2026 REPORT

Apprenticeship: Return on Investment Report

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APPRENTICESHIP:
RETURN ON INVESTMENT REPORT

Prepared By

California Community Colleges Chancellor's Office

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PART I - EXECUTIVE SUMMARY

Apprenticeship is a major part of California's workforce development strategy for the immediate future as Gov. Gavin Newsom has announced the intention to serve 500,000 apprentices by the end of the decade. The California Community College system has invested heavily in expanding existing apprenticeship opportunities and creating new ones for students.

Apprenticeship offers benefits to four major constituent groups. First, students gain the ability to earn a regular wage while learning a market-current skill. They can also learn without going into debt to do so. Apprenticeship further provides robust pathways for students who have been left behind by traditional academic institutions. As these students are disproportionately minority and first-generation, apprenticeship provides equitable levers to high-wage careers.

Second, employers gain access to customized talent pipelines, as they contribute to the design of the instructional standards. Apprenticeship reduces employer recruitment costs and increases employee retention rates. Further, it offers seamless transitions from trainee to employee increasing productivity, reducing uptake time, and preserving specialized skills.

Third, community colleges gain direct feedback from employers, which provides valuable information with which they can update programs and modernize training for all students. Apprenticeship provides colleges with better, more career-ready programs for students than other higher education settings. Further, these programs put community colleges in a position to serve as regional talent hubs and solidifies their place as economic engines, supporting tens of thousands of local jobs.

Finally, state and local governments gain an enormous boost to the economy and tax base. The community colleges and their students contribute over $170 billion annually to the statewide economy. In addition, over 2000 state and local agencies use community college programs to fill hard to staff public sector roles in information technology, healthcare and public safety. For every $1 invested in community colleges, taxpayers gain $2 in added tax revenue due to increased wages of students, and California gains $14 in added income and social safety net savings.

In order to understand the direct impact of apprenticeship on student outcomes, the California Community Colleges Chancellor's Office (Chancellor's Office) is comparing the student experience in apprenticeship programs to comparable academic programs (those which prepare students for the same occupations, but which take place in more traditional academic settings). This study focuses on three areas, earnings while enrolled, earnings post-exit, and educational outcomes.

In almost all cases, apprentices out-earn their peers while enrolled and after they complete their studies (for a period of at least 2 years – the maximum length of time studied). Further, success rates in apprenticeship coursework are significantly higher for almost all programs.

While the evidence is still preliminary and based on relatively small numbers of students at this time, it is very promising and shows that there is strong potential for apprenticeship to be a major engine for success for students. Further study is warranted as programs are expanded in enrollment and scope.

ABSTRACT

In order to better understand the impact of participating in apprenticeship programs, Chancellor's Office staff looked at comparing three outcomes for apprenticeship students to the same outcomes for students enrolled in more traditional academic programs (non-apprenticeship) which prepare them for the same careers. The outcomes are:

- Success in college coursework
- Earnings while enrolled in the program
- Earnings after exiting the program

Results show that, with limited exceptions, apprenticeship students out-earn their non-apprenticeship peers while enrolled and for at least 2 years after, though in some cases, there is a mild narrowing of the difference as they move beyond exit date. In addition, in the majority of cases, apprenticeship students are more successful in their coursework than their non-apprentice peers.

PROGRAM BACKGROUND AND CONTEXT

The California Community College system provides funding for apprenticeship through the California Apprenticeship Initiative (CAI) New and Innovative grant program for colleges to create or supplement existing apprenticeship programs. It also reimburses community college districts and K-12 districts for students enrolled in apprenticeship programs through the Related and Supplemental Reimbursement Program (RSI).

The point of these programs is to provide funding for students to learn skilled professions in a hands-on manner. Students learn while doing the job they will eventually have, which is a powerful instructional strategy. In addition, because students are working in the field that they have chosen, their learning time is also earning time. Students enrolled in apprenticeship programs are earning wages in jobs related to their chosen field, while students in more traditional academic pathways are not earning money during their learning time and generally have to wait until program completion to take a job in their chosen field.

In 2018, Gov. Gavin Newsom laid out an ambitious goal to expand the California apprenticeship system to serve 500,000 apprentices by 2029. The community college system is a major engine of that goal. As the community colleges have been scaling up apprenticeship programs and enrolling more apprentices, the administrators of these programs sought to understand the economic impact of apprenticeship on students, both while they were enrolled and after they complete their programs. Thus, the research questions for this study are:

1. While enrolled in their programs, do apprentices earn more, less or the same amount of money as students in traditional academic programs with the same career alignment?

2. After completing their programs, do apprentices earn more, less or the same amount of money as students in traditional academic programs with the same career alignment?

In addition, there was interest in comparing success rates for students enrolled in these programs. Thus, a third research question emerged:

3. To what extent do apprenticeship students succeed at higher or lower rates in their programs than students in traditional academic programs with the same career alignment?

STUDY PROCEDURE

In order to complete this study, the team had to identify apprenticeship programs with significant numbers of students that had analogous traditional academic programs with significant numbers of students. This means that in each group, there were at least 25 completers or students who attained an award or reached apprentice journey status. While the team expects the number of programs to grow as apprenticeship enrollment and offerings expand, based on the last three years of data, the following programs were identified:

- Electrical Systems and Power Transmission
- Industrial Systems Technology and Maintenance
- Environmental Control Technology
- Heavy Equipment Maintenance
- Construction Crafts Technology
- Carpentry
- Electrical
- Plumbing, Pipefitting and Steamfitting
- Manufacturing and Industrial Technology
- Sheet Metal and Structural Metal
- Welding Technology
- Surveying
- Dental Assistant
- Fire Technology

After an additional year of data became available, four new programs were identified as having significant enough cohorts to include some data:

- Computer Infrastructure and Support
- Medical Assisting
- Health Information Technology
- Child Development/Early Care and Education

Note that only the last six are what are considered non-traditional apprenticeships, which are those not in the building and construction trades. This is a known limitation of the study thus far, but, as stated above, it is anticipated that more apprenticeship programs will become eligible for this study as enrollment and offerings increase.

Once programs were identified, participants in those programs were identified. To develop earnings metrics, quarterly earnings data was taken from the California Employment Development Department (EDD) database[1] for students for a few periods of time, including:

- The second fiscal quarter of the academic year in which students complete their program
- The second fiscal quarter after the student completes their program
- The fourth fiscal quarter after the student completes their program
- The sixth fiscal quarter after the student completes their program
- The eighth fiscal quarter after the student completes their program

Using these four metrics allows for comparisons over time and for nuanced answers to the research questions above. It also allows for looks into the long-term impact of programs, as one can see if any impact during or immediately following the program is mitigated over time (2 years).

To determine academic success, three metrics were considered:

- Success in courses
- Fall to Spring retention
- Program completion

However, due to the non-standard and highly variable nature of program lengths and the length of academic periods (quarters, semesters, trimesters, etc), retention was rejected. Further, the variability of length-of-program makes program completion metrics misleading. As such, it was decided to use course success as the metric of academic success. This carries the additional benefit of boosting the sample size, as the study is no longer reliant on completers, and can include anyone who takes a course within the program.

1 The ability to access this data is limited, as EDD does not include self-employed individuals, and, as matching is done on Social Security Number (SSN), there is no data for students who do not have or have not shared a SSN.

It is important to note that the methodology used here means that it is possible that different students are being compared for the earnings and success analyses. The earnings analysis only considers students who completed their program, while the academic success analysis uses all students enrolled in courses in a program.

FINDINGS

Findings can be divided into Statewide and Regional comparisons. In each case, the number displayed is the difference between the earnings of apprentices and their non-apprentice peers. Positive numbers show apprentices out-earning their peers, while negative numbers show the peers out-earning the apprentices. Regional analysis was done using the 15-entity Microregion map[2]. Data is only shown when the numbers of students in both comparison groups allow for significance.

Statewide Earnings Results

Electrical Systems and Power Transmission

Table 1

TOP Code	Exit Year	During Enrollment	2Q Post-Exit	4Q Post-Exit	8Q Post-Exit
0934.40	2020-21	$43,517	$66,283	$46,225	$42,749

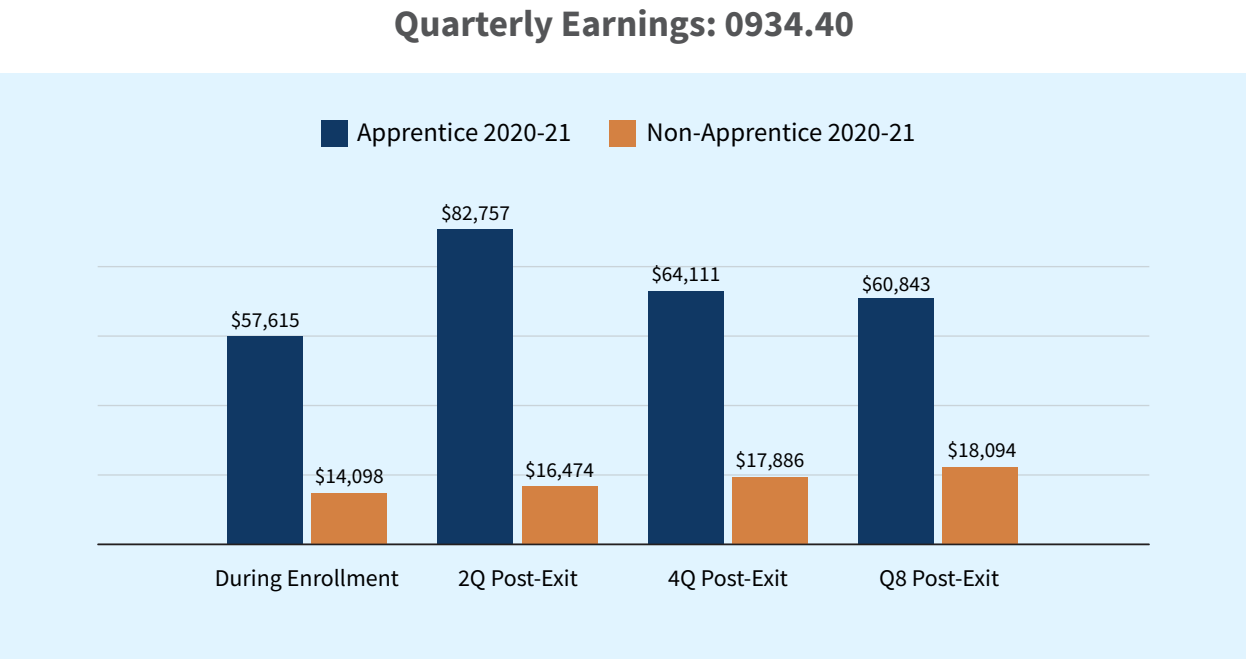


Figure 1: Quarterly Earnings: Electrical Systems and Power Transmission

2 https://datavista.cccco.edu/resources/13

Clearly, apprentices are out-earning their non-apprentice classmates. As these numbers represent quarterly earnings, apprentices are earning $170,000 to $265,000 more annually than their classmates. While the difference tends to decrease as time goes by, it is still significant 2-years post-exit.

Industrial Systems Technology and Maintenance

Table 2

TOP Code	Exit Year	During Enrollment	2Q Post-Exit	4Q Post-Exit	8Q Post-Exit
0945.00	2022-23	-$8692	-$2417	-$4182	n/a

This is one of only two programs where non-apprentices out-earn apprentices. Results are significant (about $10,000 to $35,000 per year), but there has not been enough time to show the long-term impact.

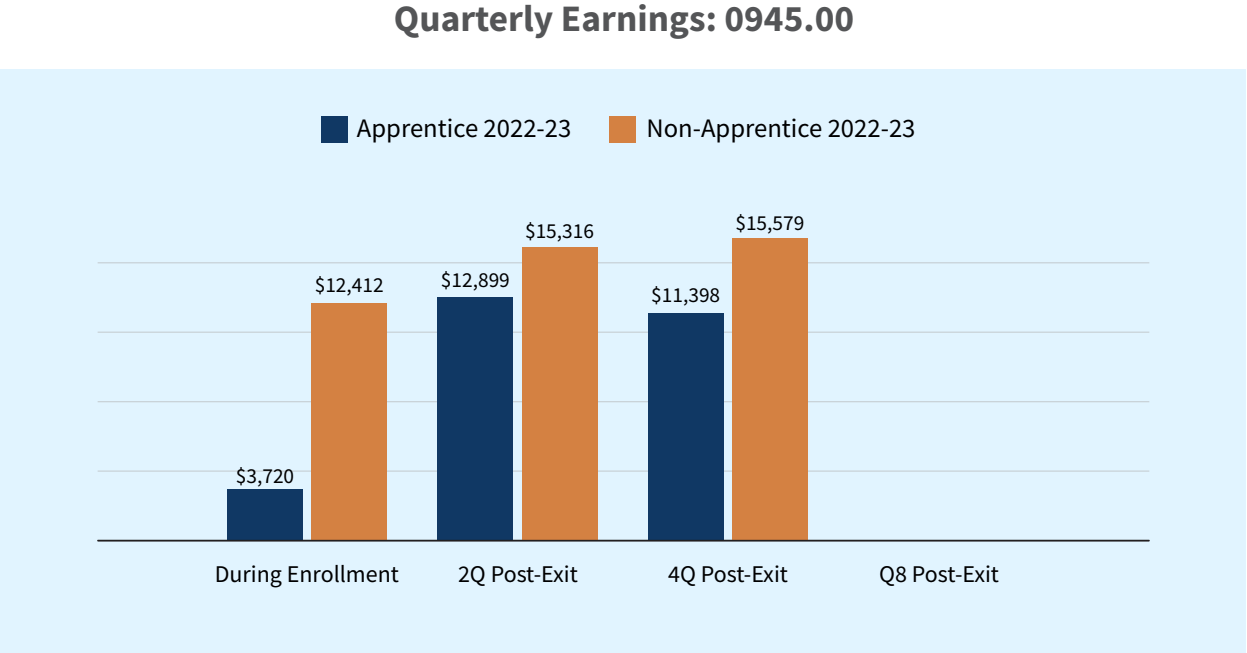


Figure 2: Quarterly Earnings: Industrial Systems Technology and Maintenance

It is also important to note that the data on apprenticeship for this program comes from a single college in the Los Angeles microregion, while the data for non-apprenticeship programs comes from several colleges across the state. While the number of students in the apprenticeship program meets the minimum threshold for significance, the fact that they are all in one location (and labor market) may skew the results.

Environmental Control Technology

Table 3

TOP Code	Exit Year	During Enrollment	2Q Post-Exit	4Q Post-Exit	8Q Post-Exit
0946.00	2020-21	$17,344	$17,056	$13,813	$15,629
0946.00	2021-22	$21,633	$20,934	$21,487	$18,767
0946.00	2022-23	$20,075	$20,563	$19,998	n/a

As with Electrical Systems and Power Transmission, the differences here are large. Also similar is the general trend towards the non-apprentices catching up over time, but the apprentices are still out-earning by $60,000 to $70,000 per year, two years out.

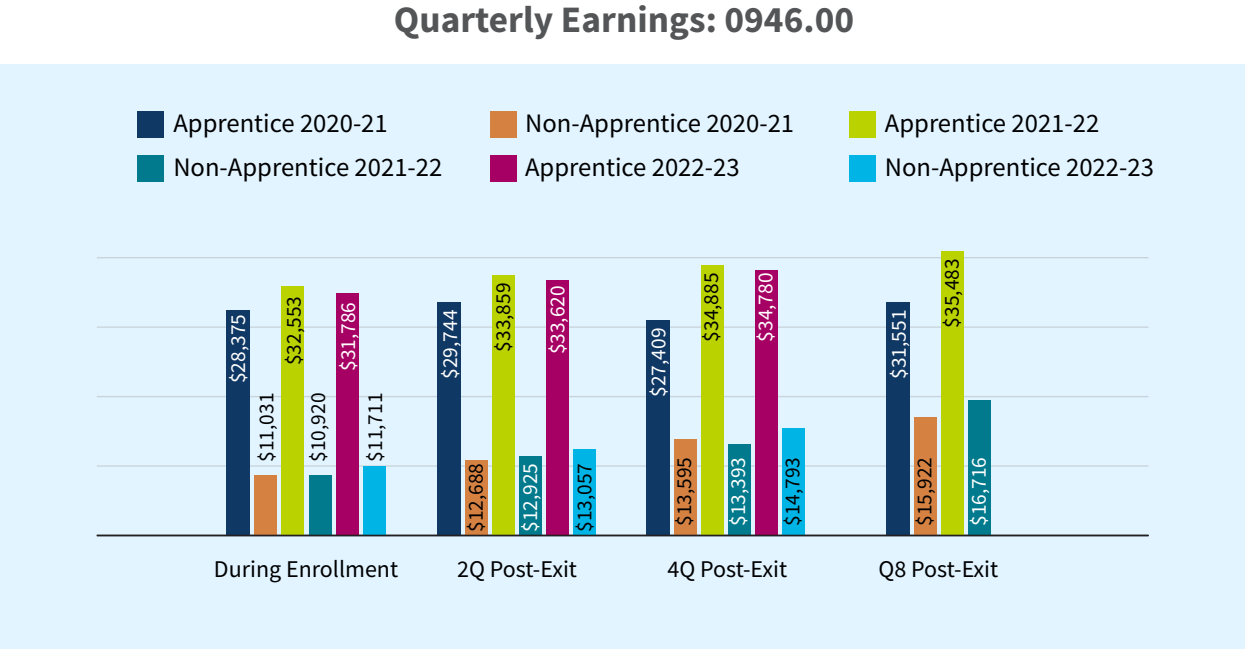


Figure 3: Quarterly Earnings: Environmental Control Technology

Heavy Equipment Maintenance

Table 4

TOP Code	Exit Year	During Enrollment	2Q Post-Exit	4Q Post-Exit	8Q Post-Exit
0947.20	2021-22	$26,700	$22,038	$21,716	$18,505
0947.20	2022-23	$22,953	$16,972	$21,029	n/a

As with two of the three programs above, the differences here are large. Also similar is the general trend towards the non-apprentices catching up over time. Apprentices are out-earning their peers by $70,000 to $105,000 per year.

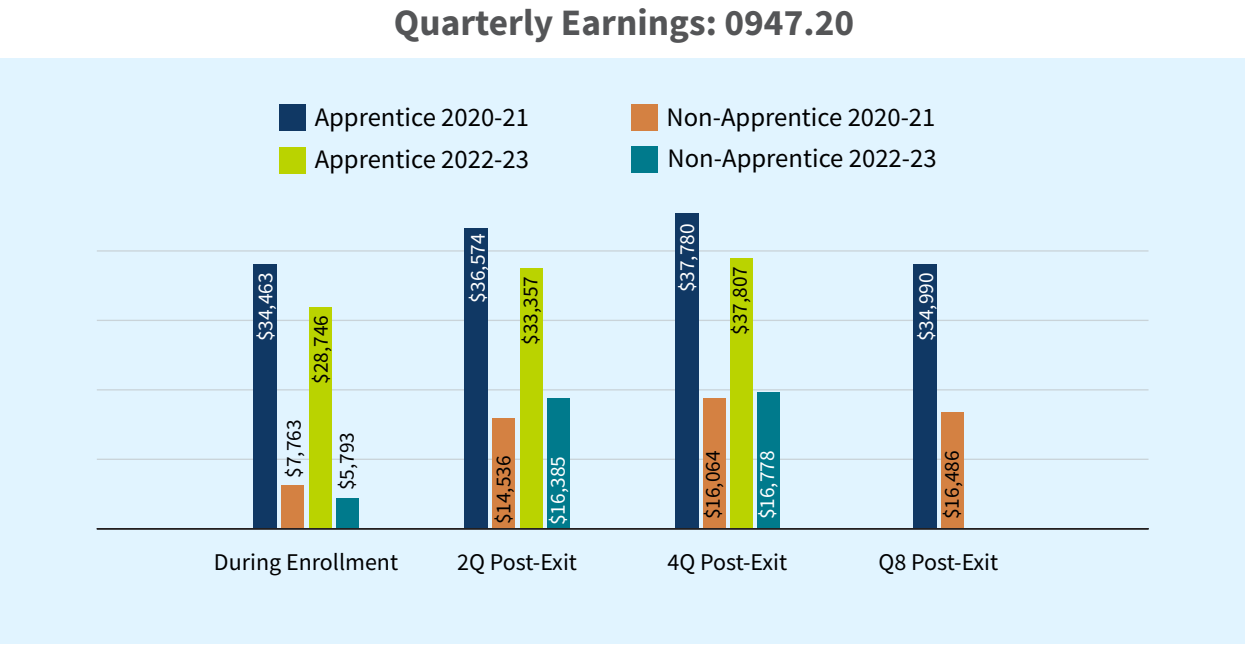


Figure 4: Quarterly Earnings: Heavy Equipment Maintenance

Heavy Equipment Operation

Table 5

TOP Code	Exit Year	During Enrollment	2Q Post-Exit	4Q Post-Exit	8Q Post-Exit
0947.30	2020-21	$22,617	$16,421	$16,163	$14,284

As with three of the four programs above, the differences here are large. Also similar is the general trend towards the non-apprentices catching up over time. Apprentices are out-earning their peers by $50,000 to $90,000 per year.

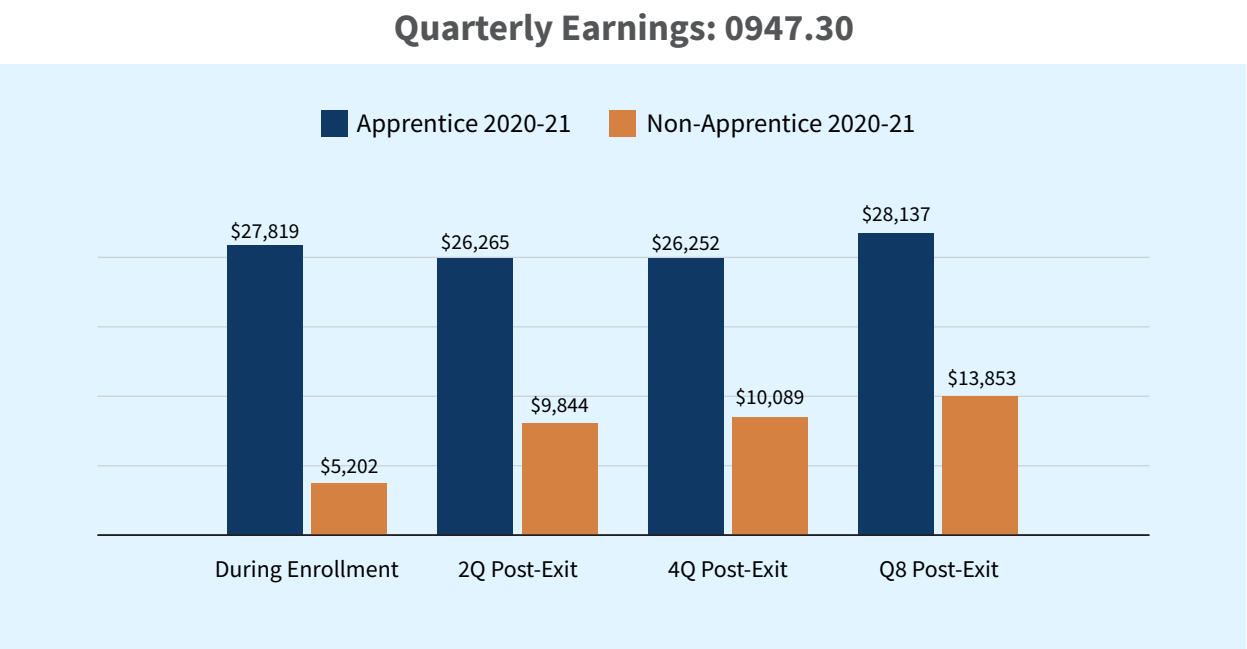


Figure 5: Quarterly Earnings: Heavy Equipment Operation

Construction Crafts Technology

Table 6

TOP Code	Exit Year	During Enrollment	2Q Post-Exit	4Q Post-Exit	8Q Post-Exit
0952.00	2020-21	$16,055	$14,650	$15,083	$14,731
0952.00	2021-22	$26,075	$29,890	$29,163	$30,987
0952.00	2022-23	$25,094	$24,569	$24,980	n/a

As with other pathways seen here, apprentices are significantly out-earning their non-apprentice peers. In this case, there is little sign of the non-apprentices catching up as time goes by. These figures translate to approximately $60,000 to $120,000 per year.

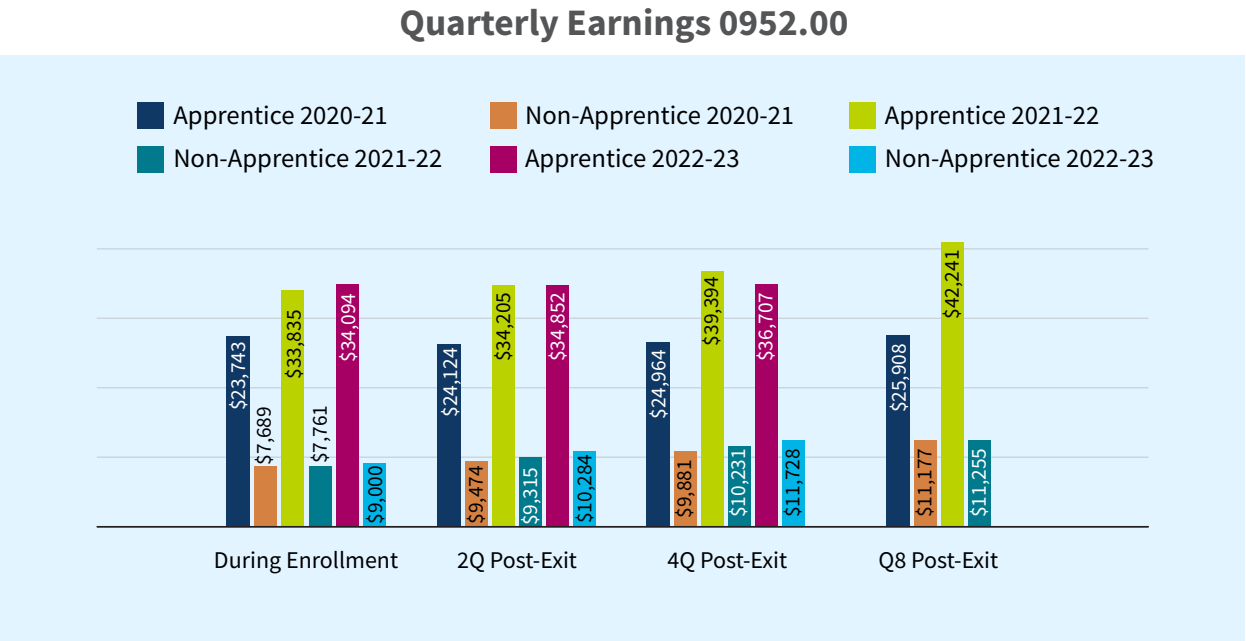


Figure 6: Quarterly Earnings: Construction Crafts Technology

Carpentry

Table 7

TOP Code	Exit Year	During Enrollment	2Q Post-Exit	4Q Post-Exit	8Q Post-Exit
0952.10	2020-21	$16,244	$16,459	$16,700	$15,487
0952.10	2021-22	$15,096	$14,450	$14,251	$13,775
0952.10	2022-23	$17,681	$15,784	$16,167	n/a

As with other pathways seen here, apprentices are significantly out-earning their non-apprentice peers. These figures translate to approximately $55,000 to $70,000 per year.

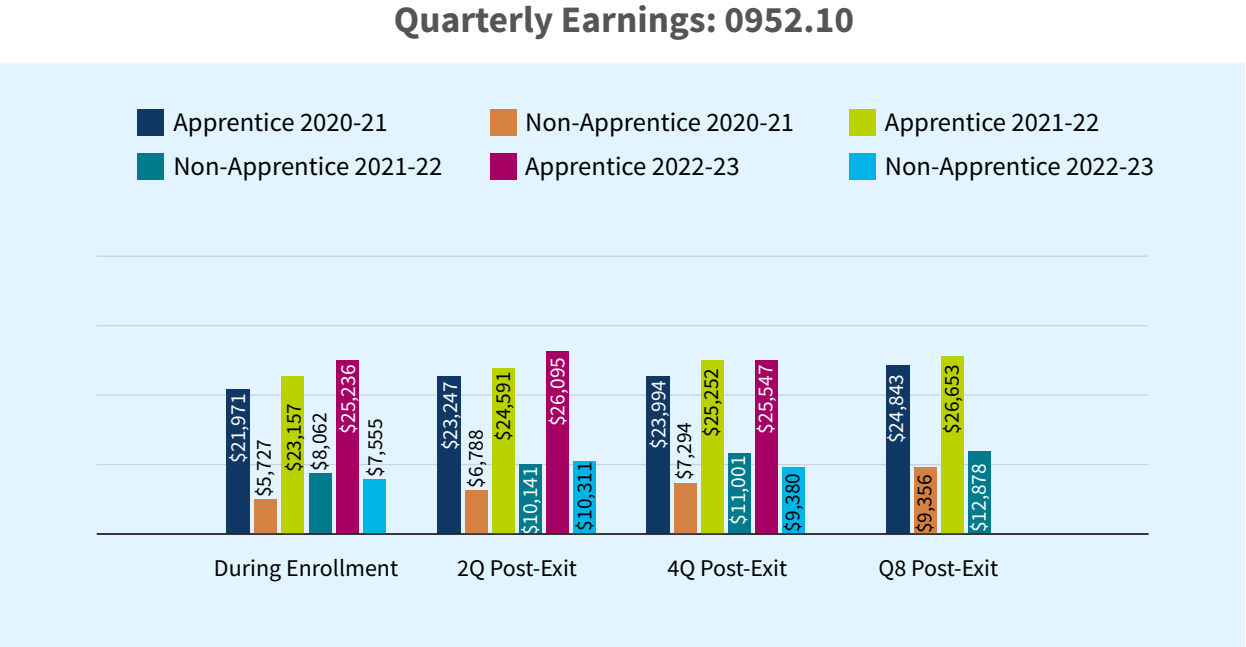


Figure 7: Quarterly Earnings: Carpentry

Electrical

Table 8

TOP Code	Exit Year	During Enrollment	2Q Post-Exit	4Q Post-Exit	8Q Post-Exit
0952.20	2020-21	$10,835	$11,797	$11,177	$10,493
0952.20	2021-22	$10,087	$10,567	$10,737	$11,355
0952.20	2022-23	$10,805	$12,305	$12,578	n/a

As with other pathways seen here, apprentices are significantly out-earning their non-apprentice peers. While the difference here is smaller than in some of the other pathways, it still equates to $40,000 to $50,000 per year, which is quite large.

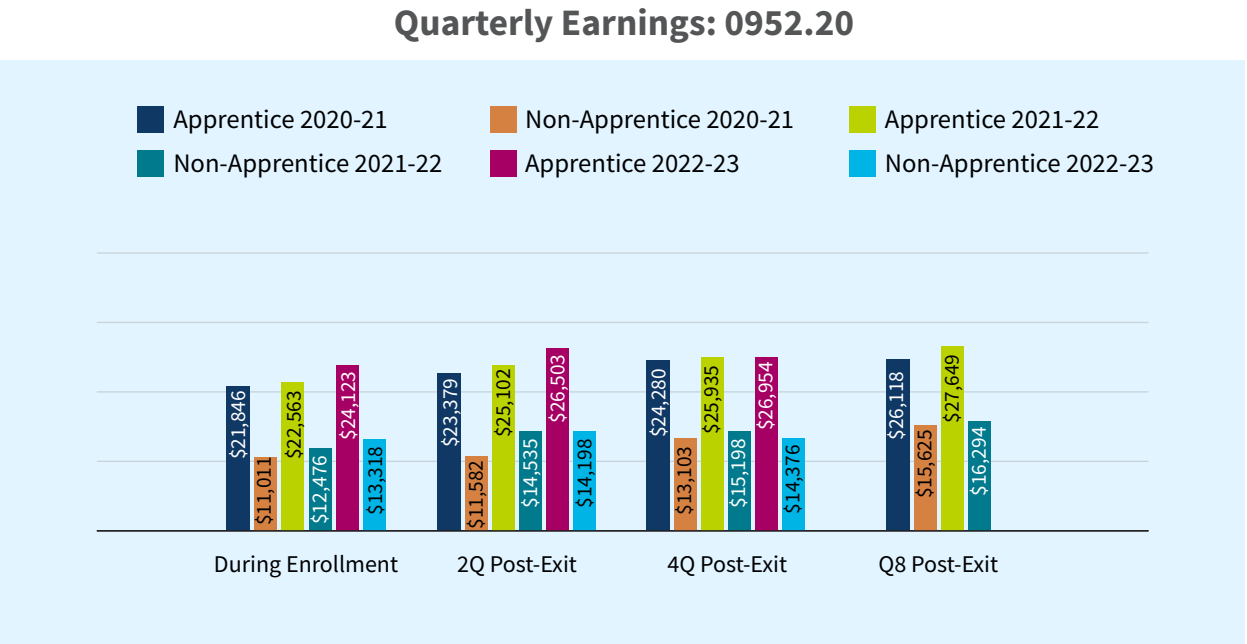


Figure 8: Quarterly Earnings: Electrical

Plumbing, Pipefitting, and Steamfitting

Table 9

TOP Code	Exit Year	During Enrollment	2Q Post-Exit	4Q Post-Exit	8Q Post-Exit
0952.30	2020-21	$18,470	$17,070	$18,402	$17,448
0952.30	2021-22	$21,264	$20,601	$21,904	$20,396
0952.30	2022-23	$22,334	$23,886	$22,752	n/a

As with other pathways seen here, apprentices are significantly out-earning their non-apprentice peers. These figures translate to approximately $70,000 to $95,000 per year.

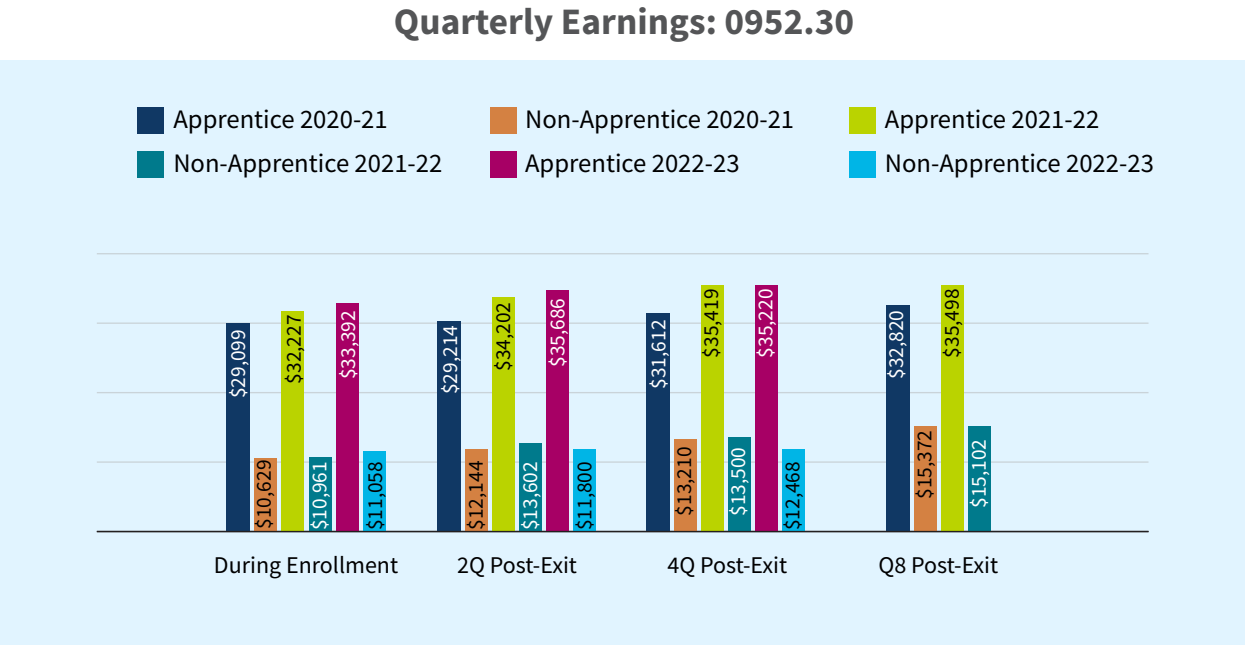


Figure 9: Quarterly Earnings: Plumbing, Pipefitting, and Steamfitting

Manufacturing and Industrial Technology

Table 10

TOP Code	Exit Year	During Enrollment	2Q Post-Exit	4Q Post-Exit	8Q Post-Exit
0956.00	2020-21	$11,429	$10,197	$12,962	$12,447
0956.00	2021-22	$16,128	$13,319	$14,175	$11,253
0956.00	2022-23	$11,644	$13,560	$13,577	n/a

As with other pathways seen here, apprentices are significantly out-earning their non-apprentice peers. These figures translate to approximately $40,000 to $50,000 per year.

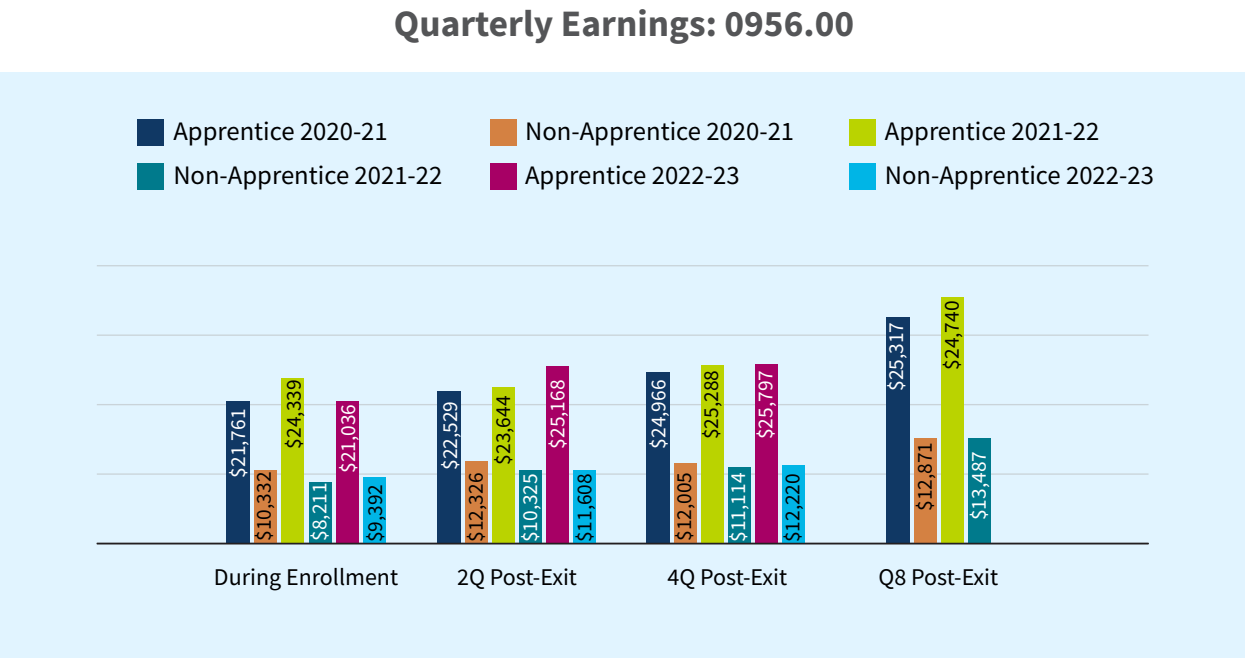


Figure 10: Quarterly Earnings: Manufacturing and Industrial Technology

Sheet Metal and Structural Metal

Table 11

TOP Code	Exit Year	During Enrollment	2Q Post-Exit	4Q Post-Exit	8Q Post-Exit
0956.40	2022-23	$16,570	$15,425	$17,410	n/a

As with other pathways seen here, apprentices are significantly out-earning their non-apprentice peers. These figures translate to approximately $60,000 to $70,000 per year.

Quarterly Earnings: 0956.40

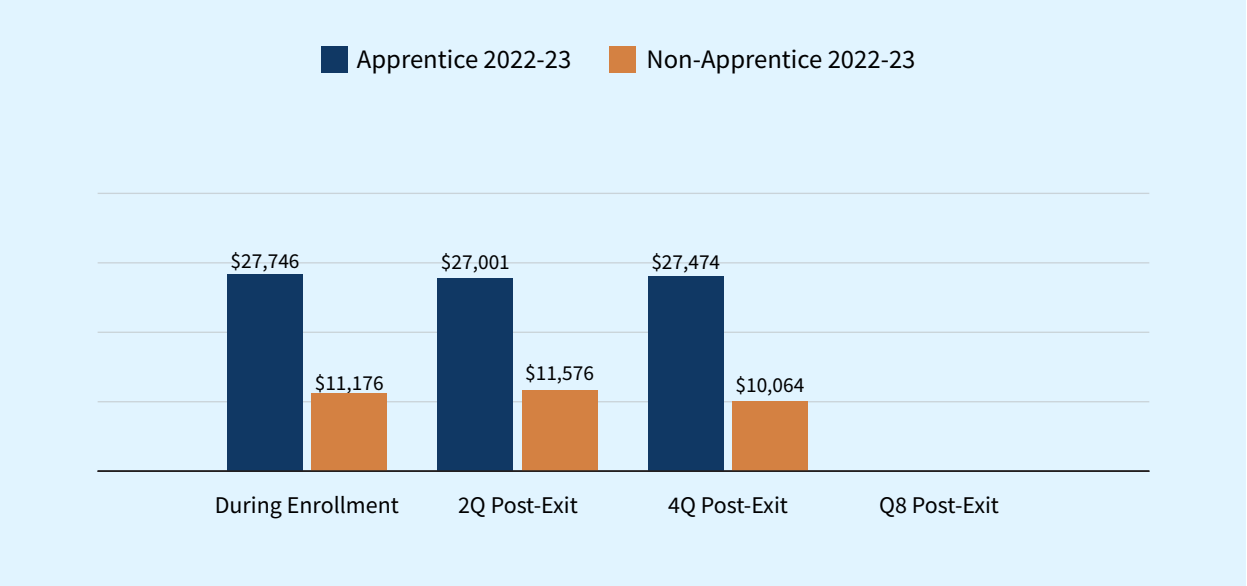


Figure 11: Quarterly Earnings: Sheet Metal and Structural Metal

Welding Technology

Table 12

TOP Code	Exit Year	During Enrollment	2Q Post-Exit	4Q Post-Exit	8Q Post-Exit
0956.50	2020-21	$13,628	$9,420	$11,694	$12,646
0956.50	2021-22	$13,030	$11,863	$11,429	$12,179
0956.50	2022-23	$12,717	$9,982	$11,218	n/a

As with other pathways seen here, apprentices are significantly out-earning their non-apprentice peers. These figures translate to approximately $40,000 to $50,000 per year.

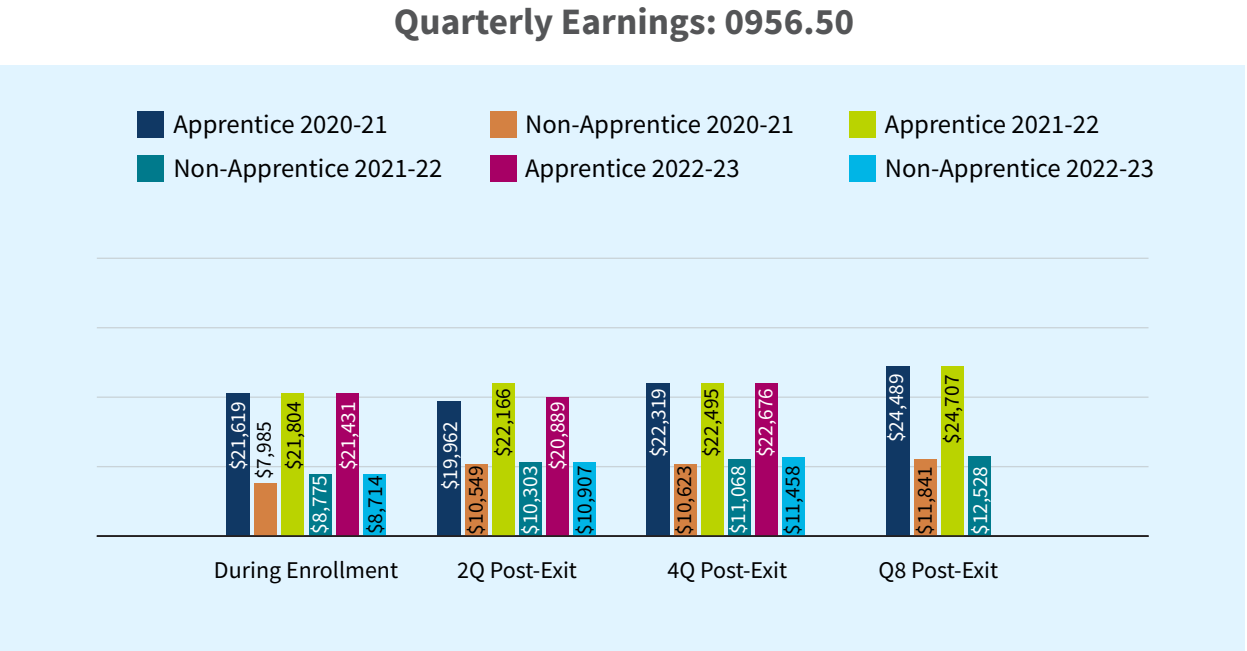


Figure 12: Quarterly Earnings: Welding Technology

Surveying

Table 13

TOP Code	Exit Year	During Enrollment	2Q Post-Exit	4Q Post-Exit	8Q Post-Exit
0957.30	2020-21	$10,617	$9,510	$7,374	$7,308
0957.30	2021-22	$5,780	$4,026	$5,770	$4,237
0957.30	2022-23	$11,473	$8,689	$9,013	n/a

This pathway shows one of the smaller differences between apprentices and non-apprentices. However, apprentices are still out-earning their peers by $15,000 to $35,000 per year.

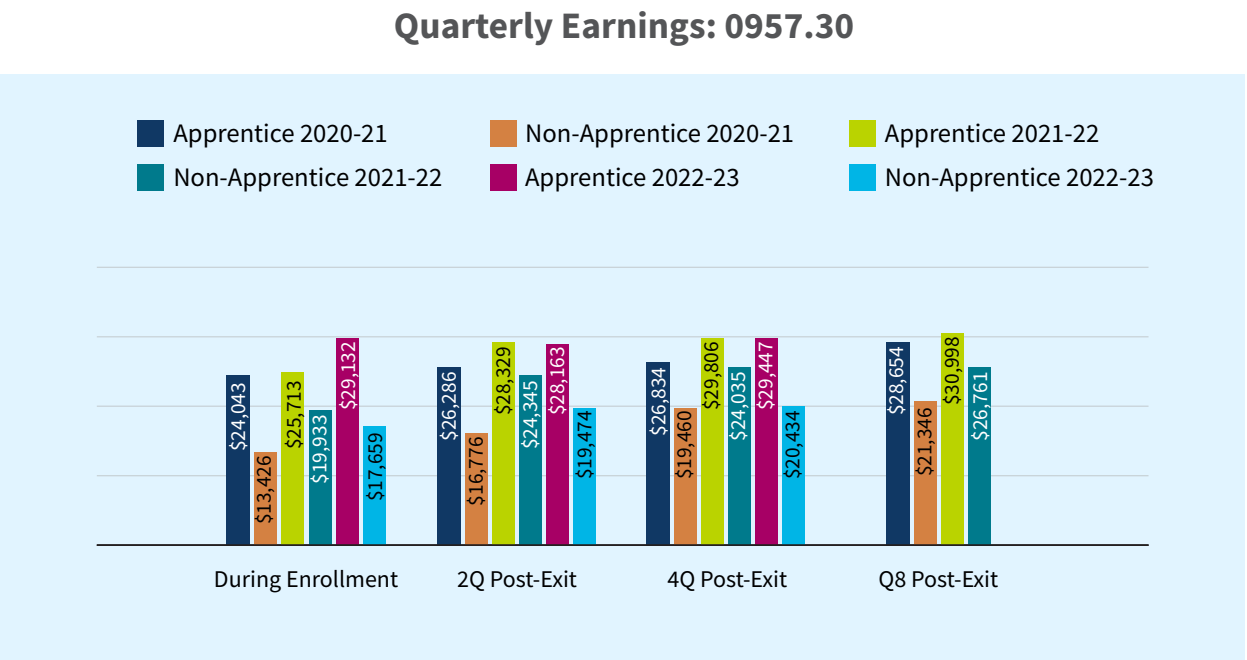


Figure 13: Quarterly Earnings: Surveying

Dental Assistant

Table 14

TOP Code	Exit Year	During Enrollment	2Q Post-Exit	4Q Post-Exit	8Q Post-Exit
1240.10	2021-22	$3,099	-$410	$229	-$416
1240.10	2022-23	$3,195	-$696	-$310	n/a
1240.10	2023-24	$3,877	$1,870	$748	n/a

This is one of only two non-traditional apprenticeship pathways that was studied. It's also one of only two of the pathways studied in which the apprentices were not out-earning their non-apprentice peers. While apprentices are out-earning their peers during their studies, this advantage disappears upon exit, with differences in earnings from that point being relatively small.

It is also important to note that the data on apprenticeship for this program comes from a single college in the Los Angeles microregion, while the data for non-apprenticeship programs comes from several colleges across the state. While the number of students in the apprenticeship program meets the minimum threshold for significance, the fact that they are all in one location (and labor market) may skew the results.

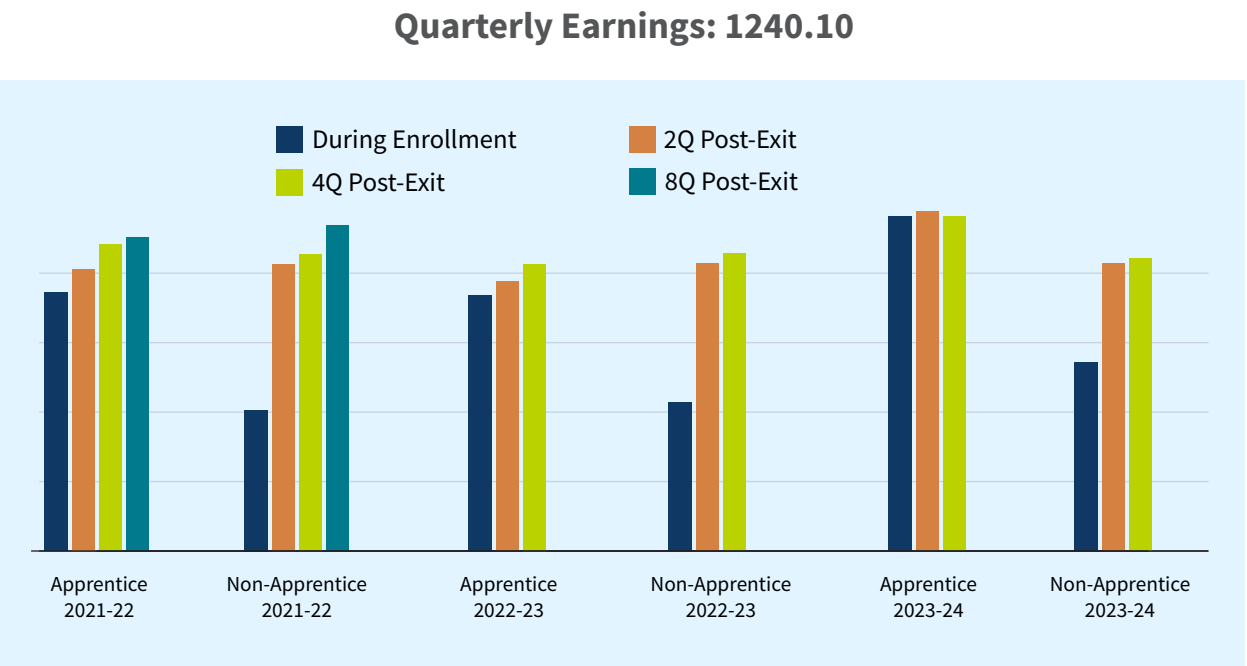


Figure 14: Quarterly Earnings: Dental Assistant

Fire Technology

Table 15

TOP Code	Exit Year	During Enrollment	2Q Post-Exit	4Q Post-Exit	8Q Post-Exit
2133.00	2021-21	$12,071	$9,585	$13,047	$6,931

This is the other non-traditional apprenticeship studied. Apprentices are out-earning their non-apprentice peers by $25,000 to $50,000 per year, but the gap seems to narrow as they get further from their program completion date.

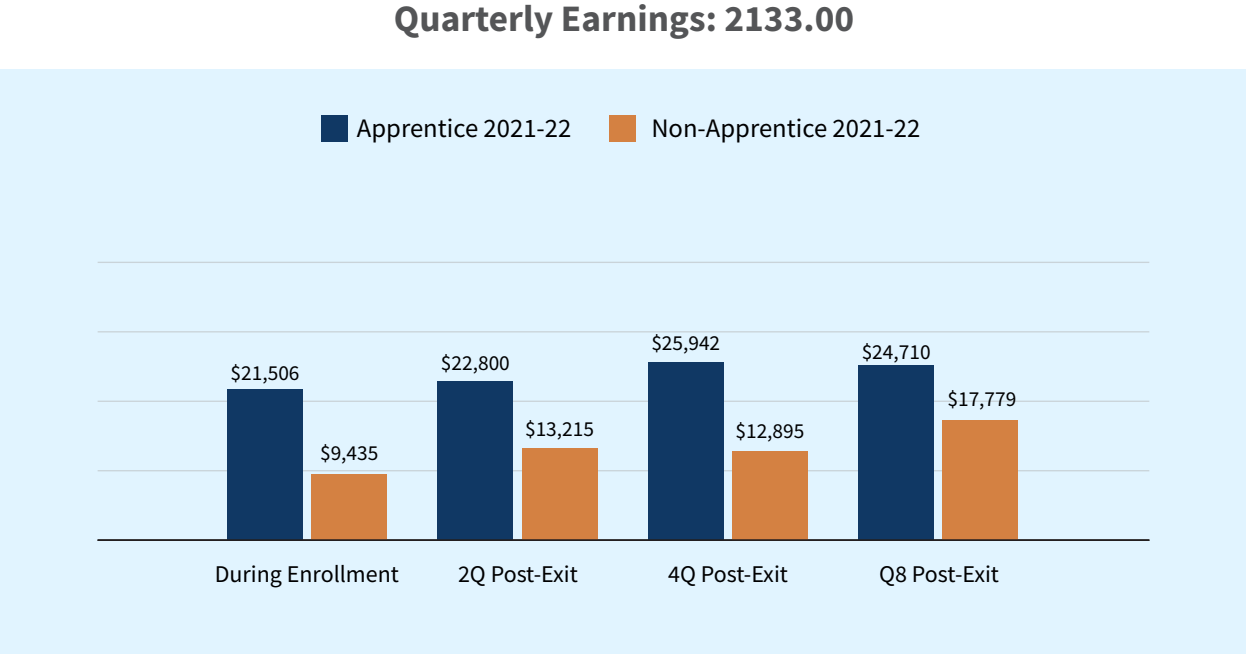


Figure 15: Quarterly Earnings: Fire Technology

Computer Infrastructure and Support

Table 16

TOP Code	Exit Year	During Enrollment	2Q Post-Exit	4Q Post-Exit	8Q Post-Exit
0708.00	2023-24	$3,799	$5,973	$7,375	n/a

This is the another non-traditional apprenticeship studied. Apprentices are out-earning their non-apprentice peers by $15,000 to $30,000 per year.

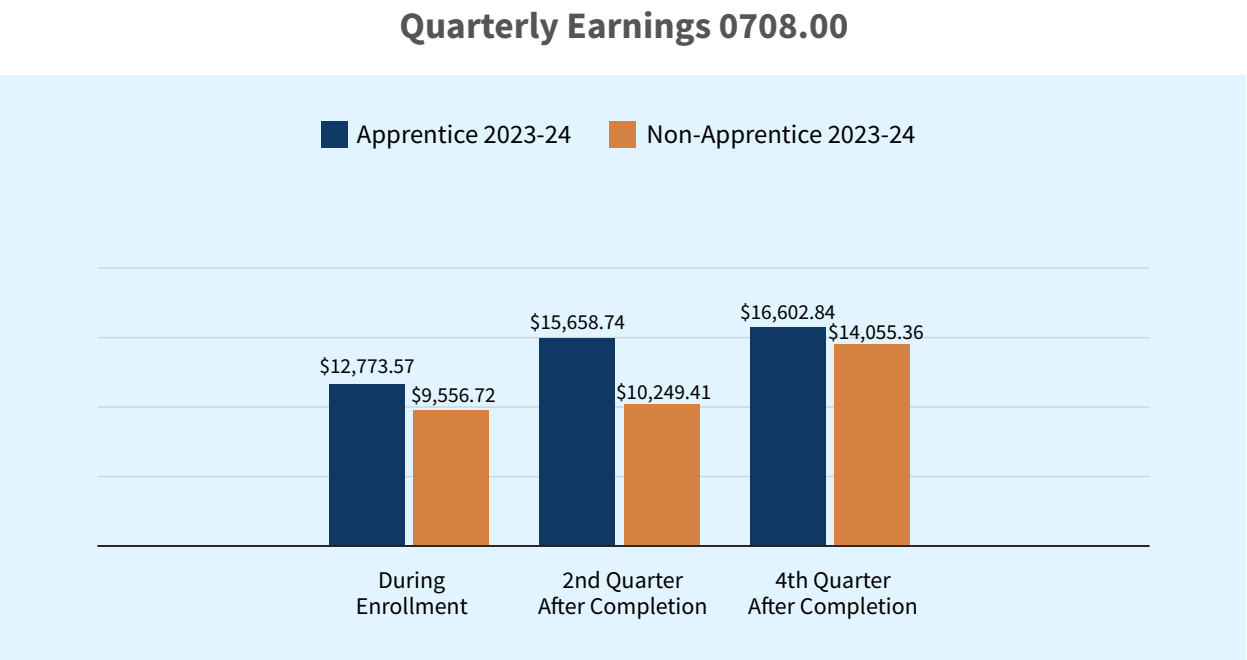


Figure 16: Quarterly Earnings: Computer Infrastructure and Support

Child Development/Early Child Care and Education

Table 17

TOP Code	Exit Year	During Enrollment	2Q Post-Exit	4Q Post-Exit	8Q Post-Exit
1305.00	2023-24	$5,419	$3,829	$3,601	$5,958

This is the another non-traditional apprenticeship studied. Apprentices are out-earning their non-apprentice peers by $15,000 to $30,000 per year.

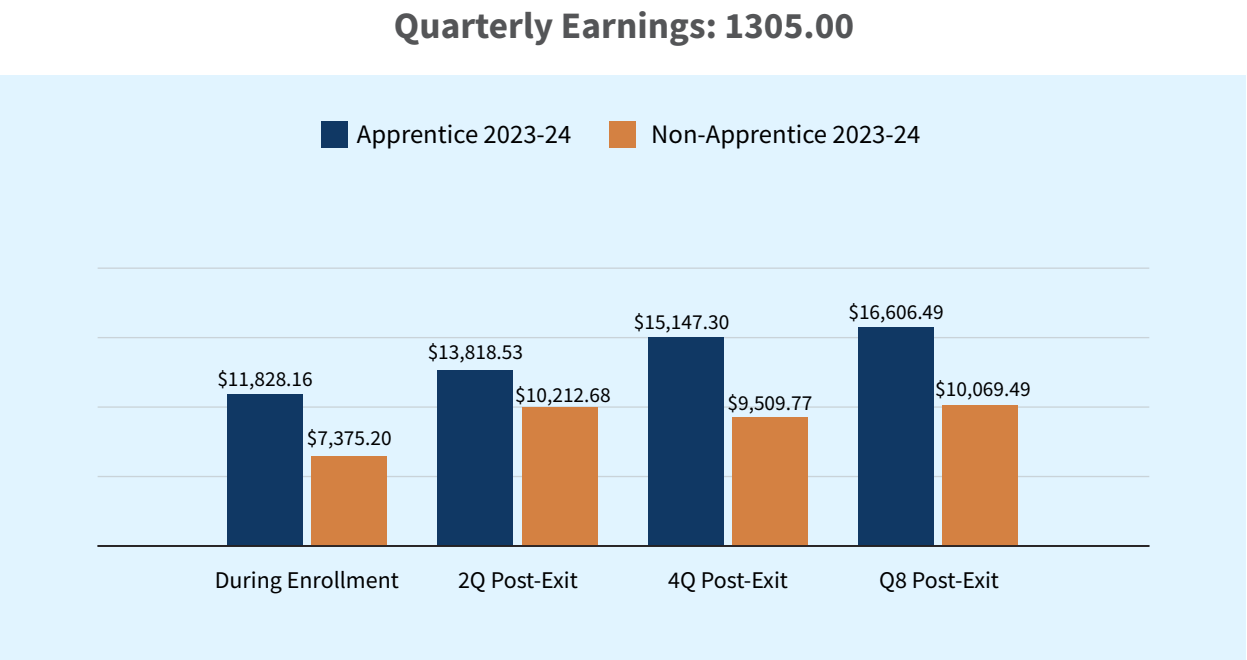


Figure 17: Quarterly Earnings: Child Development/Early Care and Education

Regional Earnings Results

Due to the small sample size, results were only compiled for some of the above pathways and for some of the microregions. The results in this section represent three-year aggregates, which differs from the results as reported above (which show each year individually).

It is important to note that this section allows for comparisons within a single, generalized labor market, which provides a more nuanced view than the systemwide analysis above. As all of the individuals in these comparisons attended programs in the same region, and community college students are highly likely to take jobs within 50 miles of their college[3], these comparisons are more direct from a labor market perspective.

Central Valley

Table 18

TOP Code	Exit Year	During Enrollment	2Q Post-Exit	4Q Post-Exit	8Q Post-Exit
0952.20	Electrical	$10,621.50	$11,030.00	$14,590.00	$15,810.00

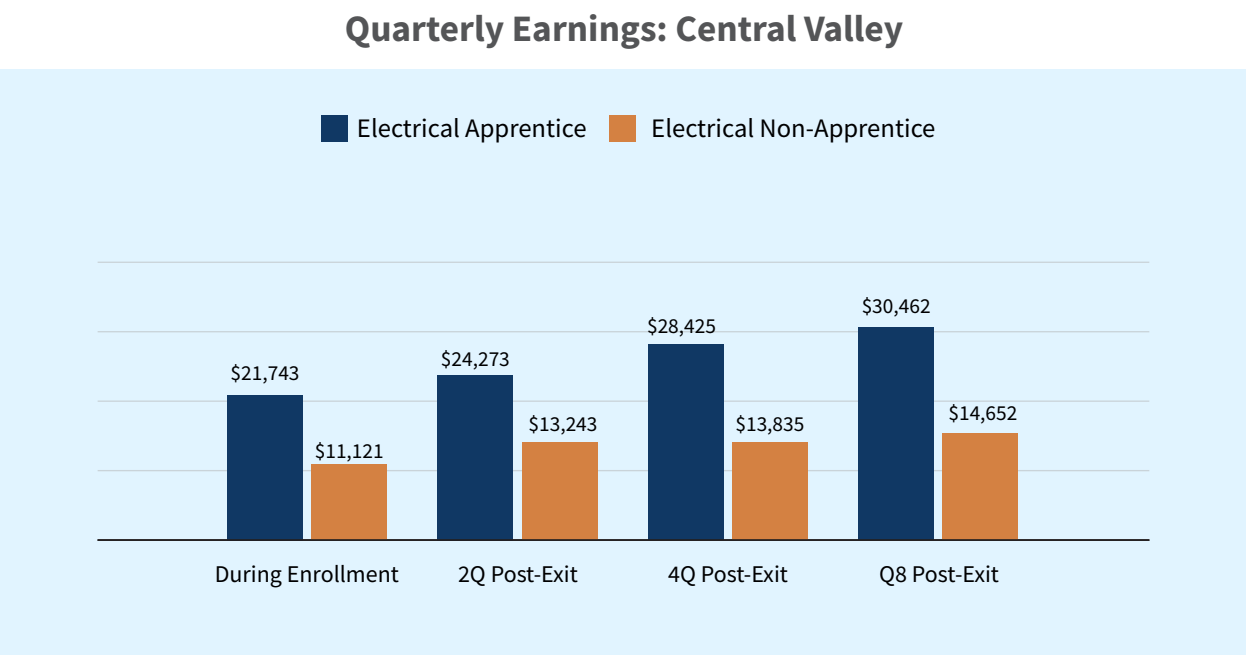


Figure 18: Quarterly Earnings: Central Valley

3 In a recent study of CTEOS data, 82% of CCC exiters worked within 50 miles of their college campus.

East Bay

Table 19

TOP Code	Program	During Enrollment	2Q Post-Exit	4Q Post-Exit	8Q Post-Exit
0946.00	Environmental Control Technology	$19,976.00	$17,341.00	$20,250.00	$3,862.50

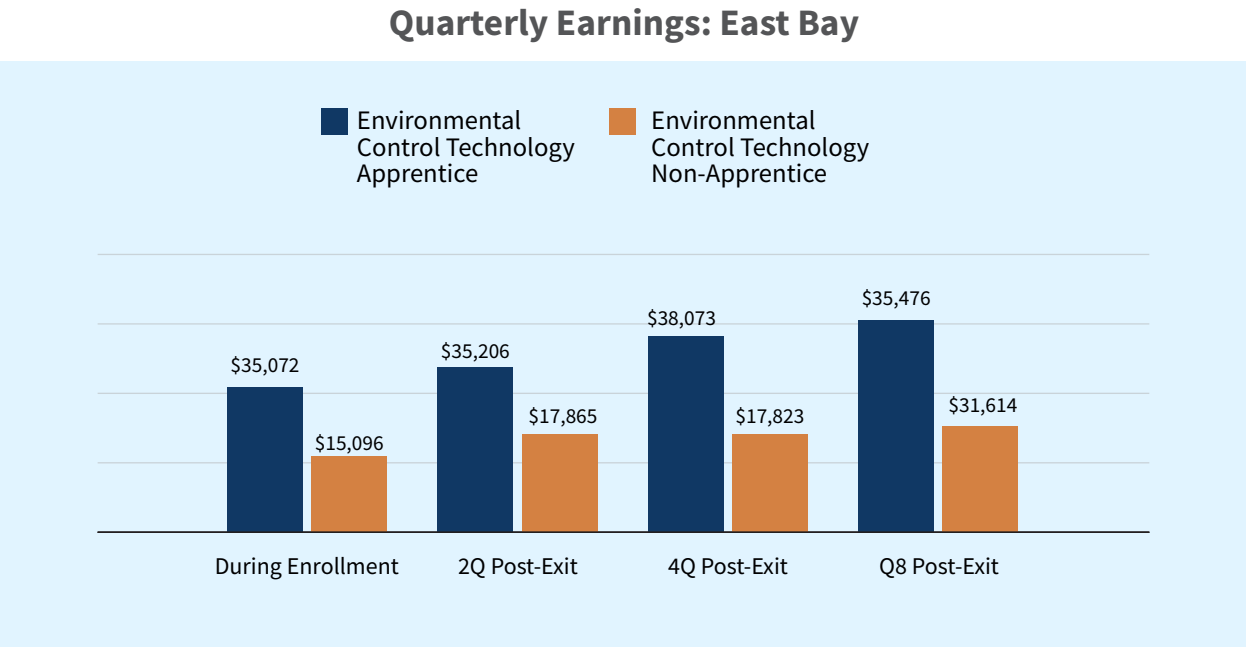


Figure 19: Quarterly Earnings: East Bay

Los Angeles

Table 20

TOP Code	Program	During Enrollment	2Q Post-Exit	4Q Post-Exit	8Q Post-Exit
0945.00	Industrial Systems Technology and Maintenance	$937.00	$707.50	-$1,848.50	$7,731.00
0946.00	Environmental Control Technology	$4,607.50	$2,927.00	$2,187.00	$2,978.00
0952.10	Carpentry	$14,275.00	$13,639.00	$13,690.50	$14,386.00
0952.20	Electrical	$631.00	$2,241.00	$1,388.50	$1,040.00
0952.30	Plumbing, Pipefitting and Steamfitting	$14,770.00	$16,258.50	$14,580.00	$12,997.00
0956.00	Manufacturing and Industrial Technology	$12,170.00	$10,602.50	$11,569.00	$8,319.00
0956.50	Welding Technology	$13,100.00	$10,380.50	$10,699.00	$12,700.50
1240.10	Dental Assistant	$1,939.00	-$83.00	$382.00	$63.00
2133.00	Fire Technology	$12,415.00	$13,254.50	$12,829.50	$8,880.50

Quarterly Earnings: Los Angeles (Group 1)

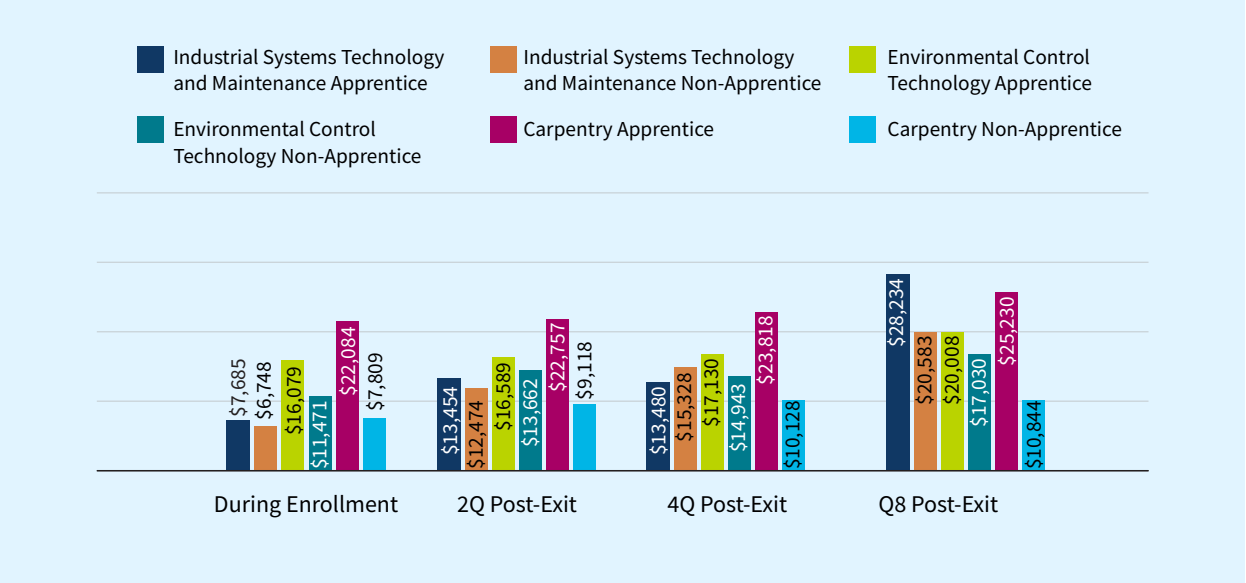


Figure 20: Quarterly Earnings: Los Angeles (Group 1)

Quarterly Earnings: Los Angeles (Group 2)

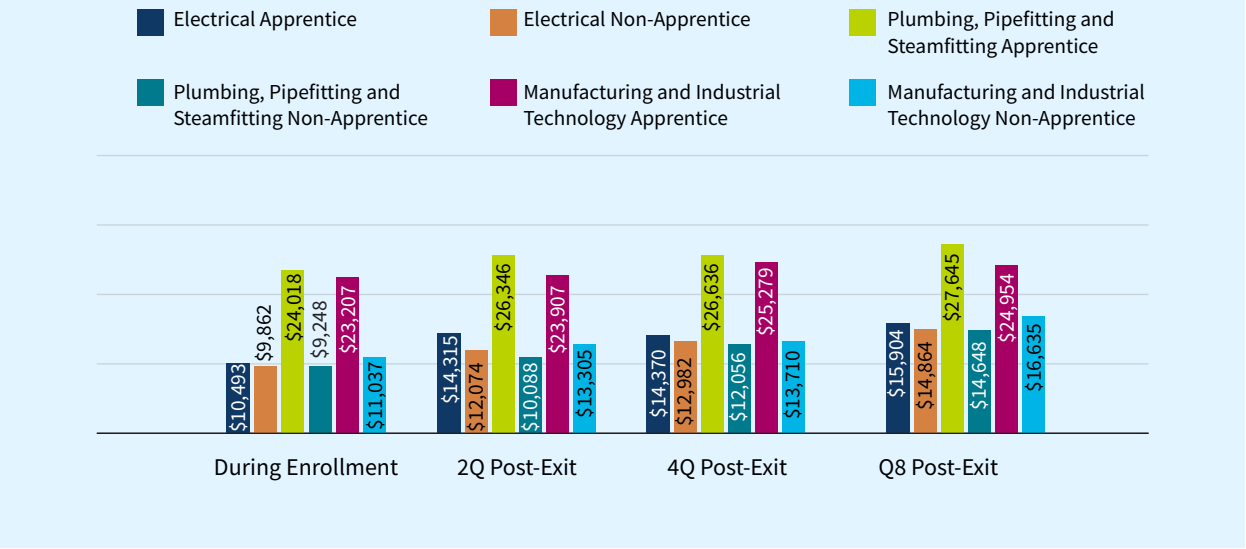


Figure 21: Quarterly Earnings: Los Angeles (Group 2)

Quarterly Earnings: Los Angeles (Group 3)

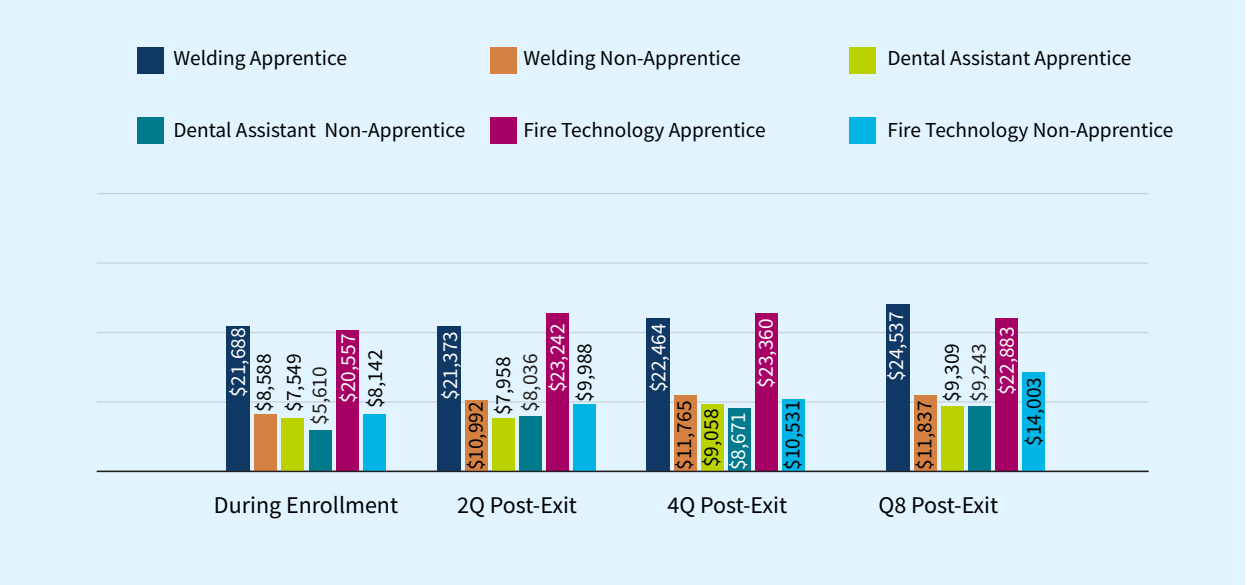


Figure 22: Quarterly Earnings: Los Angeles (Group 3)

Orange County

Table 21

TOP Code	Program	During Enrollment	2Q Post-Exit	4Q Post-Exit	8Q Post-Exit
0947.20	Heavy Equipment Maintenance	$19,569.50	$21,331.00	$19,620.50	$18,882.00
0952.20	Electrical	$9,462.00	$11,322.00	$14,049.00	$11,787.00
0957.30	Surveying	$4,400.00	$3,309.00	$6,623.00	$8,093.00

Quarterly Earnings: Orange County

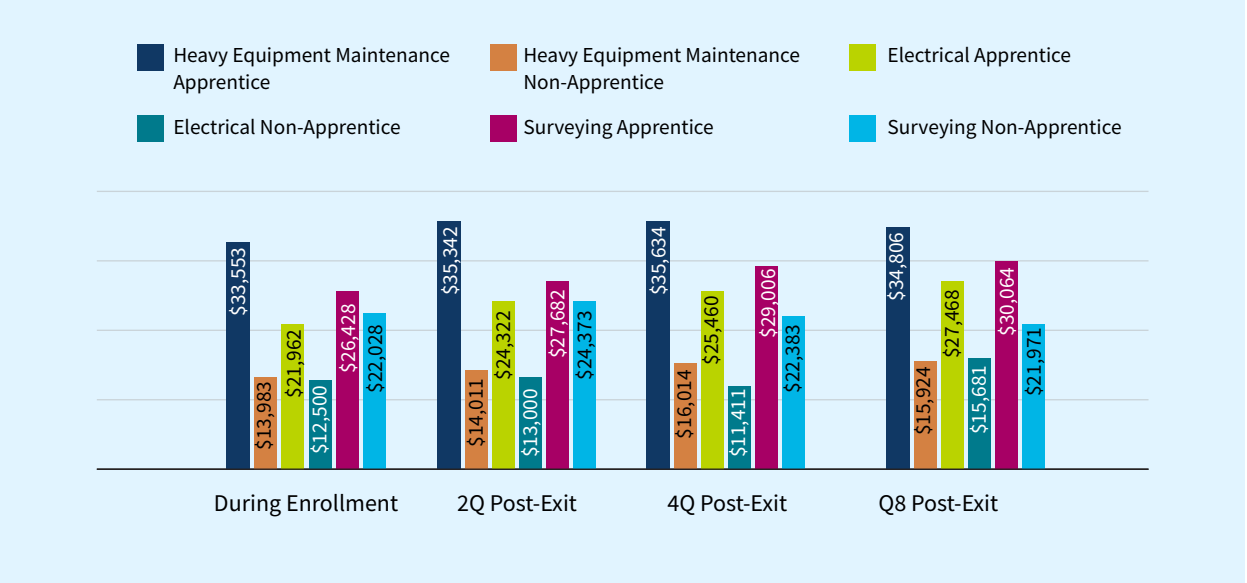


Figure 23: Quarterly Earnings: Orange County

San Diego/Imperial

Table 22

TOP Code	Program	During Enrollment	2Q Post-Exit	4Q Post-Exit	8Q Post-Exit
0947.20	Electrical Systems and Power Transmission	$33,837.00	$48,804.00	$42,462.50	$35,031.00
0952.20	Electrical	$15,824.00	$15,545.00	$13,581.00	$11,661.50

Quarterly Earnings: San Diego/Imperial

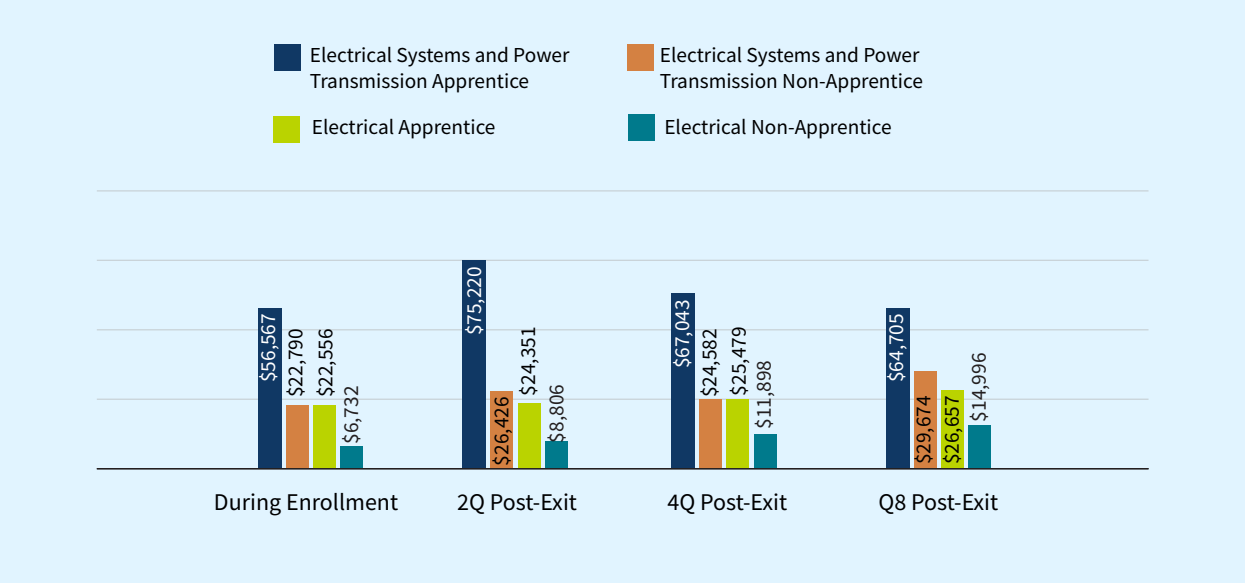


Figure 24: Quarterly Earnings: San Diego/Imperial

Silicon Valley

Table 23

TOP Code	Program	During Enrollment	2Q Post-Exit	4Q Post-Exit	8Q Post-Exit
0946.00	Environmental Control Technology	$18,505.00	$18,084.00	$18,159.00	$19,811.50

Quarterly Earnings: Silicon Valley

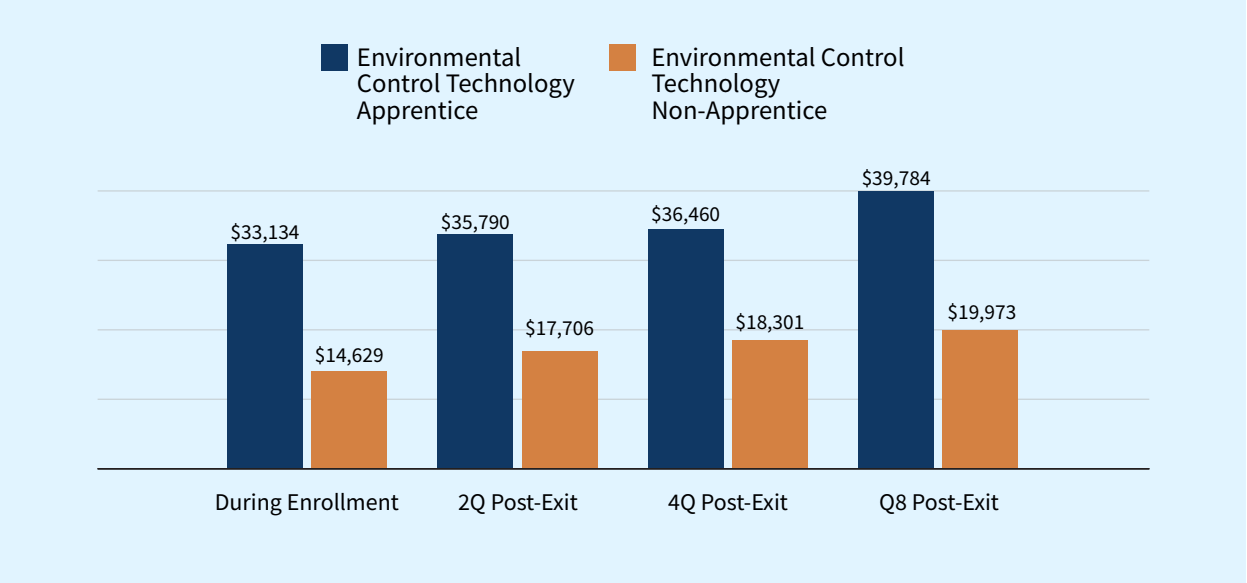


Figure 25: Quarterly Earnings: Silicon Valley

Course Success Rates

The following tables show the course success rates for apprenticeship students in a particular TOP code against course success rates for non-apprenticeship students in the same TOP code. Note that the students are selected because they are majoring in the TOP code, and the success rate includes ALL courses which they are taking. The difference shown is the apprenticeship success rate less the non-apprenticeship success rate. As such, positive numbers show greater comparative success for apprentices, while negative numbers show greater comparative success for non-apprentices.

Electrical Systems and Power Transmission

There were, on average, 342 students per year in non-apprenticeship and 116 in apprenticeship.

Table 24

Cohort	Non-Apprentice	Apprentice	Difference
2018-2019	77.5%	76.2%	-1.3%
2019-2020	69.5%	71.9%	2.4%
2020-2021	72.7%	75.7%	3.0%
2021-2022	69.7%	82.0%	12.3%
2022-2023	70.7%	77.6%	6.9%
2023-2024	72.3%	96.2%	23.8%

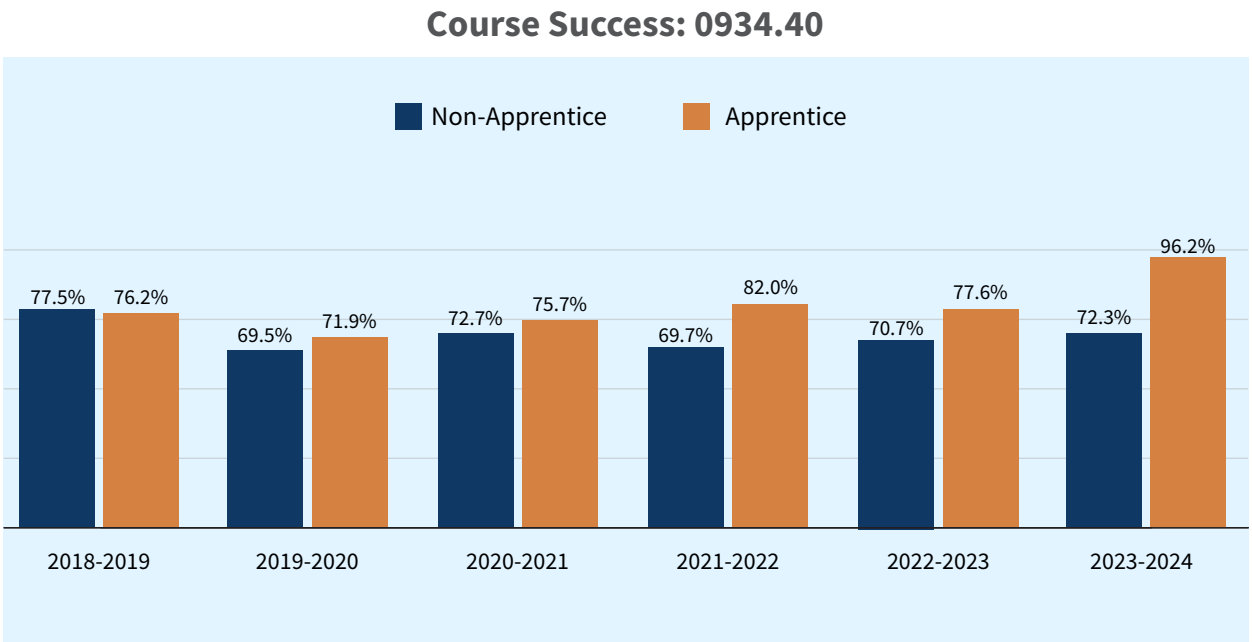


Figure 27: Course Success Rates: Industrial Systems Technology and Maintenance

Industrial Systems Technology and Maintenance

There were, on average, 326 students per year in non-apprenticeship and 129 in apprenticeship.

Table 25

Cohort	Non-Apprentice	Apprentice	Difference
2018-2019	71.9%	90.2%	18.3%
2019-2020	67.8%	85.3%	17.4%
2020-2021	67.7%	84.2%	16.5%
2021-2022	75.4%	80.1%	4.7%
2022-2023	68.0%	77.5%	9.5%

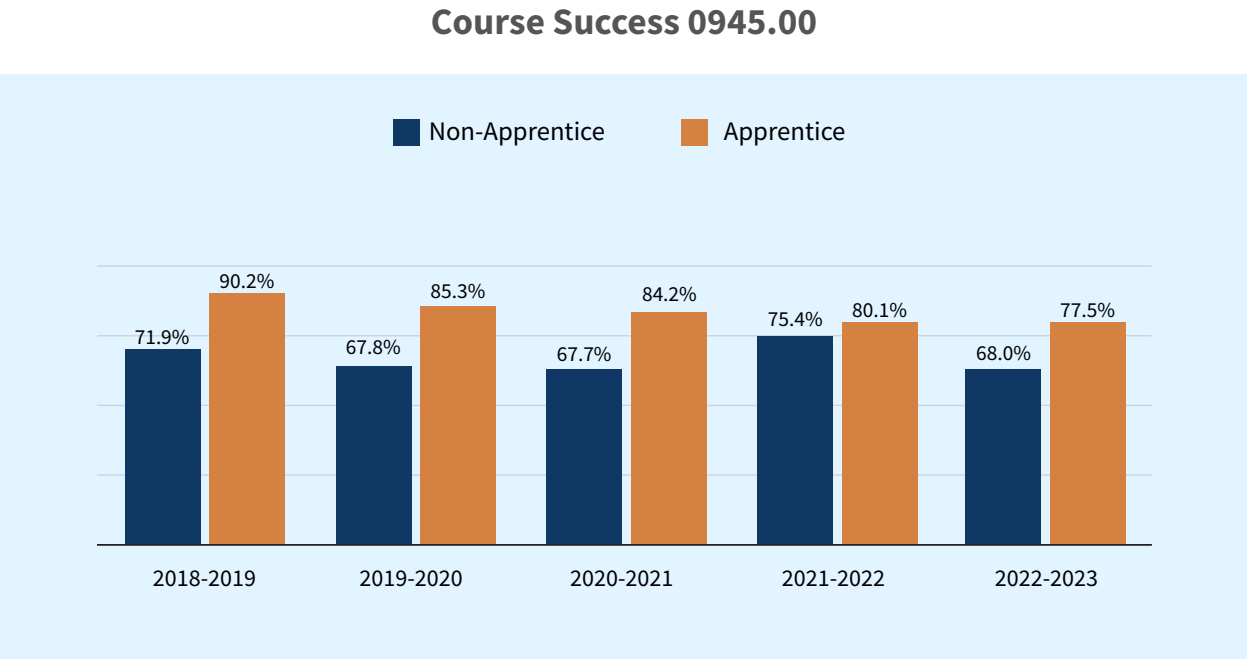


Figure 27: Course Success Rates: Industrial Systems Technology and Maintenance

Environmental Control Technology

There were, on average, 1067 students per year in non-apprenticeship and 249 in apprenticeship.

Table 26

Cohort	Non-Apprentice	Apprentice	Difference
2018-2019	73.6%	85.7%	12.1%
2019-2020	76.0%	83.5%	7.5%
2020-2021	71.6%	85.7%	14.2%
2021-2022	75.0%	84.6%	9.6%
2022-2023	70.5%	82.3%	11.8%

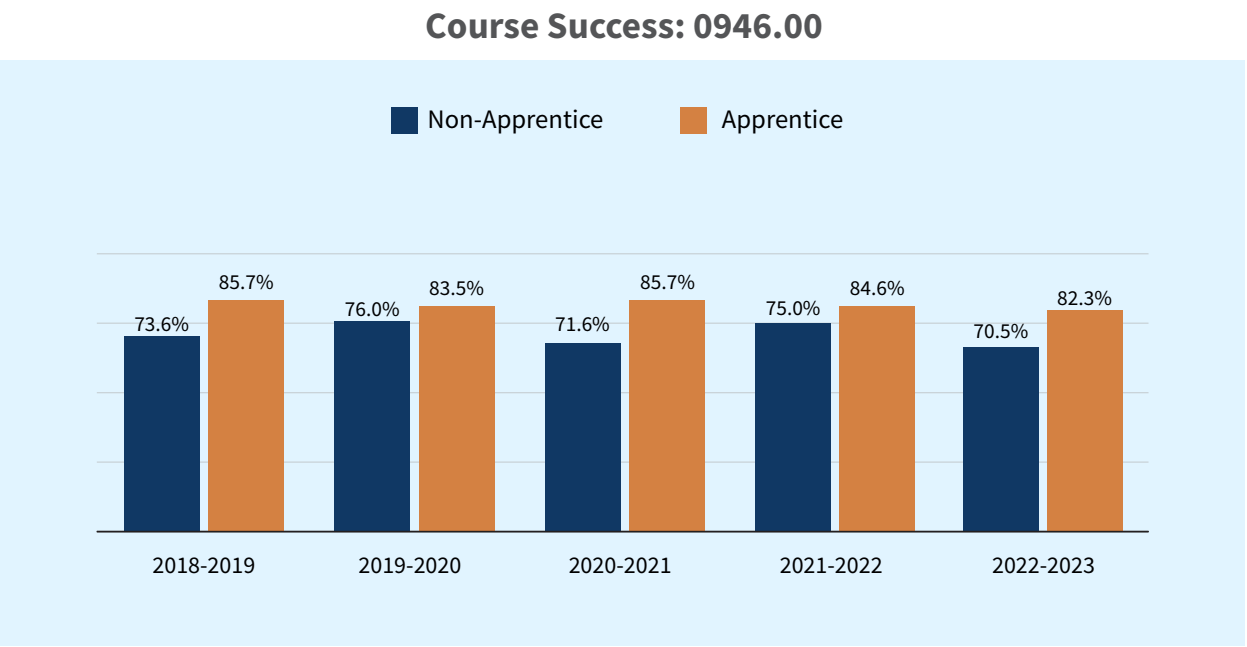


Figure 28: Course Success Rates: Environmental Control Technology

Construction Crafts Technology

There were, on average, 621 students per year in non-apprenticeship and 125 in apprenticeship.

Table 27

Cohort	Non-Apprentice	Apprentice	Difference
2022-2023	68.7%	96.6%	28.0%
2023-2024	62.7%	82.2%	19.5%

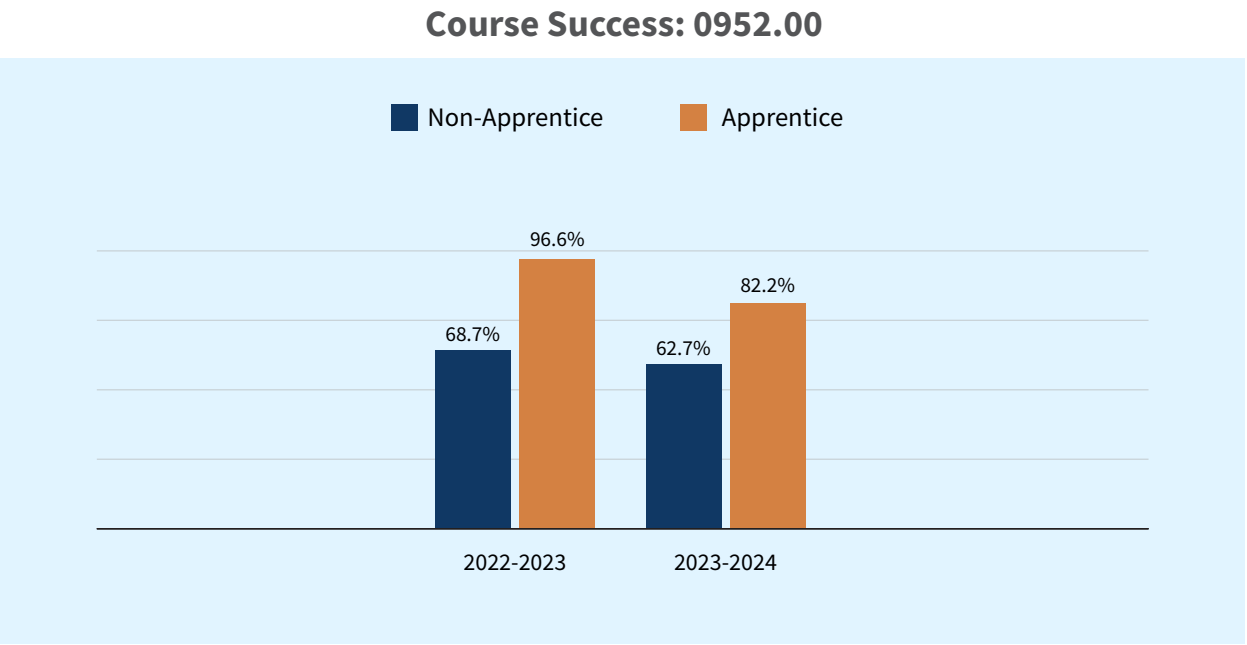


Figure 29: Course Success Rates: Construction Crafts Technology

Carpentry

There were, on average, 484 students per year in non-apprenticeship and 536 in apprenticeship.

Table 28

Cohort	Non-Apprentice	Apprentice	Difference
2018-2019	70.9%	89.7%	18.8%
2019-2020	74.4%	96.3%	21.9%
2020-2021	75.4%	98.4%	23.0%
2021-2022	75.6%	96.0%	20.4%
2022-2023	70.4%	98.3%	27.9%
2023-2024	71.5%	86.4%	14.8%

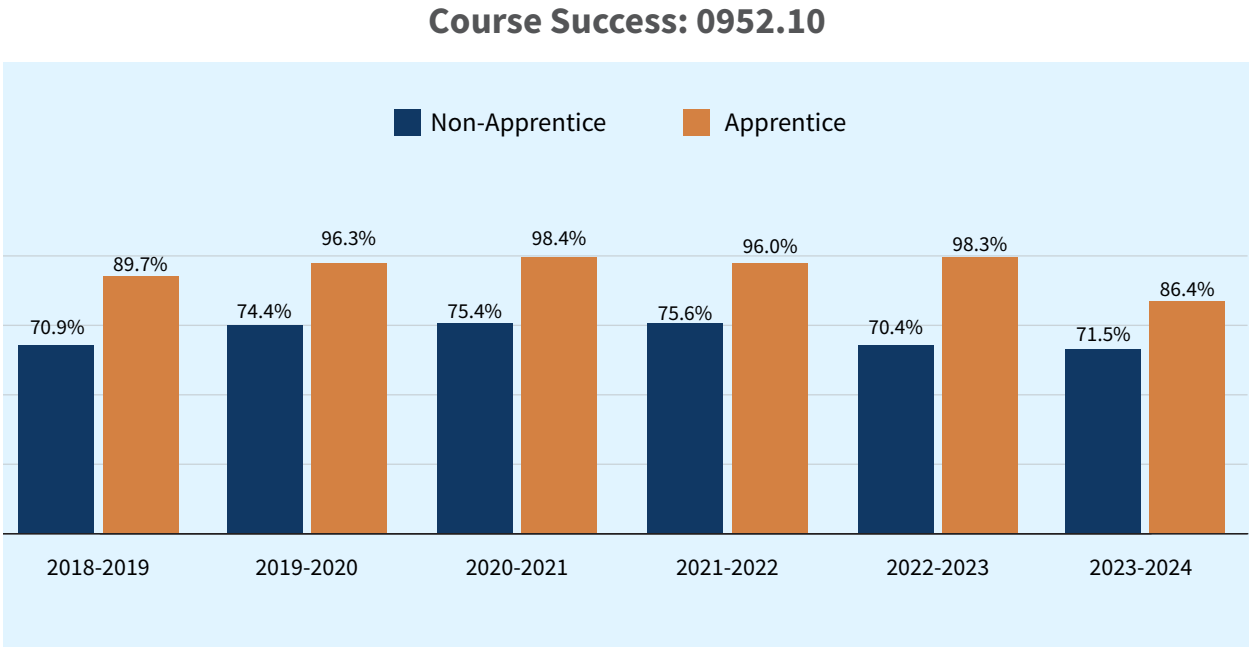


Figure 30: Course Success Rates: Carpentry

Electrical

There were, on average, 1313 students per year in non-apprenticeship and 1151 in apprenticeship.

Table 29

Cohort	Non-Apprentice	Apprentice	Difference
2018-2019	67.9%	78.3%	10.3%
2019-2020	69.2%	80.5%	11.3%
2020-2021	74.3%	81.4%	7.1%
2021-2022	69.6%	82.4%	12.8%
2022-2023	68.1%	79.2%	11.2%
2023-2024	74.0%	95.5%	21.5%

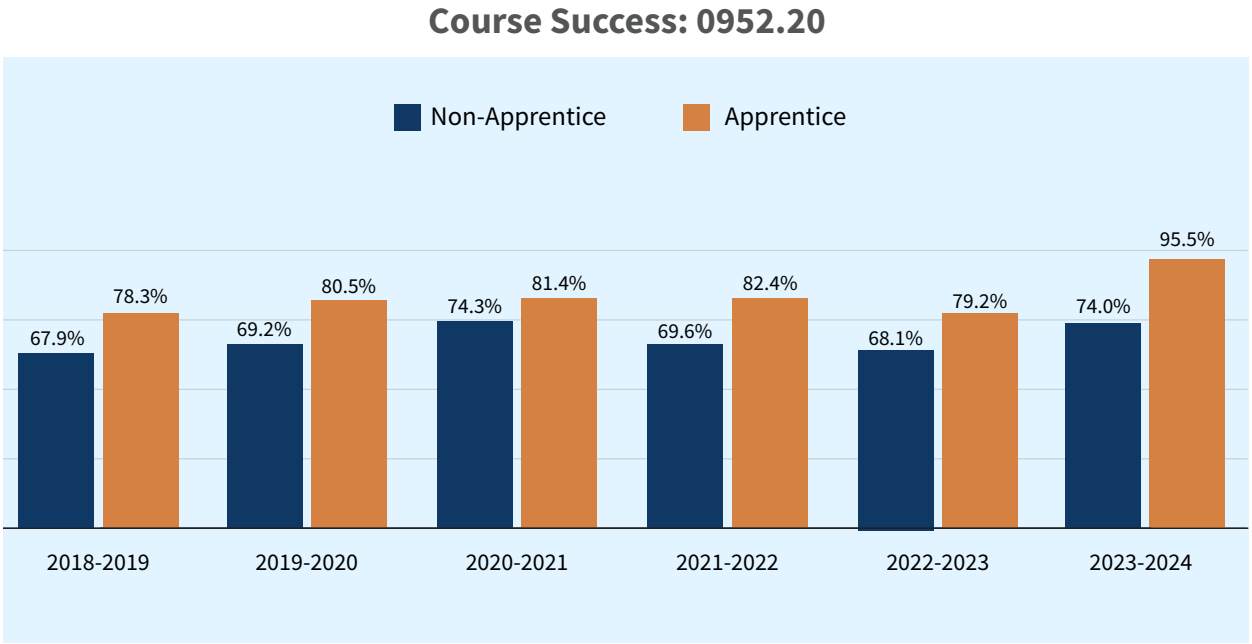


Figure 31: Course Success Rates: Electrical

Plumbing, Pipefitting, and Steamfitting

There were, on average, 225 students per year in non-apprenticeship and 229 in apprenticeship.

Table 30

Cohort	Non-Apprentice	Apprentice	Difference
2018-2019	46.2%	94.9%	48.7%
2019-2020	76.5%	76.8%	0.4%
2020-2021	77.1%	94.1%	17.1%
2021-2022	75.6%	82.7%	7.1%
2022-2023	68.9%	82.4%	13.6%
2023-2024	77.3%	95.6%	18.3%

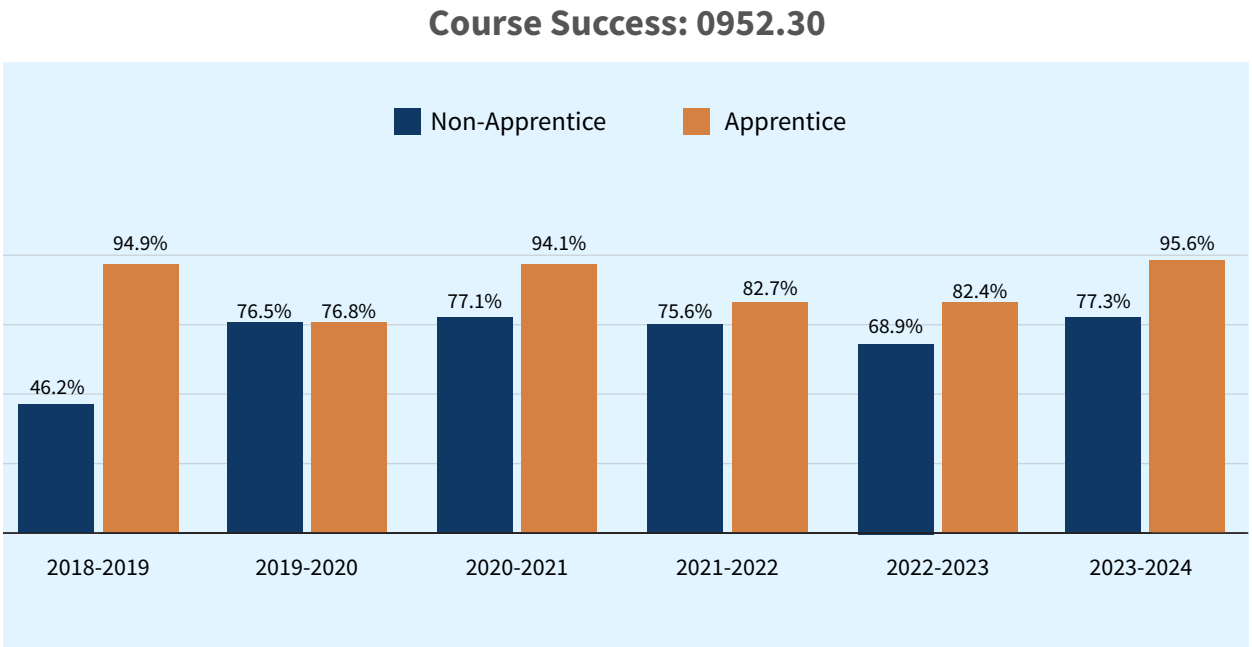


Figure 30: Course Success Rates: Plumbing, Pipefitting, and Steamfitting

Manufacturing and Industrial Technology

There were, on average, 539 students per year in non-apprenticeship and 18 in apprenticeship. Note the small sample size for apprentices in this program. However, each year shown had at least 10 students.

Table 31

Cohort	Non-Apprentice	Apprentice	Difference
2018-2019	65.0%	85.0%	20.0%
2019-2020	69.8%	93.3%	23.6%
2020-2021	68.9%	90.0%	21.1%
2021-2022	66.1%	83.9%	17.9%
2022-2023	63.6%	82.1%	18.5%
2023-2024	73.0%	82.1%	9.1%

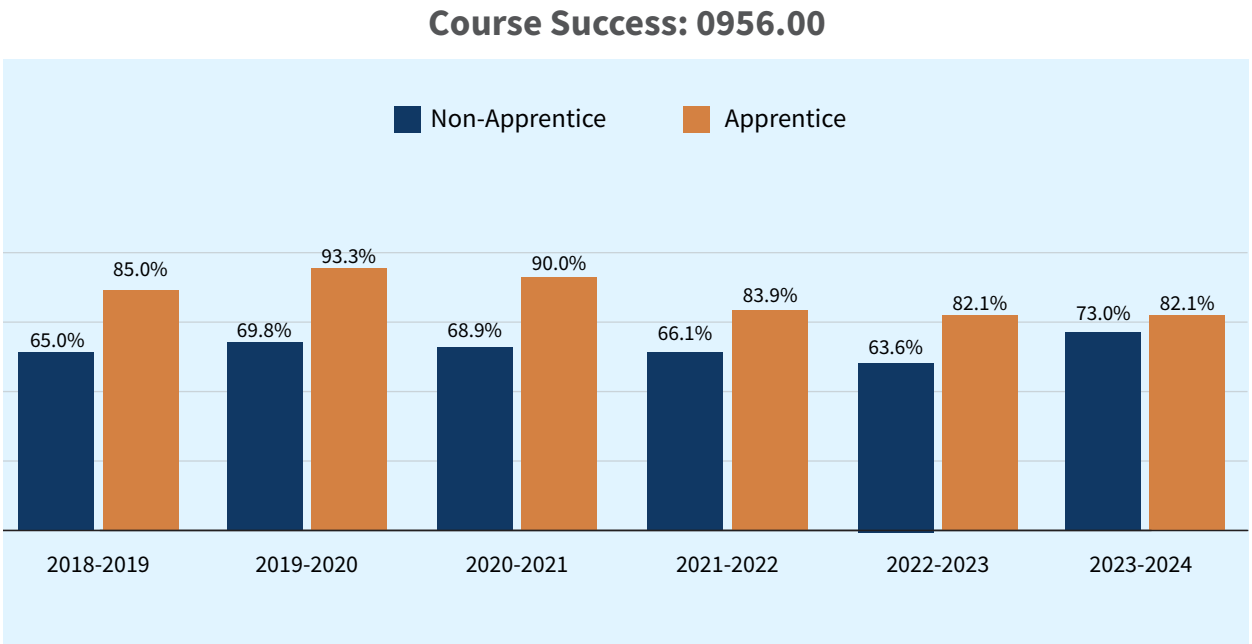


Figure 33: Course Success Rates: Manufacturing and Industrial Technology

Sheet Metal and Structural Metal

There were, on average, 96 students per year in non-apprenticeship and 162 in apprenticeship.

Table 32

Cohort	Non-Apprentice	Apprentice	Difference
2018-2019	60.6%	91.0%	30.4%
2019-2020	68.3%	98.8%	30.5%
2020-2021	66.2%	88.2%	22.0%
2021-2022	68.3%	95.3%	27.1%
2022-2023	73.0%	94.8%	21.8%
2023-2024	71.3%	96.4%	25.1%

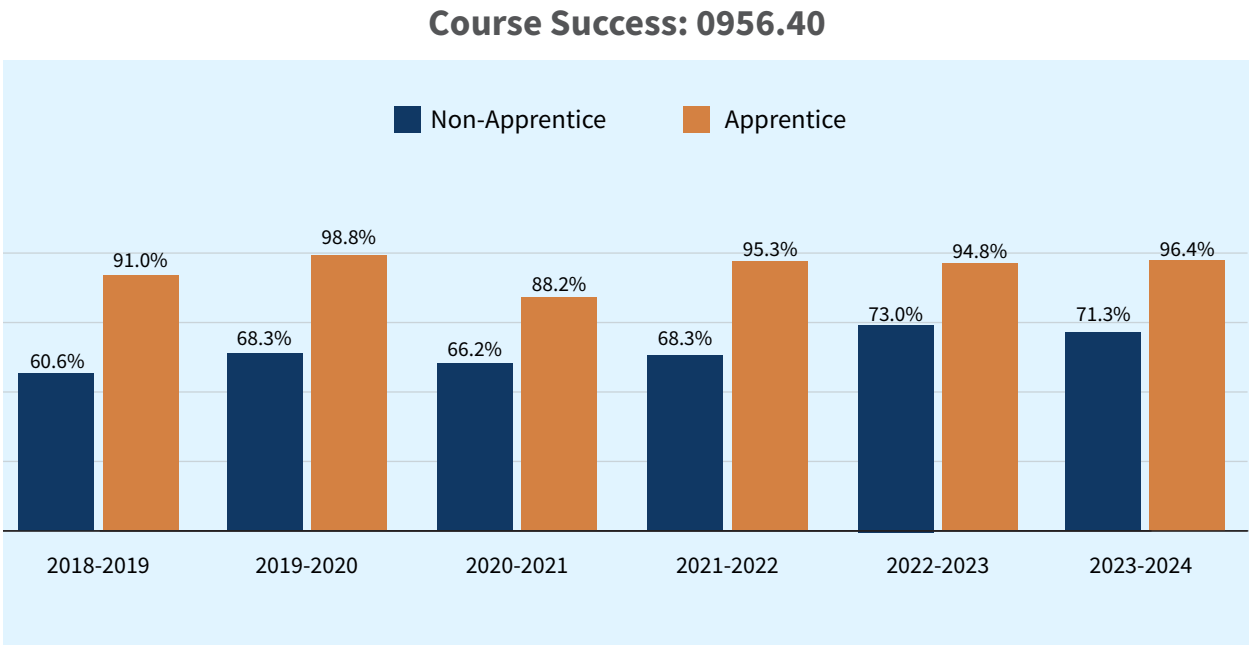


Figure 34: Course Success Rates: Sheet Metal and Structural Metal

Welding Technology

There were, on average, 3282 students per year in non-apprenticeship and 44 in apprenticeship.

Table 33

Cohort	Non-Apprentice	Apprentice	Difference
2018-2019	66.0%	75.7%	9.7%
2019-2020	67.5%	78.5%	11.0%
2020-2021	69.2%	86.9%	17.7%
2021-2022	71.6%	82.3%	10.7%
2022-2023	69.4%	87.3%	17.9%
2023-2024	70.7%	94.6%	23.9%

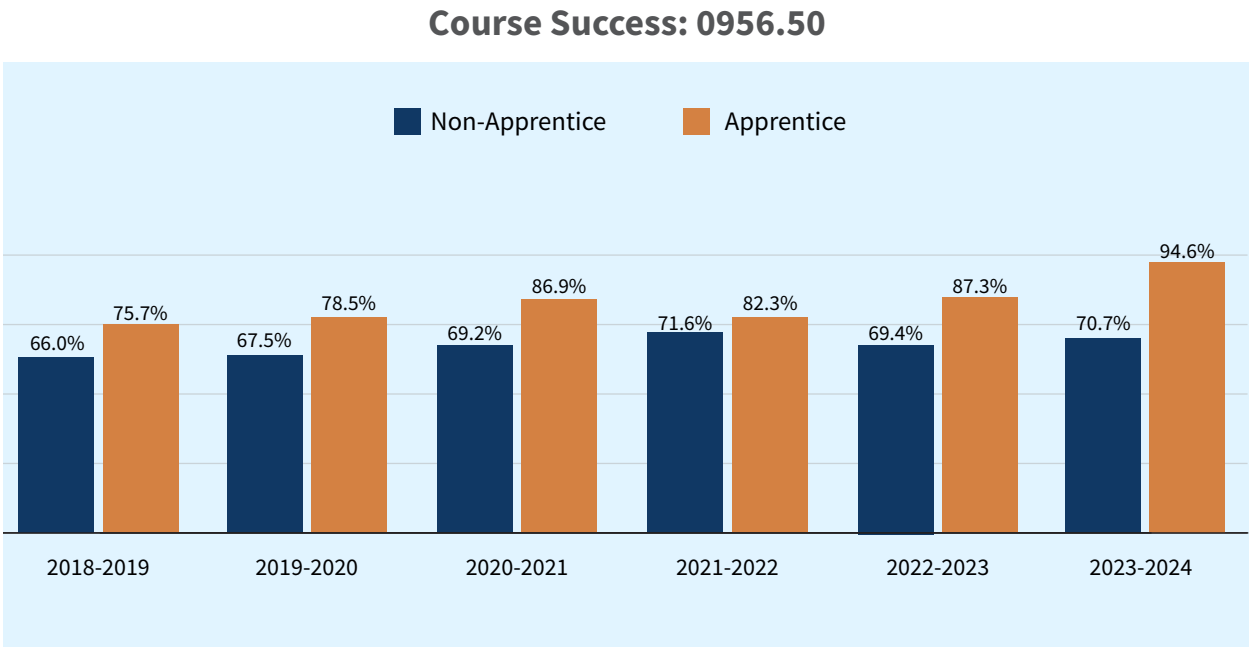


Figure 35: Course Success Rates: Welding Technology

Dental Assistant

There were, on average, 655 students per year in non-apprenticeship and 60 in apprenticeship.

Table 34

Cohort	Non-Apprentice	Apprentice	Difference
2021-2022	79.6%	89.5%	9.9%
2022-2023	73.8%	93.1%	19.3%

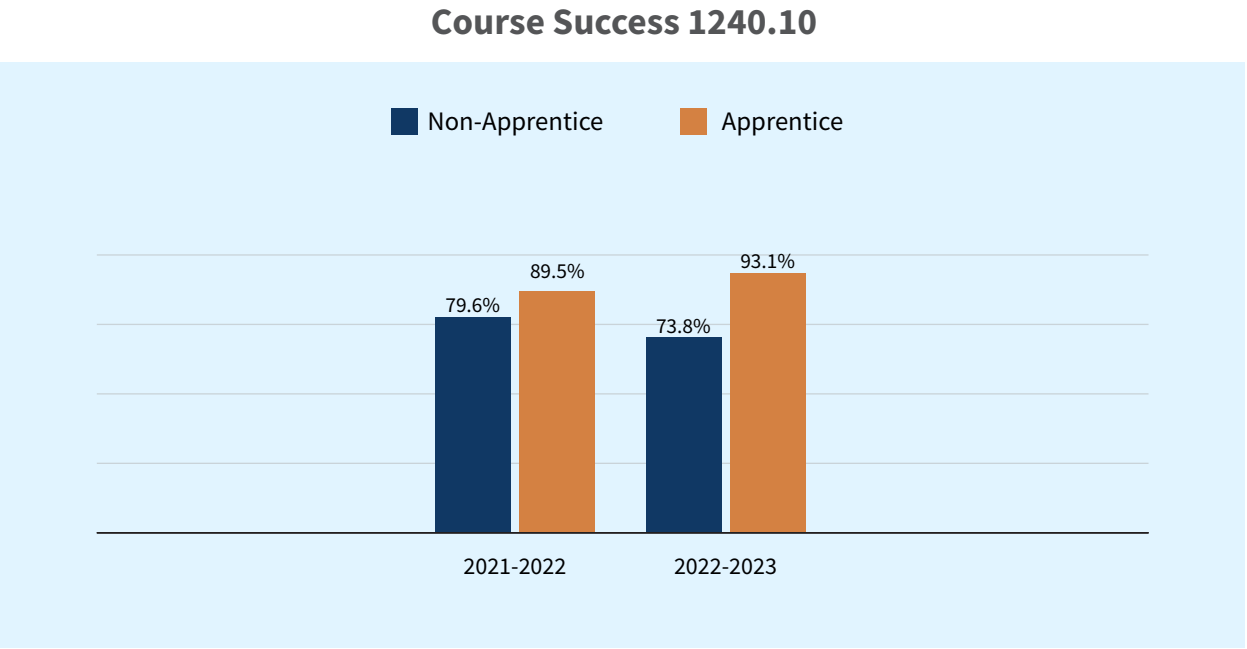


Figure 36: Course Success Rates: Dental Assistant

Fire Technology

There were, on average, 6735 students per year in non-apprenticeship and 305 in apprenticeship.

Table 35

Cohort	Non-Apprentice	Apprentice	Difference
2018-2019	71.7%	97.5%	25.8%
2019-2020	75.9%	98.6%	22.7%
2020-2021	77.4%	99.3%	21.9%
2021-2022	76.7%	97.0%	20.3%
2022-2023	75.7%	96.2%	20.5%
2023-2024	74.8%	94.7%	19.9%

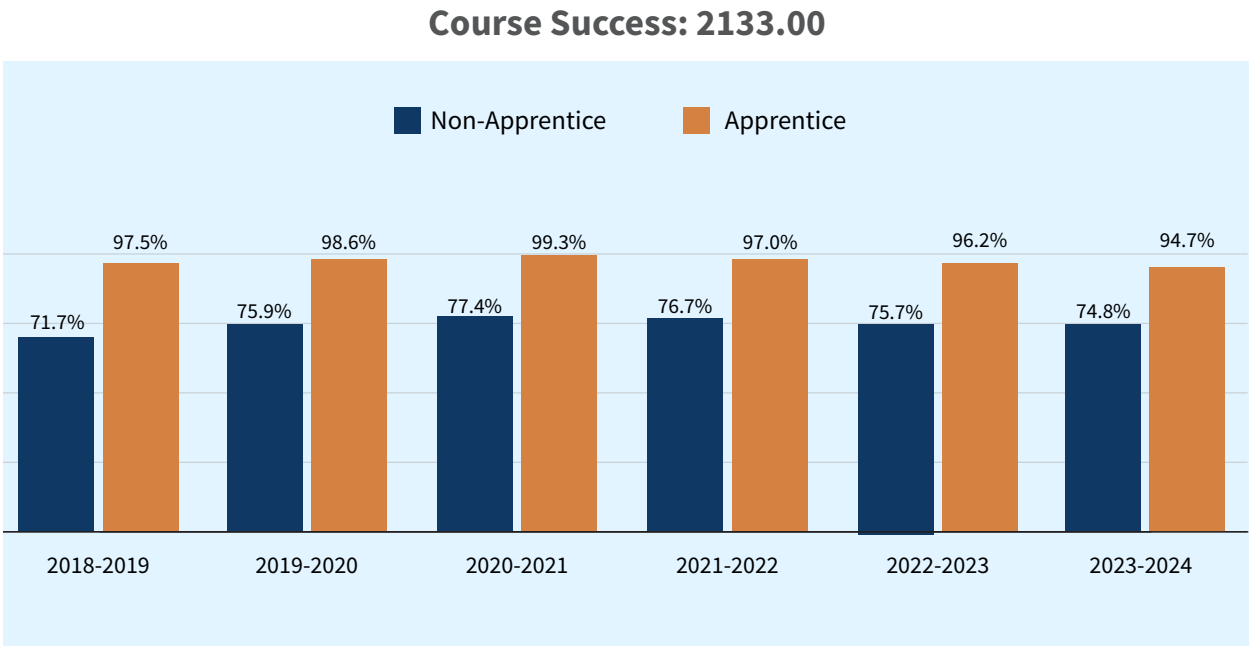


Figure 37: Course Success Rates: Fire Technology

Computer Infrastructure and Support

There were, on average, 1372 students per year in non-apprenticeship and 46 in apprenticeship.

Table 36

Cohort	Non-Apprentice	Apprentice	Difference
2021-2022	67.2%	80.3%	13.1%
2022-2023	67.4%	78.7%	11.3%
2023-2024	69.3%	72.8%	3.5%

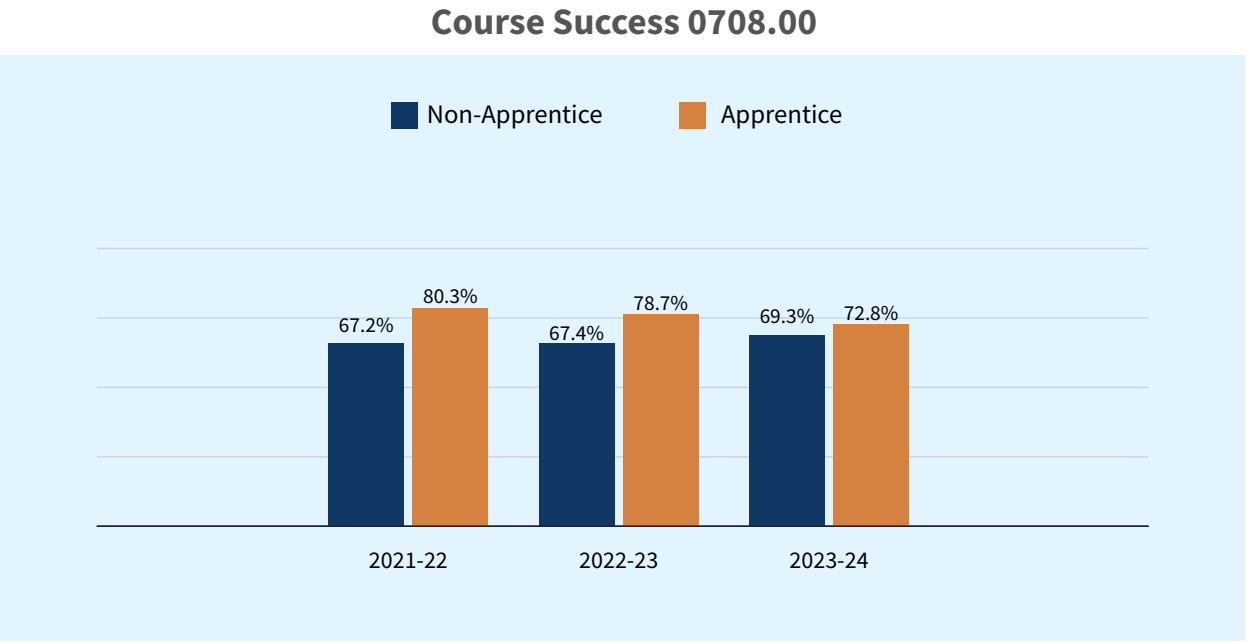


Figure 38: Course Success Rates: Computer Infrastructure and Support

Medical Assisting

There were, on average, 1333 students per year in non-apprenticeship and 35 in apprenticeship.

Table 37

Cohort	Non-Apprentice	Apprentice	Difference
2020-2021	37.6%	79.3%	11.7%
2021-2022	62.8%	77.3%	14.6%

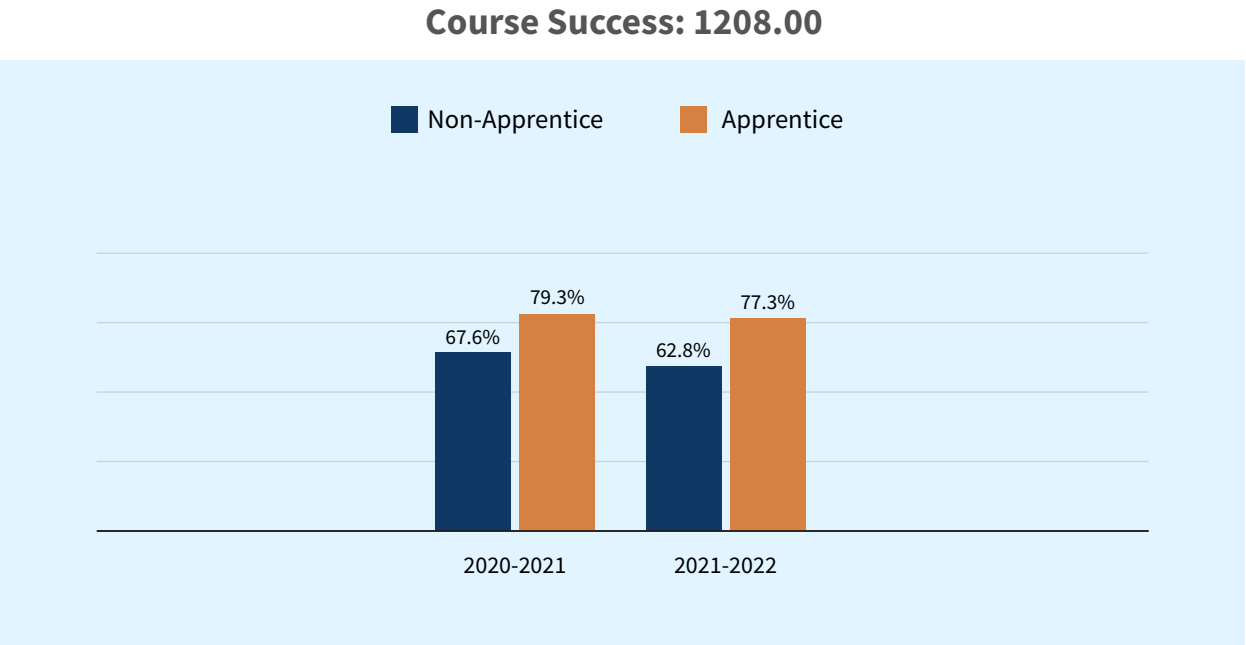


Figure 39: Course Success Rates: Medical Assisting

Health Information Technology

There was only one year of data, in which there were 994 students in non-apprenticeship and 30 in apprenticeship.

Table 38

Cohort	Non-Apprentice	Apprentice	Difference
2019-2020	79.2%	88.9%	9.7%

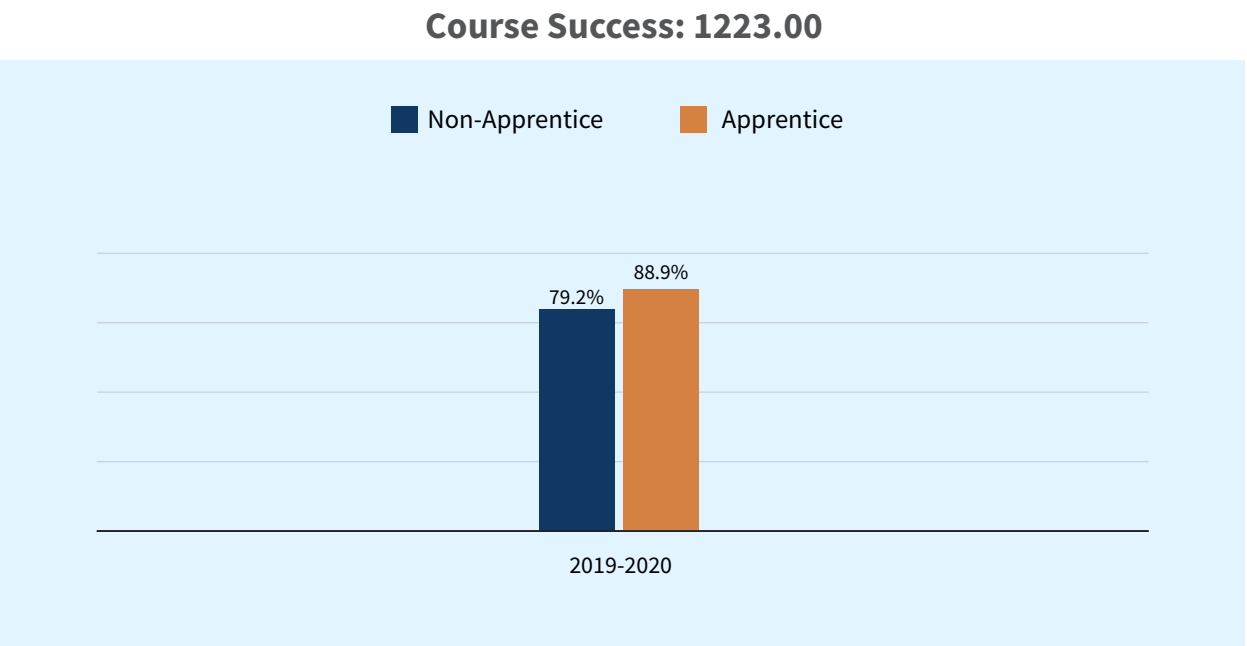


Figure 40: Course Success Rates: Health Information Technology

Child Development/Early Care and Education

There were, on average, 11,176 students per year in non-apprenticeship and 76 in apprenticeship.

Table 39

Cohort	Non-Apprentice	Apprentice	Difference
2018-2019	69.2%	83.5%	25.8%
2021-2022	68.6%	62.8%	-5.8%
2022-2023	67.7%	86.4%	18.7%
2023-2024	68.4%	81.2%	12.8%

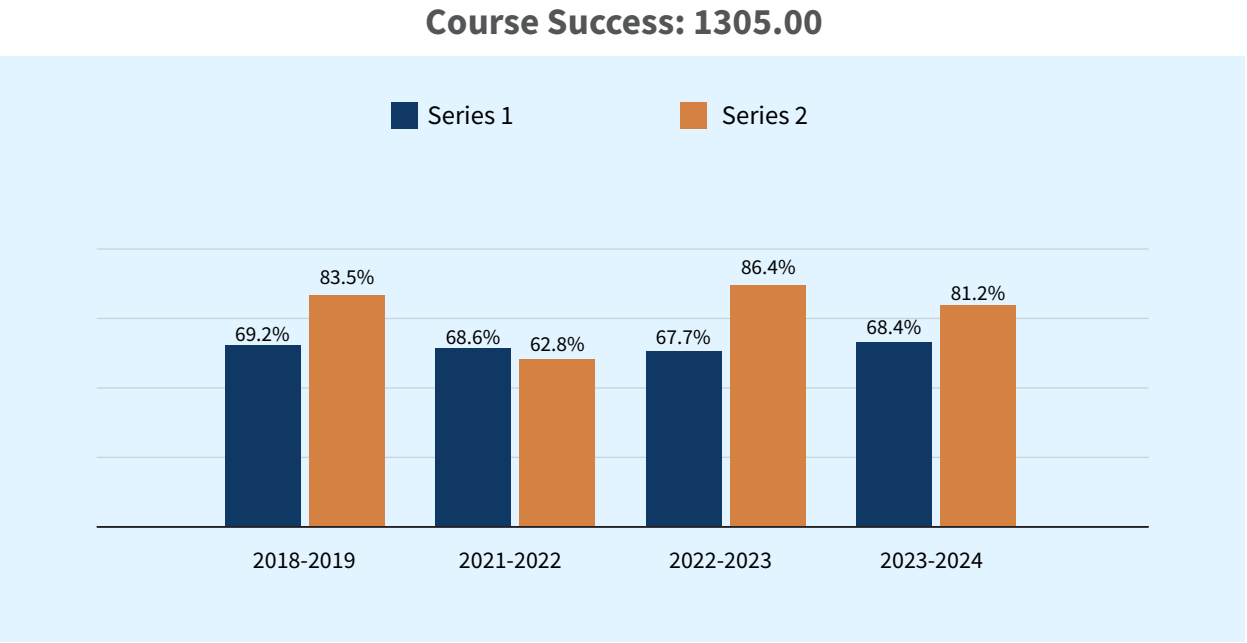


Figure 41: Course Success Rates: Child Development/Early Care and Education

Note on course success data

Note that in every case, in the majority of years, the apprentices succeeded in their coursework at greater rates than their non-apprentice peers. While there are some pathways where the success rates are closer and others where it is less close, it is clear that apprentices are completing their coursework at higher rates than their non-apprentice peers in every case studied.

STUDY LIMITATIONS

It should be noted that this study is limited in scope and power. In order to assign significance, cohorts of 25 or more students were required. There are many apprenticeship and non-apprenticeship programs which do not have 25 students in a cohort, so they were not included here.

Further, the small sample sizes in some of the groups studied do not allow for the ability to control for regional economic differences. As the costs of living (and therefore salaries) are significantly higher in some regions of California than others, it is possible that the regional representation of the studied cohorts can skew the results slightly. Despite this, any such distortion is not large enough to fully impact the outcomes and change the conclusions.

Traditional vs Non-Traditional Apprenticeships

While apprenticeship programs have historically focused on building, construction, and fire trades jobs, there has been an increasing focus on non-traditional apprenticeships in recent years. These are apprenticeships in other fields, including healthcare, the arts, technology and more. These programs are a major part of the Governor's initiative in expanding apprenticeship opportunities and increasing access to middle-income careers.

Unfortunately, this study was limited by the cohort requirement so that only six non-traditional apprenticeships could be examined. While there are many non-traditional apprenticeships in the California Community College ecosystem, there were not enough students in either those pathways or the corresponding classroom-oriented pathways to study this phenomenon.

CONCLUSIONS AND RECOMMENDATIONS

It's important to note that while the vast majority of results shown here are very positive for apprentice programs, this study should be treated as very preliminary. It was challenging to find analogous comparison groups with enough students enrolled to establish significance. Many of the findings here are based on studying groups of the minimum qualifying size or close to it. In addition, there are only two non-traditional apprenticeship programs that could be studied for this reason.

That said, this preliminary data is very promising for apprenticeship programs. The researchers hypothesized that apprentices would out-earn their peers during their programs, due to the earn-while-you-learn nature of apprenticeship, but it seems clear that, for the most part, their earnings advantage lasts for quite a while after program exit. Further, in most cases, apprentices complete their coursework at higher rates than their peers.

Despite the largely good news, it should be noted that there are two programs where apprentices do not out-earn non-apprentices. Further, one of these programs is one of the few nontraditional apprenticeships which was studied. While study of these two programs was limited by geography, as there was only a single college offering each apprenticeship program, limiting students to a single labor market, further study is warranted.

As the preliminary data generally points to apprentices having economic and academic benefits, it may be wise for colleges to continue to support and expand apprenticeship opportunities. While the data is far from conclusive, it is encouraging. It is recommended that this study be expanded as more data becomes available. Further, if results prove consistent and durable, it is worth investigating the factors that make apprenticeship superior in student success, to determine the extent to which these characteristics can be replicated in other program types.

APPENDIX A: LIST OF ACRONYMS

Acronym	Definition
CAI	California Apprenticeship Initiative
Chancellor's Office	California Community College Chancellor's Office
RSI	Related and Supplemental Reimbursement Program
SSN	Social Security Number
TOP	Taxonomy of Programs

PART II - APPRENTICESHIPS

Historically, apprenticeships have played a significant role in worker training. Many of the skilled trades have used apprenticeships for centuries to train new workers under the guidance of skilled craftsmen. In the United States, our modern apprenticeship system was formalized by the 1937 National Apprenticeship Act. At the time, apprenticeships were primarily confined to manufacturing, construction, and the utilities, but apprenticeships began expanding into public safety domains after the end of World War Two[4]. However, the apprenticeship model provides many benefits to learners and employers, so it has begun to spread into other areas, known as non-traditional apprenticeships; where paid, hands-on training supplements classroom instruction. In California, non-traditional apprenticeships are expanding into information technology, healthcare, education, public service, business, and creative industries, among others.

APPRENTICESHIPS IN CALIFORNIA

Regardless of traditional versus non-traditional, the Division of Apprenticeship Standards (DAS), within the Department of Industrial Relations (DIR), regulates apprenticeships in California. Frequently labor-management committees (Joint Apprenticeship Committees, JACs run traditional apprenticeship programs, but community colleges and corporations also play a significant role in apprentice training in the provision of related classroom instruction. Regardless of what type of organization runs the training, all apprenticeships involve paid work experience that allows apprentices to immediately apply classroom knowledge to the work environment. Over the past decade, both the federal and state governments have provided resources to expand apprenticeships. In California, Governor Newsom set a goal of creating 500,000 apprenticeship opportunities by 2029. The California Community College Vision 2030 sets a goal to increase the number of apprenticeships offered and to increase the number of students participating in apprenticeships. The Apprenticeship Pathways demonstration project is supporting colleges to expand the number of apprenticeships with a specific aim to improve employment and upward social mobility[5]. We will focus on the return investment later in the report, but first we will explore the state of apprenticeships in California through two interrelated datasets.

DIVISION OF APPRENTICESHIP STANDARDS

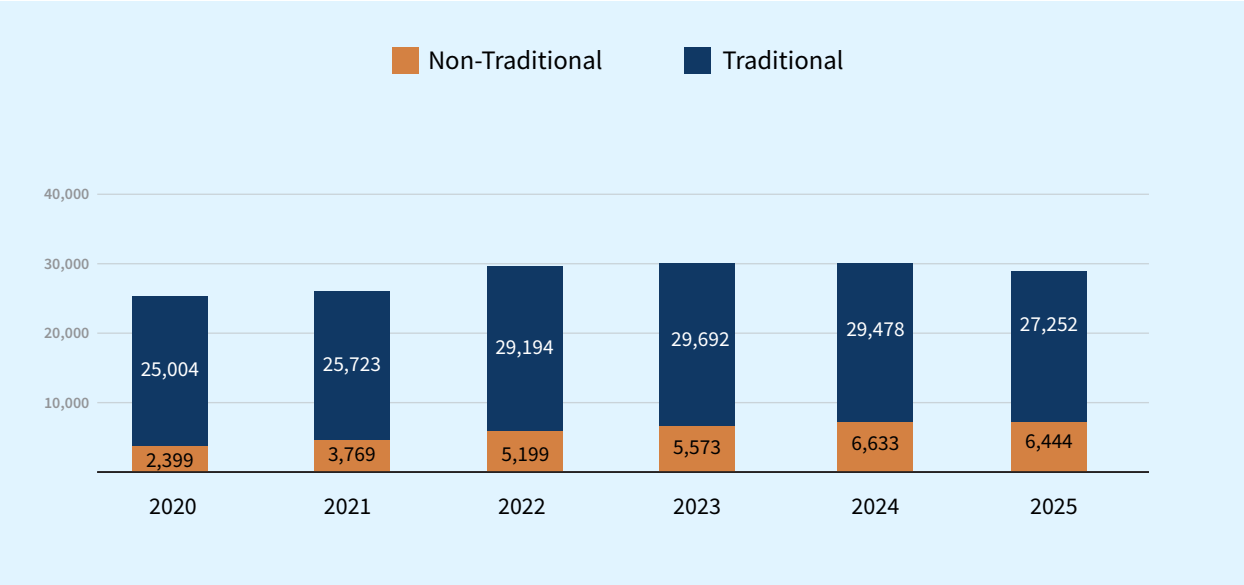
The Division of Apprenticeship Standards (DAS) makes information available via a public dashboard[6] and provides data to the Chancellor's Office through a data sharing agreement. The information in Figure 1 shows the number of new apprenticeship registrations by year. Although not all students will complete their apprenticeship, this highlights the overall increase in the number of apprentices and the growth in non-traditional apprentices.

4 https://www.dol.gov/index.php/agencies/eta/apprenticeship/policy/national-apprenticeship-act

5 https://vision2030.cccco.edu/section-i/vision-to-action/demonstration-projects/#apprenticeshipPathways

6 https://public.tableau.com/app/profile/california.apprenticeship/viz/RegistrationDashboard_16301055851260/RegistrationDashboard

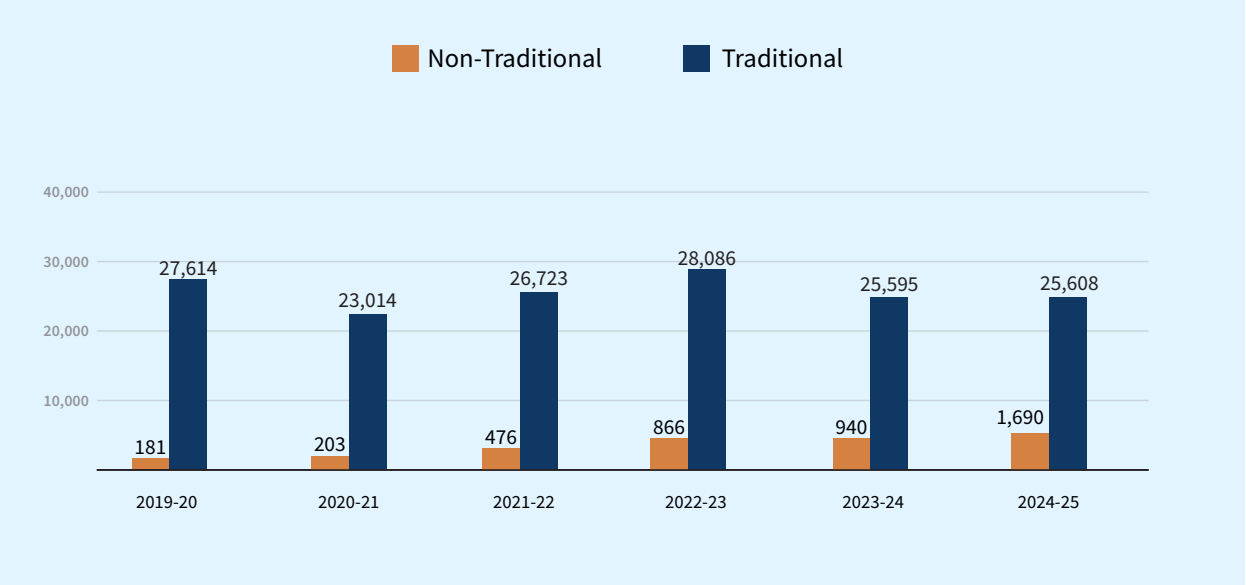
Figure 1. Traditional and Non-Traditional DAS Apprentice Registrations



CALIFORNIA COMMUNITY COLLEGES

Data from the California Community Colleges Chancellor's Office tells a similar story. As seen in Figure 2, the number of students enrolling in courses for non-traditional apprenticeships has increased over the last 6 years.

Figure 2. Students Enrolled in Apprenticeship Classes by Type



While the number of students enrolled in non-traditional apprenticeship classes is lower than in traditional programs, there is considerable growth in several program areas, as seen in Figure 3. If the California Community Colleges system can continue to grow the non-traditional apprenticeship programs at the same rate, the number of students enrolling could equal the current number of students enrolling in traditional apprenticeship programs by the 2030-31 academic year.

Figure 3. Non-traditional Apprenticeship Students by Program

TOP Category and Title	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
05 - Business & Management		47	406	717	761	1341
Business Management		47	406	717	679	1131
Marketing and Distribution					63	210
Retail Store Operations and Management					19	
06 - Media & Communications	**17**	**19**	**19**	**17**	**2**	**8**
Digital Media						2
Journalism	17	19	19	17	2	4
Website Design and Development						2
07 - Information Technology					**27**	**5**
Information Technology, General					27	5
10 - Fine and Applied Arts					**20**	
Applied Photography					20	
12 - Health	**63**	**72**	**19**	**89**	**109**	**203**
Community Healthcare Worker				8	24	57
Dental Hygienist	18	20				
Optical Technology				44	66	47
Psychiatric Technician	23	23		21		13
Registered Nursing						65
Respiratory Care/Therapy	22	29	19	16	19	21
13 - Family & Consumer Science	**21**			**6**	**21**	**133**
Child Development/Early Care and Education				6	21	72
Children with Special Needs						14
Culinary Arts	21					
Infants and Toddlers						34
Preschool Age Children						13
30 - Commercial Services	**79**	**65**	**32**	**37**		
Cosmetology and Barbering	79	65	32	37		

While the 2025-2026 academic year is not yet available, a preliminary review of what is available shows that 2025-26 will likely be another growth year for non-traditional apprenticeships at California community colleges. However, since apprenticeships take time for students to complete coursework and then complete their on-the-job training, not many students from the non-traditional pathways have reached Journey status with the DAS. Of the same students shown in Figure 3, only 284 have reached Journey status as of the time of publication. The Top 3 programs for students reaching Journey status to date are General Operations Managers (105), Psychiatric Technician (41), and Dispensing Optician (38).

RETURN ON INVESTMENT

Nearly all Career Technical Education (CTE) programs cost community colleges more than four-year university transfer pathways. These extra costs are often the result of specific training requirements, unique training equipment, or the high cost of consumables that students use during instruction. In addition, apprenticeship pathways can have somewhat higher overheard due to the required coordination with employers and external organizations, such as the DAS or labor organizations. Despite these extra costs, apprenticeship pathways offer considerable return on investment for employers, participants, and the public.

Employer Returns

Reduced Recruitment and Onboarding Costs / Faster Skills Acquisition

Employers who participate in apprenticeship programs are often making significant investments in the training programs by paying for on-the-job training for the apprentices, supporting the programs materially, and investing time by helping to develop and refine the curriculum, among other contributions. Despite this cost, employers who invest in traditional apprenticeship programs see measurable financial returns that begin during the training period itself and it is expected that employers who participate in non-traditional apprenticeships will see similar outcomes. The most comprehensive recent evidence comes from Kuehn et al. (2022)[7], whose study examined 68 employers sponsoring 2,854 apprentices through the American Apprenticeship Initiative (AAI). The aggregate finding from that body of work, as summarized by National Apprenticeship (n.d.)[8], is that on average, employers realize a return of "$1.47 for every $1 invested."

This positive return is driven in part by the fact that apprenticeship programs train workers in the specific skills an employer needs, reducing the time and cost associated with bringing new hires up to speed through conventional onboarding. The urgency of this benefit is reflected in current labor market data. According to SHRM's 2024 Talent Trends report, as summarized by the Society for Human Resource Management (2025)[9], "skilled trade positions

7 Kuehn, D., Mills De La Rosa, S., Lerman, R., & Hollenbeck, K. (2022). Do employers earn positive returns to investments in apprenticeship? Evidence from registered programs under the American Apprenticeship Initiative. Abt Associates; Urban Institute. https://www.dol.gov/sites/dolgov/files/OASP/evaluation/pdf/AAI/AAI_ROI_Final_Report_508_9-2022.pdf

8 National Apprenticeship. (n.d.). Return on investment (ROI). https://nationalapprenticeship.org/roi

9 Society for Human Resource Management. (2025, January 6). Bridging the skills gap: Preparing future talent for the workforce. https://www.shrm.org/enterprise-solutions/insights/bridging-the-skills-gap--preparing-future-talent-for-the-workforce U.S. Government Accountability Office. (2025). Apprenticeship: Earn-and-learn opportunities can benefit workers

were the second most difficult positions to recruit for, with 46% of HR professionals reporting that these roles were 'very difficult' to fill." For employers facing these hiring challenges, apprenticeship functions as a direct, cost-effective alternative to open-market recruitment.

Improved Employee Retention, Reduced Turnover, Increased Productivity, and Development of Internal Talent Pipelines

Beyond direct financial return, employers consistently report a wider set of organizational benefits that make apprenticeship investment even more valuable than basic cost-benefit calculations suggest. Marotta et al. (2022)[10] documented this in their analysis of AAI employer outcomes. Their survey examined "two types of benefits: direct benefits (the value of apprentices' productivity) and indirect benefits (the value the employer experiences beyond that increased productivity, such as reduced turnover and improvements in company culture)." The findings were striking: "nearly all (99 percent) surveyed employers reported experiencing one or more indirect benefits," and "most (84 percent) rated at least one of the indirect benefits as at least as valuable as the increases in apprentice's productivity." This is a critical finding because most cost-benefit analyses of apprenticeship focus only on productivity gains. Marotta et al. (2022) further found that "nearly all employers (96 percent) cited improved company culture as a benefit" and that "more than 90 percent of employers reported their apprenticeship programs led to improvements in their talent pipelines and increased employee loyalty." When retention, culture, and talent pipeline stability are included, the true employer return is substantially higher than what standard ROI figures capture.

The talent pipeline benefit is especially significant in industries facing demographic shifts, changes in technology and skill shortages. As the National Governors Association (2023)[11] notes, registered apprenticeship "plays an important role in the U.S. economy and workforce ecosystem by satisfying employer talent needs while providing training and employment pathways for individuals in family-sustaining, in-demand careers." Employers who build apprenticeship programs are not simply filling current vacancies — they are developing a self-renewing internal workforce that reduces long-term dependence on external hiring. Since many journey workers are likely to return for additional training, this also supports the pipeline for advanced skills and supervisory employees.

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and employers (GAO-25-107040). https://www.gao.gov/products/gao-25-107040

10 Marotta, J., Lerman, R., Kuehn, D., & San Miguel, M. (2022). Beyond productivity: How employers gain more from apprenticeship — Findings from the American Apprenticeship Initiative evaluation. Abt Associates; U.S. Department of Labor, Chief Evaluation Office. https://www.dol.gov/sites/dolgov/files/ETA/publications/ETAOP2022-40_AAI_Brief-Indirect_Benefits_Final_508_9-2022.pdf

11 National Governors Association. (2023, November 13). Advancing apprenticeship: Opportunities for states and business to create and expand registered apprenticeship programs. https://www.nga.org/publications/advancing-apprenticeship-opportunities-for-states-and-business-to-create-and-expand-registered-apprenticeship-programs/

Participant Returns

Career Mobility, Advancement, and Access to High-Demand Occupations

While it's too early to see the individual participant returns for non-traditional apprentices with the California Community Colleges, apprenticeship participants see substantial and well-documented gains in earnings, career advancement, and access to occupations that offer long-term stability. Walton et al. (2022)[12] tracked American Apprenticeship Initiative (AAI) participants and found that annual earnings rose by 49% after program completion, with women experiencing even larger earnings growth (65%) compared to men (43%). When compared to workers with similar backgrounds who did not participate in apprenticeship, the advantage is even clearer. Katz and Shakesprere (2022)[13], found substantially faster wage growth for apprentices (43%) than for comparable workers (16%). These are not marginal gains — they represent a meaningful shift in a participant's economic trajectory.

The types of jobs that apprenticeship leads to further support the mobility argument. The U.S. Government Accountability Office (2025)[14] found that "of the 10 most common [registered apprenticeship program] occupations, six were projected to grow faster than the average occupation by 2033" and that nine "paid above median wages for all workers, according to 2023 Bureau of Labor Statistics (BLS) data." A recent Urban Institute[15] report found that apprenticeships in the trades were more likely to be participating in a union-based program, while non-trades related apprenticeships were less likely to be part of a union. Completers are entering careers with staying power, not just immediate employment.

Access to Training Without Student Debt Accumulation and Increased Job Security

One of the most compelling features of apprenticeship — particularly in the current environment of rising student loan burdens — is that participants earn while they learn, accumulating no debt in exchange for industry-recognized credentials. The GAO reports that registered apprenticeship programs offer benefits for participants that include "increased wages, access to occupation-relevant education that leads to a credential, and the potential to avoid taking on student loan debt." The same report notes that the Department of Labor found that "between April 2022 and March 2023, [registered apprenticeship program] completers earned average annual wages of about $80,000 their first year after exiting their program" and that "those average wages were higher than those of associate's degree holders, according to BLS data on average annual wages."

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12 Walton, D., & Gardiner, K. N. (2022). Expanding apprenticeship to underrepresented populations. Abt Associates; U.S. Department of Labor, Employment and Training Administration. https://www.dol.gov/sites/dolgov/files/ETA/publications/ETAOP2022-38_AAI_Brief-Underrepresented_Pops_Final_508_9-2022.pdf

13 Katz, B., & Shakesprere, J. (2022). Did apprentices achieve faster earnings growth than comparable workers? U.S. Department of Labor, Employment and Training Administration. https://www.dol.gov/sites/dolgov/files/ETA/publications/ETAOP2022-41_AAI_Brief-Earnings_Growth_Final_508_9-2022.pdf

14 U.S. Government Accountability Office. (2025). Apprenticeship: Earn-and-learn opportunities can benefit workers and employers (GAO-25-107040). https://www.gao.gov/products/gao-25-107040

15 https://www.urban.org/research/publication/how-labor-unions-and-industry-associations-can-accelerate-youth-apprenticeship

This positions apprenticeship as a financially superior pathway to the middle class for many workers, particularly those who would otherwise take on significant debt to achieve comparable earnings. Since California Community Colleges represent a low-cost entry into training and education, this can be doubly important for apprentices as they can receive direct financial support from their employers, while also accessing financial support for their education. For apprentices who meet the qualifications for the Promise Grant, they may have little or no out-of-pocket expenses.

This earnings and mobility evidence takes on additional significance when viewed through an equity lens. The workers who stand to gain the most from apprenticeship are also those who face the greatest structural barriers to economic advancement. Research summarized by the Burning Glass Institute and Multiverse (2023)[16] confirms that the workers most affected by being stuck in unstable, low-wage work, or underemployment "are disproportionately women, Black and Hispanic workers without a degree" — the same populations that well-designed apprenticeship programs are increasingly reaching. With this in mind, apprenticeships can boost economic stability and social mobility for historically underrepresented and disparately impacted groups.

16 Burning Glass Institute & Multiverse. (2023). Untapped potential: How new apprenticeship approaches will increase access to economic opportunity. https://www.prnewswire.com/news-releases/new-report-apprenticeships-poised-to-move-830-000-workers-into-strong-careers-creating-28-5-billion-in-additional-earnings-in-2024--301986151.html

Public and Economic Returns

Increased Tax Contributions and Reduced Reliance on Public Assistance

When apprentices move into higher-wage employment, the fiscal benefits to the public are direct and quantifiable. Virginia Works (2025)[17] conducted a rigorous state-level economic analysis that illustrates this clearly. Economist Timothy Aylor's analysis found that Virginia's registered apprenticeship program "generated an estimated $6.8 million in additional federal, state, and local tax revenue in fiscal year 2023, representing a three-to-one return on investment." The full fiscal year 2023 analysis of 2,203 program completers "revealed substantial economic benefits including $17.1 million in total labor income impact and $34.7 million in value-added economic activity (GDP contribution)." Aylor attributes this impact to two reinforcing factors: "apprentices typically earn higher wages than they would have otherwise, and the industries sponsoring apprenticeships often feature high value-added production with extensive supply chains." This methodology — which connects individual wage gains to regional GDP contribution and tax revenue — offers a replicable model for quantifying public returns at the state or system level. Across the broader literature, the aggregate public return is estimated to be substantial, with National Apprenticeship (n.d.) reporting that "every $1 invested in apprenticeships leads to a public return of approximately $28 in benefits."

Regional Workforce Competitiveness and Expanded Labor Force Participation

The macroeconomic case for apprenticeship investment is supported by evidence of significant untapped potential in the U.S. labor market. The Burning Glass Institute and Multiverse (2023) estimate that an apprenticeship-ready workforce could generate over 830,000 new apprenticeship opportunities per year, representing approximately $28.5 billion annually in wage increases for workers pursuing these pathways. Current enrollment figures suggest the system is growing toward this potential, with the U.S. Government Accountability Office (2025) reporting that registered apprenticeship programs enrolled about 940,000 people in fiscal year 2024 across a wide range of industries, including technology, healthcare, advanced manufacturing, and energy.

17 Virginia Works. (2025, August 20). Virginia Works registered apprenticeship program delivers strong economic returns: $6.8 million in additional tax revenue generated, a 3-to-1 return on investment. https://virginiaworks.gov/virginia-works-registered-apprenticeship-program-delivers-strong-economic-returns-6-8-million-in-additional-tax-revenue-generated-a-3-to-1-return-on-investment/

Improved Economic Mobility Outcomes

The public return on apprenticeship investment is strongest when programs successfully reach workers who would otherwise remain at the margins of the labor market. Evidence shows this is increasingly happening. The Council of Economic Advisers (2024)[18] reports that "Asian, Black, and Latino apprenticeships grew by 100%, 92%, and 160%, respectively, compared to 79% growth for White apprenticeships" between 2015 and 2024, indicating that the programs are expanding their reach to populations with the greatest potential for upward mobility. When these workers move into high-wage, high-demand careers, the downstream effects — reduced public assistance use, increased tax contributions, stronger regional labor markets — compound over time, making investment in equitable apprenticeship programs among the highest-return options available in workforce development policy.

CONCLUSION

While non-traditional apprenticeships are somewhat new within the California Community Colleges, they are growing at a quick rate as colleges, labor, and industry add new opportunities. If colleges can continue their current rate of growth, the number of apprentices entering non-traditional pathways will match the number of apprentices in traditional pathways by the 2030-31 academic year. Further, if non-traditional pathways can match the return on investment of traditional pathways, California will see a larger number of people earning living wages and with economic stability, while returning real benefits to employers and the public.

18 Council of Economic Advisers. (2024, November 20). All aboard the ApprenticeSHIP: Assessing the changing face of registered apprenticeships. The White House. https://bidenwhitehouse.archives.gov/cea/written-materials/2024/11/20/all-aboard-the-apprenticeship-assessing-the-changing-face-of-registered-apprenticeships/

APPENDICES

APPENDIX B. TWO DIGIT SOC CODE CLASSIFICATION

SOC Code	SOC Title	Traditional
11-0000	Management Occupations	Non-traditional
13-0000	Business and Financial Operations Occupations	Non-traditional
15-0000	Computer and Mathematical Occupations	Non-traditional
17-0000	Architecture and Engineering Occupations	Non-traditional
19-0000	Life, Physical, and Social Science Occupations	Non-traditional
21-0000	Community and Social Service Occupations	Non-traditional
23-0000	Legal Occupations	Non-traditional
25-0000	Educational Instruction and Library Occupations	Non-traditional
27-0000	Arts, Design, Entertainment, Sports, and Media Occupations	Non-traditional
29-0000	Healthcare Practitioners and Technical Occupations	Non-traditional
31-0000	Healthcare Support Occupations	Non-traditional
33-0000	Protective Service Occupations	Traditional
35-0000	Food Preparation and Serving Related Occupations	Non-traditional
37-0000	Building and Grounds Cleaning and Maintenance Occupations	Traditional
39-0000	Personal Care and Service Occupations	Non-traditional
41-0000	Sales and Related Occupations	Non-traditional
43-0000	Office and Administrative Support Occupations	Non-traditional
45-0000	Farming, Fishing, and Forestry Occupations	Non-traditional
47-0000	Construction and Extraction Occupations	Traditional
49-0000	Installation, Maintenance, and Repair Occupations	Traditional
51-0000	Production Occupations	Traditional
53-0000	Transportation and Material Moving Occupations	Non-traditional
55-0000	Military Specific Occupations	Non-traditional

APPENDIX C. TOP CODE CLASSIFICATION

TOP Code	TOP Title	Traditional
0502.00	Accounting	Non-Traditional
0506.00	Business Management	Non-Traditional
0506.50	Retail Store Operations and Management	Non-Traditional
0509.00	Marketing and Distribution	Non-Traditional
0701.00	Information Technology, General	Non-Traditional
0702.00	Computer Information Systems	Non-Traditional
0708.00	Computer Infrastructure and Support	Non-Traditional
0708.20	Computer Support	Non-Traditional
0934.00	Electronics and Electric Technology	Traditional
0934.20	Industrial Electronics	Traditional
0934.30	Telecommunications Technology	Traditional
0934.40	Electrical Systems and Power Transmission	Traditional
0935.00	Electro-Mechanical Technology	Traditional
0945.00	Industrial Systems Technology and Maintenance	Traditional
0946.00	Environmental Control Technology	Traditional
0946.10	Energy Systems Technology	Traditional
0947.00	Diesel Technology	Traditional
0947.40	Railroad and Light Rail Operations	Traditional
0947.50	Truck and Bus Driving	Traditional
0948.40	Alternative Fuels and Advanced Transportation Technology	Traditional
0952.00	Construction Crafts Technology	Traditional
0952.10	Carpentry	Traditional
0952.20	Electrical	Traditional
0952.30	Plumbing, Pipefitting and Steamfitting	Traditional
0952.50	Mill and Cabinet Work	Traditional
0952.80	Drywall and Insulation	Traditional
0952.90	Roofing	Traditional
0956.00	Manufacturing and Industrial Technology	Traditional

TOP Code	TOP Title	Traditional
0956.30	Machining and Machine Tools	Traditional
0956.40	Sheet Metal and Structural Metal	Traditional
0956.50	Welding Technology	Traditional
0956.70	Industrial and Occupational Safety and Health	Traditional
0956.80	Industrial Quality Control	Traditional
0959.00	Marine Technology	Traditional
1219.00	Optical Technology	Non-Traditional
1261.00	Community Health Care Worker	Non-Traditional
1305.00	Child Development/Early Care and Education	Non-Traditional
1306.30	Culinary Arts	Non-Traditional
2104.00	Human Services	Non-Traditional

PART III - CONCLUSIONS

ABOUT APPRENTICESHIP

Apprenticeships represent an important part of any comprehensive workforce training ecosystem. Apprenticeships have been used as a means of training workers in skilled trades for many years. While this has traditionally been limited to building trades and similar occupations like firefighting, over the last several years, there has been a movement to increase the use of apprenticeship to be more inclusive of other non-traditional occupations, including those in healthcare, education, public sector, information technology and many other crucial sectors.

Apprenticeship takes down the longstanding barrier between learning and work and, in many ways, is the perfect form of student financial aid. As such, it combines targeted instruction with hands-on opportunities, which creates a unique and durable way for many people to learn. Further, providing individuals with real experience and learn-while-you-earn opportunities makes the educational pathway more affordable and accessible for lower income students, and the experience students gain makes them more marketable upon graduation than students from more traditional educational programs.

CALIFORNIA APPRENTICESHIPS

All of California's apprenticeship programs are regulated by the Division of Apprenticeship Standards (DAS) within the Department of Industrial Relations (DIR). While many labor-management committees run apprenticeship programs, the community colleges and independent corporations also run many of these programs. The latter groups are particularly impactful in setting up non-traditional apprenticeships.

In 2018, the Governor of California announced a goal of creating 500,000 apprenticeship opportunities by 2029. In response, the Board of Governors for the California Community Colleges system approved, as part of its Vision 2030 goals for the nation's largest workforce training and public higher education system of 2.2 million students, an intent to vastly increase the number of students participating in apprenticeships and create earn while you learn pathways through pre-apprenticeship and apprenticeship as a primary career education strategy.

DIVERSITY OF APPRENTICESHIP PROGRAMS

In general, apprenticeships can be divided into two groups: traditional apprenticeships, which largely consist of those in the building and firefighting trades; and non-traditional apprenticeships, which can be in any other field. The California Community College system offers apprenticeships in programs as diverse as Electrical Systems and Power Transmission, Heavy Equipment Maintenance, Sheet Metal, Welding, Surveying, Dental Assisting, Fire Technology, Computer Infrastructure and Support, Child Care/Development, Business Management, Marketing, Digital Media, Journalism, Photography, Cosmetology and many more. Individuals looking for targeted workforce training have options beyond traditional academic programs, and these opportunities are expanding into more sectors and occupations.

NUMBERS OF APPRENTICES

Of the 50 states, there are currently about 700,388 active registered apprentices as of March 2026. California, which is the top state in apprenticeship creation, has twice the number of registered apprentices of the second-ranked state (Texas) and at about 100,000 current registered apprentices represents about 15% of the nation's apprenticeships. Over the last five years, the most significant increases in apprenticeships were non-traditional, where manufacturing grew by 473% and healthcare 400%.

Over the last six years, there have been some fluctuations in the numbers of students enrolling in apprenticeship programs at California community colleges at any given time. These go from a Pandemic low of 23,217 in 2020-21 to a recent high of 28,952 in 2022-23. While the numbers of traditional apprentices have remained relatively stable over this time, the numbers of non-traditional apprentices have nearly doubled every year or two.

The research findings and recent reports of the California Division of Apprenticeship Standards indicate that non-traditional apprenticeship programs are projected to be the primary driver of growth over the next decade, while the rates of traditional apprenticeships are projected to remain the same. Indeed, since FY2021-22, non-traditional registered apprenticeships have grown by 76% and non-traditional apprenticeships now account for about 25% of all apprenticeships in California.

BENEFITS OF APPRENTICESHIP

Apprenticeship offers benefits to four major constituent groups. First, students gain the ability to earn a regular wage while learning a market-current skill. They can also learn without going into student loan debt to do so. Apprenticeship further provides robust pathways for students who have been disproportionately impacted by traditional academic institutions. As these students are disproportionately minority and first-generation, apprenticeship provides equitable levers to high-wage careers.

Second, employers gain access to customized talent pipelines, as they contribute to the design of the instructional standards. Apprenticeship reduces employer recruitment costs and increases employee retention rates. Further, it offers seamless transitions from trainee to employee increasing productivity, reducing uptake time, and preserving specialized skills.

Third, community colleges gain direct feedback from employers, which provides valuable information with which they can update programs and modernize training for all students. Apprenticeship provides colleges with better, more career-ready programs for students than other higher education settings. Further, these programs put community colleges in a position to serve as regional talent hubs and solidifies their place as economic engines, supporting tens of thousands of local jobs.

Finally, state and local governments gain an enormous boost to the economy and tax base. The community colleges and their students contribute over $170 billion annually to the statewide economy. In addition, over 2000 state and local agencies use community college programs to fill hard to staff public sector roles in information technology, healthcare and public safety. For every $1 invested in community colleges, taxpayers gain $2 in added tax revenue due to increased wages of students, and California gains $14 in added income and social safety net savings.

BENEFITS DURING PROGRAM

The California Community Colleges team has studied the benefits of apprenticeship programs to students and determined that they benefit in two major ways. First, student completion rates are higher in apprenticeship programs than in comparable, traditional academic programs. Second, students are earning while they're learning, so they are generally making more money. Table 1 shows the benefits of some apprenticeship programs. The number shown is the difference between the outcomes for apprentices and the same outcome for students in similar, traditional programs. A positive number shows a benefit for the apprentices, and a negative number shows a benefit for the traditional students. Note that for all programs, if there was more than one year of data available, the most recent year's data was used.

Program	Difference in Course Success Rate	Difference in Quarterly Earnings While Enrolled
Electrical Systems and Power Transmission	23.8%	$43,517
Industrial Systems Technology and Maintenance	9.5%	-$8,692
Environmental Control Technology	11.8%	$20,075
Construction Crafts Technology	19.5%	$25,094
Carpentry	14.8%	$17,681
Electrical	21.5%	$10,805
Plumbing, Pipefitting and Steamfitting	18.3%	$22,334
Manufacturing and Industrial Technology	9.1%	$11,644
Sheet Metal and Structural Metal	25.1%	$16,570
Welding Technology	23.9%	$12,717
Dental Assistant	19.3%	$3,877
Fire Technology	19.9%	$12,071
Computer Infrastructure and Support	3.5%	$3,799
Child Development/Early Child Care and Education	12.8%	$5,419

Note that in all cases, apprentices are significantly more successful in their coursework than students in traditional pathways. This difference is generally between 10% and 25%. Further, in all pathways except one, the apprentices significantly out-earn their non-apprentice counterparts. This difference is often over $10,000 for a quarter, which translates to over $40,000 annually.

BENEFITS AFTER PROGRAM

In addition to out-earning their counterparts during their programs, apprentices have a tendency to out-earn their counterparts after they exit. This may be due to them having more on-the-job experience at graduation. Table 2 shows the comparison between the post-graduate (4 or 8 quarters) earnings of apprentices and students in similar, but traditional, programs. A positive number shows the apprentices out-earning the non-apprentices. A negative number shows the non-apprentices out-earning the apprentices. Results shown prioritize the longest time period and most recent data.

Program	Time Period	Difference in Quarterly Earnings After Exit
Electrical Systems and Power Transmission	8Q	$42,749
Industrial Systems Technology and Maintenance	4Q	-$4,182
Environmental Control Technology	8Q	$18,767
Heavy Equipment Maintenance	8Q	$18,505
Heavy Equipment Operation	8Q	$14,284
Construction Crafts Technology	8Q	$30,987
Carpentry	8Q	$13,775
Electrical	8Q	$11,355
Plumbing, Pipefitting and Steamfitting	8Q	$20,396
Manufacturing and Industrial Technology	8Q	$11,253
Sheet Metal and Structural Metal	4Q	$17,410
Welding Technology	8Q	$12,179
Surveying	8Q	$4237
Dental Assistant	8Q	-$416
Fire Technology	8Q	$6,931
Computer Infrastructure and Support	4Q	$7,375
Child Development/Early Child Care and Education	8Q	$5,958

In the majority of cases, people earning their credential through apprenticeship are significantly out-earning their non-apprentice counterparts a year or two post-exit. In most cases the gap is well over $10,000 per quarter, which translates to over $40,000 annually.

CONCLUSIONS

Apprenticeship is an important part of any workforce training landscape. It offers a different modality of training opportunity that can appeal to individuals who do not flourish in more traditional educational settings. Further, it offers students the opportunity to earn while they learn, which can make educational attainment more economically viable for students of lower financial means.

Apprenticeship programs have been shown to significantly increase the size of the workforce pipeline, helping to fill positions in difficult-to-staff areas and geographic regions. Further, employers report high satisfaction rates with apprenticeship programs, as completers have significant hands-on experience when they start.

In addition to all the other benefits, apprenticeship programs are economically advantageous for students, and they tend to have higher success rates than traditional academic programming. The California Community Colleges system is determined to expand access to apprenticeship so that more students can take part in this excellent opportunity and so that the community colleges, already a major workforce engine within California and nationally, can contribute even more.

APPENDIX D: LIST OF ACRONYMS

Acronym	Definition
DAS	Division of Apprenticeship Standards
DIR	Department of Industrial Relations

Front cover photo:
Coastline Community College

Photo at right:
Los Angeles Pierce College

Back cover photo:
Madera Community College

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