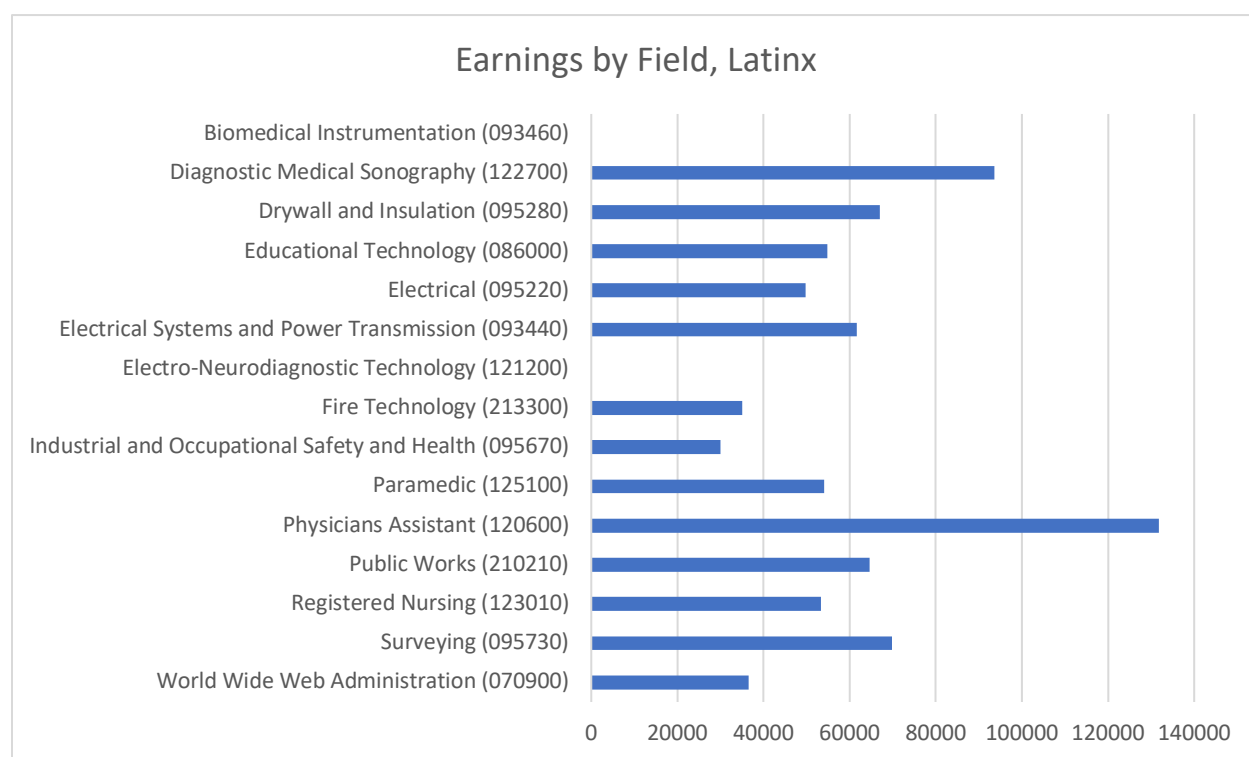
The top fields where Black SWP exiting students reported high median earnings are Educational Technology and Registered Nursing, at \$49,991 and \$48,589 respectively (see Figure 4).

Figure 4. Earnings by field, Black



For Latinx, the highest median SWP earnings, by a substantial margin, are for Physicians Assistant and Diagnostic Medical Sonography (see Figure 5).

Figure 5. Earnings by field, Latinx



The above display of data attempts to provide an initial glimpse into the complexities of policy, practice, and outcomes in community colleges. For example, Levin et al. (2009) noted that students traditionally underrepresented in higher education were more often than not leaving with short-term certificates. Certificates are not necessarily an indicator of a low-income outcome; as the data above show, fields such as medical and electrical-type certificates can lead to high post-award wages. Additionally, an analysis of post-award earnings shows that for many fields, associate degree holders and certificate holders fared similarly.

However, the data above also show that there are numerous fields for which certificate holders have very low pre-award earnings, and while their post-award earnings are typically higher, their yearly income is very low. Grubb also noted this back in 1997, that in some cases/fields, the cost of attending community college may not be economically of worth. This may be a cause for concern, as it suggests that certificates for low-wage fields have persisted for at least three decades. Wraparound services, including career counseling, are clearly an essential part of understanding the cost/benefit analysis of any educational trajectory. Similarly, Levin et al. (2009) expressed concern that many in these underrepresented groups were in essence being prepared for low-skill, low-wage jobs that would limit their opportunities for advancement.

Having a bachelor's degree has long-term benefits (Schudde and Bernell, 2019; Hout, 2012). At the national level, recent Bureau of Labor Statistics (BLS) data show that in addition to higher earnings, greater educational attainment is also typically associated with a lower unemployment rate.¹⁴ Additionally, the BLS has reported that the occupations that are projected to grow the most are also those that require higher educational attainment.¹⁵ For California, California Department of

¹⁴ <https://www.bls.gov/emp/tables/unemployment-earnings-education.htm>; accessed May 20, 2024; Note: these data only account for higher level of education, and do not account for trainings, like apprenticeships

¹⁵ <https://www.bls.gov/emp/tables/education-summary.htm>; accessed May 20, 2024

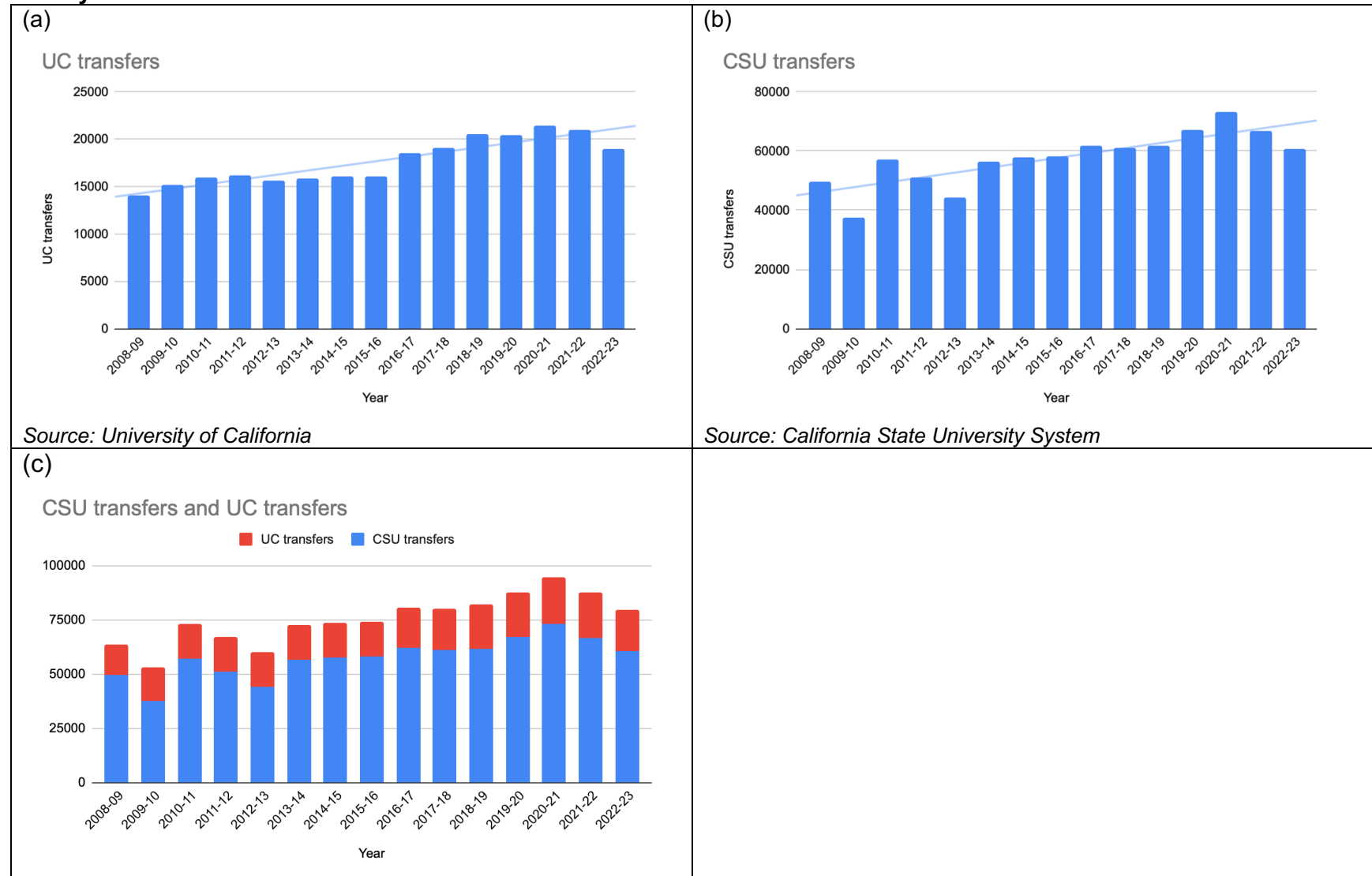
Finance data show that in 2014 (the most recent date that data are available),¹⁶ 18-64 year old males and females who had a Bachelor's degree or higher and made at least \$75,000 were the largest group. For those 18-64 that only had some college, but not a 4-year degree, the earnings distribution for males is relatively equally spread out over the \$15,000-\$24,999 bracket up through the \$75,000 and over bracket. For females 18-64 who have some college but no 4-year degree, there is more variation between the brackets, with the \$25,000 to \$34,999 bracket accounting for the largest share of this population.

There is an equity consideration here as well. As Dougherty and Keinzl (2006) point out, community colleges also play a key equity role in that transferring to a university can be a much more cost-effective way to achieve a bachelor's degree. This becomes particularly important from a policy perspective as the cost of higher education has continued to rise, meaning that it is often the most advantaged who have access to universities.

Although there are limited data on transfers, there are data on transfers to both the California State University (CSU) system and the University of California (UC) system. While both systems have shown an increase in the number of transfers over time, there are far more transfers to the CSU system than to the UC system (see Figure 6).

¹⁶ <https://data.ca.gov/dataset/ca-educational-attainment-personal-income>; data downloaded from <https://data.ca.gov/dataset/ca-educational-attainment-personal-income/resource/26201f19-4469-4311-a819-bbbd3e557eda>; accessed May 20, 2024

Figure 6. Transfers to the (a) University of California system, (b) California State University system, and (c) both the UC and CSU systems combined



Note: the scales for the UC and CSU transfer data (y-axis for figures 6a and 6b, respectively) were kept different to allow the reader to understand the change in yearly numbers of transfers over time

Conclusions

There are several limitations with the data analyzed that need to be acknowledged, and which highlight potential next steps for analysis. First, as of this writing, the earnings data reported on are a decade old – it is the calculated median of 2010-2011 to 2014-2015, and these are the most recent data available through the Chancellor's Office Data Mart. There have undoubtedly been increases in earnings potential for various fields, decreases in others, and fields that have significantly shrunk over the past decade or more. Second, several of the fields displayed in the various lists discussed above are at risk of becoming obsolete (and for those openings that remain, likely a steep pay cut) due to the increasing use of Artificial Intelligence. There are equity concerns here as well, particularly considering there are fields that are better insulated against external shocks than others and the racial composition of these fields. A greater understanding of the data on outcomes that are disaggregated by race and by performance (i.e., course grades) could help identify other equity aspects in the explanation of "success" metrics. Additionally, it should be telling to explain the socio-economic backgrounds of students related to student outcomes, including the role that faculty (and support staff) of color can play in shrinking gaps in access and achievement.

There are inherent issues with policymakers focusing on completion as equating to "success". Completion – be it an award, a credential, or units – does not necessarily equate to economic value nor does it indicate potential access to furthering one's education or training. Additionally, completing the requirements to transfer does not necessarily mean a student will transfer, and even if they do transfer, it does not mean that they will graduate with a four-year degree. For example, the California legislature adopted Chapter 428 to facilitate transfer to the California State University system. The legislation created an Associate's degree that once obtained, creates automatic eligibility for CSU transfer. Once in the system, the student can earn their bachelor's degree with an additional 60 units of coursework, or two years. While seemingly more efficient, legislation such as this assumes that students have figured out an educational plan that leads directly to graduation. As with the analysis on certificates, Associate's degrees, and earnings discussed above, support is needed to help students understand both the requirements of their chosen educational journey, as well as what the outcomes can possibly be once they exit the system. Explanations of the various ramifications of equating success with completion could go a long way to helping policymakers understand equity of access in higher education, as well as how to support the core equity mission of community colleges.

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