CAAL-Skills Workforce Metrics Dashboard Report 2022

Chapter 13: California Department of Industrial Relations (DIR), Division of Apprenticeship Standards (DAS) – State Certified Apprenticeship Program

The California Workforce Development Board (CWDB) assists the Governor in setting and guiding policy in the area of workforce development. The CWDB is responsible for assisting the Governor in performing the duties and responsibilities required by the federal Workforce Innovation and Opportunity Act (WIOA) of 2014. California's Unified Strategic Workforce Development Plan directs its work in providing guidance to the statewide workforce development system.

The production of this report would not have been possible without the ongoing support and participation of the CAAL-Skills partner agencies and the diligent work of the Employment Development Department (EDD) Labor Market Information Division.

This document can be found on the CWDB's website at cwdb.ca.gov

California Workforce Development Board
800 Capitol Mall, Suite 1022
Sacramento, CA 95814
T: 916-657-1440
F: 916-657-1377

Table of Contents

13 California Department of Industrial Relations (DIR), Division of Apprenticeship Standards (DAS) – State Certified Apprenticeship Program

Program Overview: State-registered apprenticeship represents collaboration of industry, an educational institution, government, and the apprentice. Within the Department of Industrial Relations (DIR), the Division of Apprenticeship Standards (DAS or the Division) works closely with industry to develop apprenticeship programs that train apprentices to employers' specific requirements. Apprenticeship is an opportunity for workers to learn skills necessary for a career in a chosen field on the job, in the culture and environment of the workplace, while studying the theory behind their trade or profession. Without leaving the workforce, apprentices are trained using specifically designed classroom instruction and directly apply their newly developed skills on-the-job.[1]

To be considered a program of apprenticeship, three criteria must be fulfilled: program design must combine classroom instruction in the skill or craft with concurrent of on-the-job training at a worksite, and apprentices must receive regular and formally scheduled wage progression as they advance.

California leads the nation in apprenticeship. During calendar year 2015, the state had 74,441 apprentices registered in over 640 programs recognized by DAS. Minorities numbered 45,796, or 61.5% of all apprentices, and women apprentices numbered 4,683, or 6.3% of all apprentices.

A majority of DAS-approved apprenticeship programs are in the construction sector, but programs continue to expand within both "traditional" apprenticeship sectors (defined in the state Labor Code as occupations in the building trades and firefighting) and into nontraditional and in-demand areas including early childhood education, hospitality, healthcare, IT, and other fields. In 2015 for example, DAS approved 20 new programs in apprenticeship, shorter-duration "trainee" programs (which comprise an on-the-job component only) and so-called journeyperson upgrade (upskilling or recertification programs for those already certified in their field). Of these, 13 were in the service industry, three were in the maintenance or manufacturing industry, three were in civil service, and one was in the construction industry.[2]

---

[1] For more on theory and practice of apprenticeship, as well as research findings of gains to participants and employers, see: Clark, Damon and René Fahr. "The Promise of Workplace Training for Non-College-Bound Youth: Theory and Evidence from German Apprenticeship." IZA Discussion Paper No. 378. Bonn, Germany, 2001; Fersterer, Josef, Jorn-Steffen Pischke, and Rudolf Winter-Ebmer. "Returns to Apprenticeship Training in Austria: Evidence from Failed Firms." *Scandinavian Journal of Economics* vol. 110, no. 4, 2008, p. 733-753; Reed, Deborah, Albert Yung-Hsu Liu, Rebecca Kleinman, Annalisa Mastri. Davin Reed, Samina Sattar, and Jessica Zieglerl. "An Effectiveness Assessment and Cost-Benefit Analysis of Registered Apprenticeship in 10 States." Washington, DC: Office of Apprenticeship, U.S. Department of Labor, 2012. Skills Initiative – Expanding apprenticeship in the U.S.—Lessons from the German Dual Education System" [Embassy of the Federal Republic of Germany).

[2] Division of Apprenticeship Standards 2015 Legislative Report (ca.gov). California Department of Industrial Relations.

A full, current listing of DAS-registered apprenticeship and trainee programs is available on the DAS web page.

About the data: unique considerations of apprenticeship

The nature of apprenticeship makes it unique from other forms of job training or career services offered by different programs in this report, and requires additional context. Data in this report capture the entire population of participants who were enrolled in DAS registered apprenticeship[3] during state fiscal years 2014-2015 and 2015-2016. This population includes individuals who began a program some time in FY 14-15 or 15-16, along with all those who had enrolled prior to the start of this period and continued to be active participants. Apprenticeship is a program of progressive skill development according to standards agreed by industry, educational providers, workers and their representatives, and government. An apprenticeship program often lasts from between three to six years from entry until the apprentice reaches journey status. One data implication is that a large share of active apprentices in a given fiscal year period will be individuals who neither enter nor exit (complete) in the fiscal year considered. Because apprentices earn wages while completing their training, this chapter presents an additional table and associated figures that display employment and earnings data for: active apprentices; apprentices who have completed their program; and individuals who withdrew before completing. This additional data display is presented in Table Set 13.1.1.1.

Data caveats

Information on apprentices' exits and completions comes from petitions submitted by individual program sponsors to the Division of Apprenticeship Standards. DAS continually receives new information from program sponsors that registered apprentices have completed their training. Because this information may not be submitted until after the apprentice completed program requirements—for instance, if the individual requires their Occupational Certification to seek a job or for some other purpose—records may be lagged. This means that numbers of total completions by DAS apprentices will always undercount the true total of completions that occurred in a given year period.

Data in this report represent the latest available records for the two-year period from FY 14-15 to FY 15-16, at the time the report was prepared.[4]

[3] Data also include a small number of individuals in each year (<300 between both years) who were participants in "trainee programs," which are shorter duration programs that are not apprenticeship (consisting wholly of on-the-job training) but that are DAS-overseen and culminate in recognized industry-valued credentials. Many programs are in emerging fields, such as allied health. It is possible that, of these <300 individuals, some may also be journey-level workers who had enrolled in continuing education or recertification courses.

[4] Comparisons should not be made between numbers of completions shown in DAS' own annual legislative reports and completion numbers shown in this report's data. This is because the measures are different: in DAS' annual reports, "total annual completions" refers to the number of trade certificates DAS issued in the report's calendar

Participant Definition – A program participant is defined as any individual who was enrolled in an apprenticeship program registered with DIR-DAS during the specified program years.[5]

Participant Characteristics – Racial and ethnic minorities increased from 38,160 in 2015 to 45,796 in 2016, comprising 61.5% of all apprentices. During the same period, women's participation in apprenticeship programs increased from 3,810 to 4,683 making up 6.3% all apprentices. DAS continues to work with the CAC's Equal Opportunity in Apprenticeship standing committee to increase the number of women and minorities in apprenticeship.[6]

Eligibility Criteria – Per the CA Labor Code, "apprentice" describes a person at least 16 years of age who has entered into a written agreement with an employer or program sponsor. However, eligibility criteria are program-specific, and identified by the program sponsor in individual program standards subject to approval by the chief in accordance with standards set forth in Labor Code Section 3078.5.[7] For example: programs often require that entrants meet minimum educational and other aptitude qualifications that may touch on their ability to physically perform essential functions of the job. Basic math and literacy skills are generally required, and some occupations favor candidates with additional qualifications such as those who have taken shop courses, have some knowledge of mechanical drawing, physics, blueprint reading, drafting, higher mathematics, chemistry, electricity, and/or welding. Other qualifications an apprentice candidate may be required to possess include: physical fitness, a good sense of balance, eye-hand coordination, color sense, agility, ability to work at heights, mechanical aptitude, and interpersonal skills.

Based on the selection method used by the apprenticeship sponsor, additional qualification standards – such as aptitude tests, interviews, school grades, or previous work experience – may be included for qualification.

---

year. These certificates are issued based upon records sent in by individual apprenticeship programs showing that an apprentice met all requirements for completion. The annual report's completion total does not take into account the year in which the participant actually finished their program requirements. For example: a participant in a registered apprenticeship program in construction finished all requirements for her occupational certification in May of 2015. However, she did not seek to obtain her credential until 2016 and her program sent in the petition in that year. Her occupational certification was issued some time during the second half of calendar year 2016. She was captured as a data point in DAS' 2016 legislative report; however, in the approach taken in this chapter, "completion" refers to an exiting apprentice having successfully completed all program requirements regardless of timing of credential attainment. This hypothetical participant would have been captured in this chapter as a data point in FY 2014-2015.

[5] In addition to apprenticeship programs (which necessarily involve concurrent instructional and on-the-job elements), DAS also oversees various other on-the-job programs (see CA Labor Code Section 3093). Based on the inclusion of participants exiting having received on-the-job training only, it appears possible that some participants in such programs were also included in this chapter's data.

[6] California Industrial Relations Apprenticeship Standards 2016 Legislative Report California Department of Industrial Relations.

[7] CALC Section 3077.

Exit Definition – A change in participant Agreement Status Code (ASC) made by the program sponsor to indicate that an apprentice has either completed or withdrawn from the program for one of a number of possible reasons.[8]

Exit Dates – Date completed or withdrew from Training.

Completion – The source of data are program petitions reporting apprentices' completions during the specified fiscal year.

Completion Date – The program-reported date on which an apprentice completed all program requirements.[9]

Withdrawal Definition – A participant was determined to have withdrawn from their apprenticeship program if they exited without completion.

Withdrawal Dates – The program-reported date on which a participant withdrew from their program.

[8] "Exit" status is determined based on a variety of possible statuses, denoting either completion of or withdrawal from a program. They include: (completed – trade certificate issued), indicating a participant who both completed all program requirements and successfully passed an exam demonstrating competency in all areas and becoming certified in his/her field; (cancelled – less than a year under agreement) indicating a participant whose apprenticeship agreement was cancelled due either to non-progress on requirements or for some other reason;, (Cancelled for cause); (Completed – no certificate issued) describes a situation in which a participant completed all requirements associated with his/her program, but did not successfully pass a final exam and therefore did not become certified in his/her field; (Leave granted disability or military); (Automatic cancellation new agreement – a year or more under agreement) and (Automatic cancellation new agreement – less than a year under agreement) respectively describe situations in which a participant's apprenticeship agreement was cancelled administratively, because the same individual became enrolled in a new DAS agreement; (Completed – trade certificate issued electronic) indicates a participant who completed all program requirements and successfully passed an exam demonstrating competency in all areas and becoming certified in his/her field; (Cancelled – less than a year under agreement electronic) describes a participant whose apprenticeship agreement was cancelled due either to non-progress on requirements or for some other reason; (Amended and completed – trade certificate issued) describes a scenario in which the program discretionarily deemed it appropriate to award the participant credits necessary to facilitate that participant's completion. A participant in registered apprenticeship can only be enrolled in one program at a time. It should be noted that: participants who were enrolled prior to FY 14-15, were served one day in FY 14-15, and exited on that day, were not included as participants in FY 14-15. It should also be noted that some (<50) individuals in each year exited and then re-entered. These individuals were included in the "exit" population.

[9] Note that date of exit and date or completion or withdrawal were provided as two separate fields.

13.1 Participant Program Status

13.1.1 Participant Program Status

13.1.1.1 Table Set – Participant Program Status

FY 2014-2015							
Participant Status	# Served	2 Quarters After Exit / FY			4 Quarters After Exit / FY		
		# Employed	% Employed	Median Earnings	# Employed	% Employed	Median Earnings
Participating in the Program	40,286	36,087	89.58	$12,687	33,816	83.94	$17,225
Completed the Program	2,980	2,582	86.64	$19,574	2,462	82.62	$22,292
Withdrew from the Program	10,478	7,172	68.45	$7,706	6,919	66.03	$10,205
TOTAL	53,744	45,841	85.30	$12,167	43,197	80.38	$16,442

FY 2015-2016							
Participant Status	# Served	2 Quarters After Exit / FY			4 Quarters After Exit / FY		
		# Employed	% Employed	Median Earnings	# Employed	% Employed	Median Earnings
Participating in the Program	45,324	39,265	86.63	$13,527	37,135	81.93	$18,308
Completed the Program	7,329	6,544	89.29	$19,364	6,351	86.66	$22,577
Withdrew from the Program	15,514	10,828	69.80	$8,730	10,699	68.96	$11,782
TOTAL	68,167	56,637	83.09	$13,246	54,185	79.49	$17,757

Apprenticeship is a program of training and concurrent employment, in which an active apprentice earns income while working in her trained-for field. Multiyear program length and formal schedules of wage progression[10] included in industry-specific apprenticeship standards mean that apprentices are working meaningfully in their field while receiving training. In this sense, apprenticeship resembles a type of incumbent worker training—although apprentices receive both on-the-job and classroom instruction.

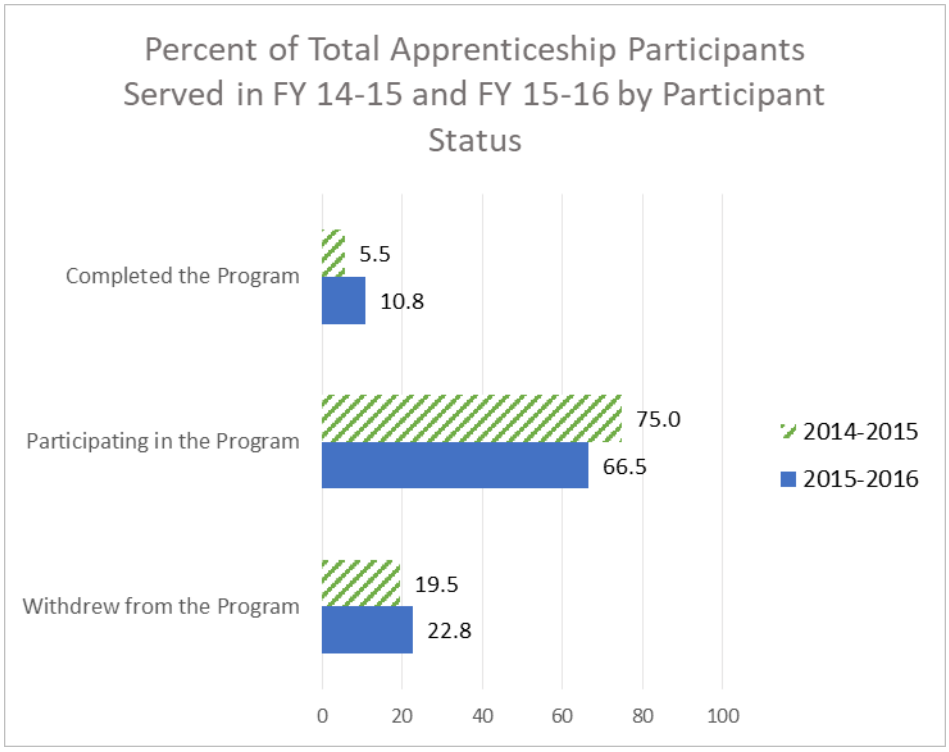
The unique profile of apprenticeship makes it appropriate to capture employment and earnings data not only for those who complete—but also for participants while they are actively enrolled in the program.

Table Set 13.1.1.1 and accompanying figures display employment and earnings outcomes for DAS participants according to three statuses: (1) while actively participating in registered apprenticeship in the second and fourth quarters of each fiscal year; (2) two and four quarters after withdrawing from the program; and (3) two and four quarters after successful completion of an apprenticeship.[11]

[10] Individual program standards, published on the DIR-DAS site, contain formal wage schedules which must be adhered to. In addition, DIR publishes wage schedules for apprentices employed in public works. Published schedules capture hourly pay rates, employer contributions to benefits (health and pension) and leave time accrual. Regular wage increases are prescribed based on the apprentice's tenure in the program.

[11] Date of participant completion or withdrawal was derived using data in two fields: participant completion status, provided as a binary variable (yes/no) was associated with date of completion/withdrawal. Date of completion/withdrawal was provided as a separate field from date of exit. The two dates were typically a few days or weeks off from each other. Data was queried to ensure that any participant with a positive completion status also had a date of completion/withdrawal.

13.1.1.2 Figure – Program Participation by Participant Status



As expected, most participants (75.0% of all enrolled apprentices in FY 14-15 and 66.5% in FY 15-16) remained active apprentices throughout the period.[12]

The multiyear nature of apprenticeship means that there is greater probability of capturing an individual apprentice during one of his or her several non-completion years than in the participant's one and only completion year.

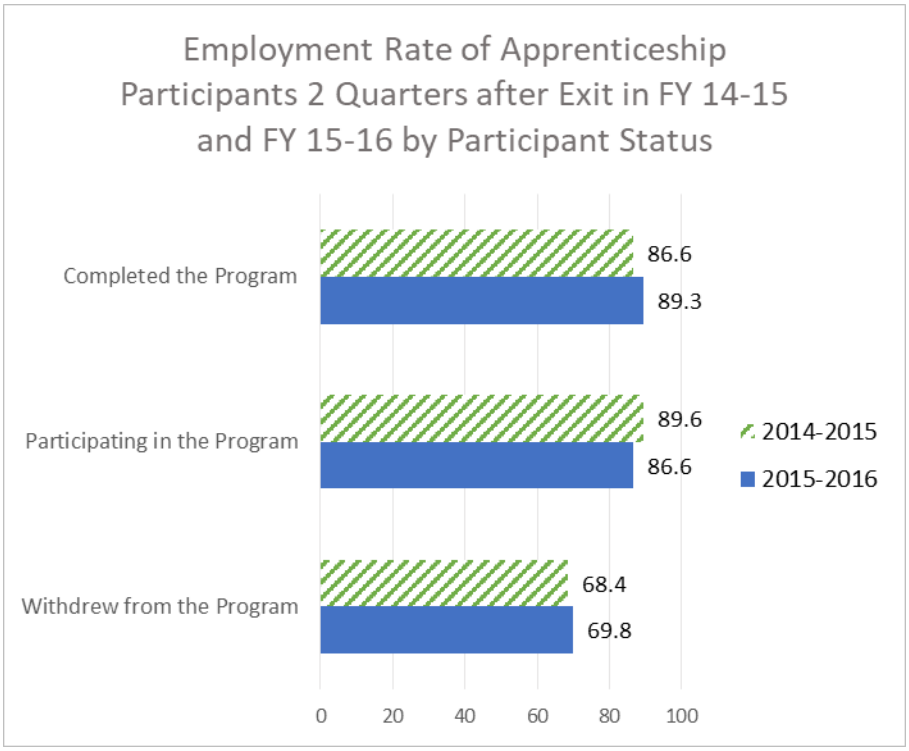
Correspondingly, participants completing an apprenticeship made up a small share of each year's total enrollments, 5.5% of the first year's total and 10.8% of the second year's total.

Participants who withdrew—that is, exited without completion—were slightly less than 20% of all participants in FY 14-15 (19.5%), and 22.8% of all FY 15-16 participants.

Apprenticeship entails a long-term commitment to a skill or craft, and during the first year of a program some participants may find that they are unready for or unsuited to the program. For example: an apprentice in a program for an occupation that involves working at heights may find the program or calling incompatible with an aversion to heights. Therefore, program withdrawals are not necessarily a cause for concern.

[12] Readers will notice that the total beneath the Participating in the Program column is different in both fiscal years from the participant totals in other program tables. This reflects the exclusion of a few (<10) individuals who were filtered out due to a date of entry > date of exit.

13.1.1.3 Figure – 2nd Quarter Employment Rate by Participant Status



Rates of employment among both active participants and those who had completed a program were high: among the former, 89.6% of active apprentices showed reported income in the second quarter of FY 14-15, as did 86.6% in the second quarter of FY 15-16.[13]

Apprenticeship is by definition an "earn-and-learn" program where individuals are earning wages while advancing in their training in a craft. Wage progression is transparent and subject to formal agreement in the form of program standards decided jointly by employers, worker representatives, and educational providers (LEAs) and ratified by the DAS. (To find individual programs' standards, please visit DAS' site).

Because apprenticeship is a program of simultaneous employment and training, it is appropriate to address a few factors that may explain why rates of employment among active apprentices shown here were less than 100% in both years. The first concerns economic conditions in construction—the dominant sector of DAS apprenticeship programs—during the two report years. Construction is especially sensitive to the effects of economic downturns, and the demand for construction workers in California did not completely recover from the 2008-

[13] In general, the outcome metric "second quarter earnings" refers to reported earnings in the second quarter after an individual's exit from the program. Because this would be meaningless if applied to the population of active apprentices, the second (and fourth) quarter of the specified fiscal year has instead been used as the outcome date in calculating the relevant statistics for this population.

2009 recession until after 2015.[14] Although apprentices are employees throughout the duration of their training, if work on a jobsite becomes unavailable they may temporarily be placed on layoff status. A different issue is data-related: wage data in this report is obtained by matching employer-reported earnings with participant identifying information, meaning that any earnings for individuals employed by non-UI reporting employers are not captured, and data may be incomplete in other ways[15]. It is also possible that the method of defining "active participants" used here (any individual who was active at any point during the fiscal year period and did not exit) is imperfect: specifically, it is possible for an individual who was an active participant according to this definition not to have been active at one or both points in time during the fiscal year at which employment and earnings were assessed for this population (second and fourth quarter of the fiscal year). Note that it is not believed that this played a large role in lower than expected employment, given that were this a factor, it would be expected that employment would be lower in the second quarter and increase in the fourth. Instead, the opposite is true.

Employment was also quite high among individuals who completed their program, two quarters after exit: 86.6% of all participants in FY 14-15 who completed an apprenticeship earned wages in the second quarter after exit, as did 89.3% of those to complete in FY 15-16.

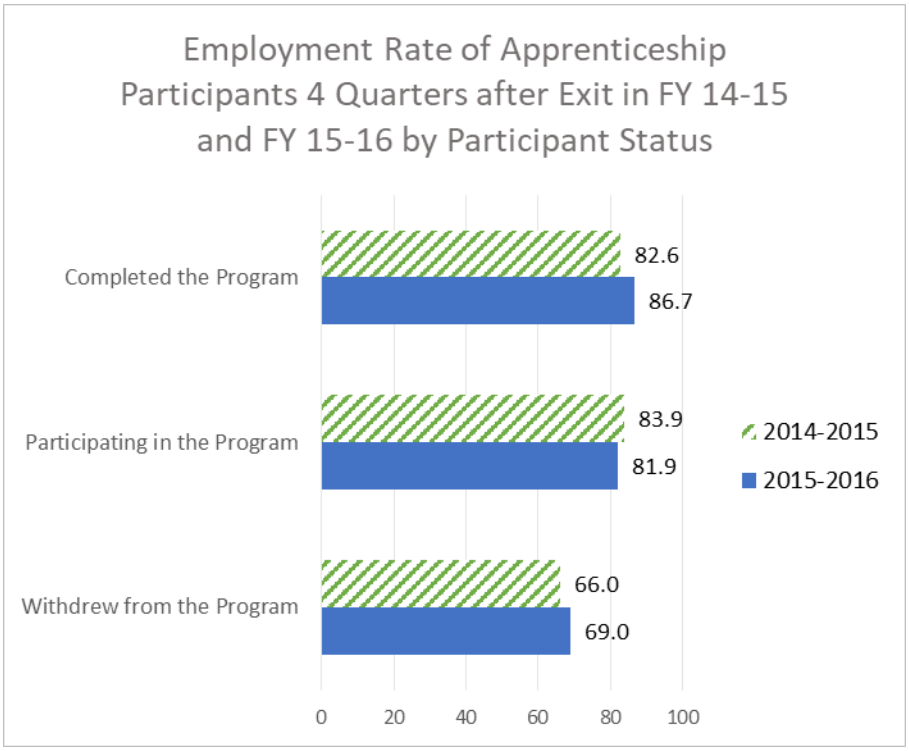
These rates were notably higher than the rates among non-completers, respectively of 68.4% and 69.8%. This is consistent with accepted wisdom that participants who complete a program of training are likely to accrue full benefits from it.[16]

[14] Tschetter , John and John Lukasiewicz. "Employment changes in construction: secular, cyclical, and seasonal" *Monthly Labor Review,* March 1983; Berman, Jay and Janet Pleeger. "Which industries are sensitive to business cycles?" *Monthly Labor Review*, February 1997; Geremew, Menelik and Francois Gourio. "Seasonal and business cycles of U.S. Employment" Federal Reserve Bank of Chicago - Economic Perspectives vol. 42, no. 3, 2018.

[15] Use of UI data matching is considered to be the "gold standard" in workforce evaluation studies. Unlike studies that rely on survey data, issues with response bias are avoided. Notwithstanding, no methodology is perfect and use of UI data (or other administrative data for wage matching) entails its own set of limitations. Chief among these is the incentive employers have to underreport earnings (and thus face lower payout obligations in the event a former employee files a UI claim). See a discussion of these issues in: Mastri, Annalisa, Dana Rotz and Elias Hanno. "Comparing Job Training Impact Estimates using Survey and Administrative Data" Mathematica Policy Research, 2018.

[16] Note that completion rates associated with specific DAS programs vary, both year-to-year and across programs and industry sectors. DAS. "Completion Rates for Apprenticeship Programs 5 Year Average and Last Year" Link embedded p. 3 of DAS Annual Legislative Report for 2017.

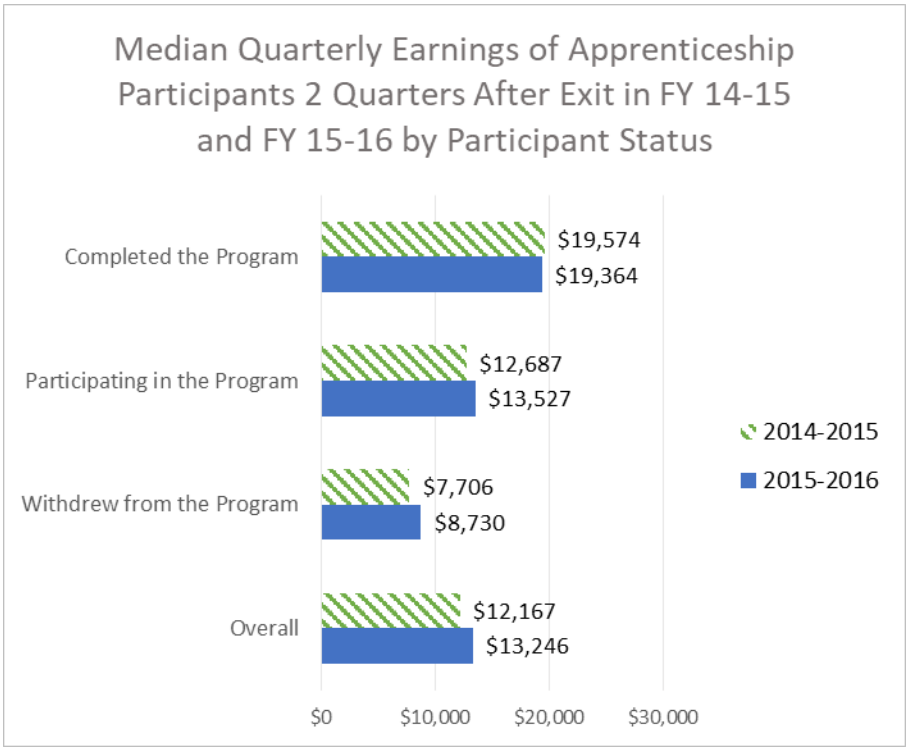
13.1.1.4 Figure – 4th Quarter Employment Rate by Participant Status



Fourth-quarter rates of employment continued to be markedly higher among program-completers and individuals who were active apprentices, compared with rates among participants who withdrew prior to completion.

Employment rates in all participant categories were lower at this stage compared with the earlier stage. Reasons for this drop are not immediately apparent, especially because it was also seen among active apprentices.

13.1.1.5 Figure – 2nd Quarter Median Earnings by Participant Status

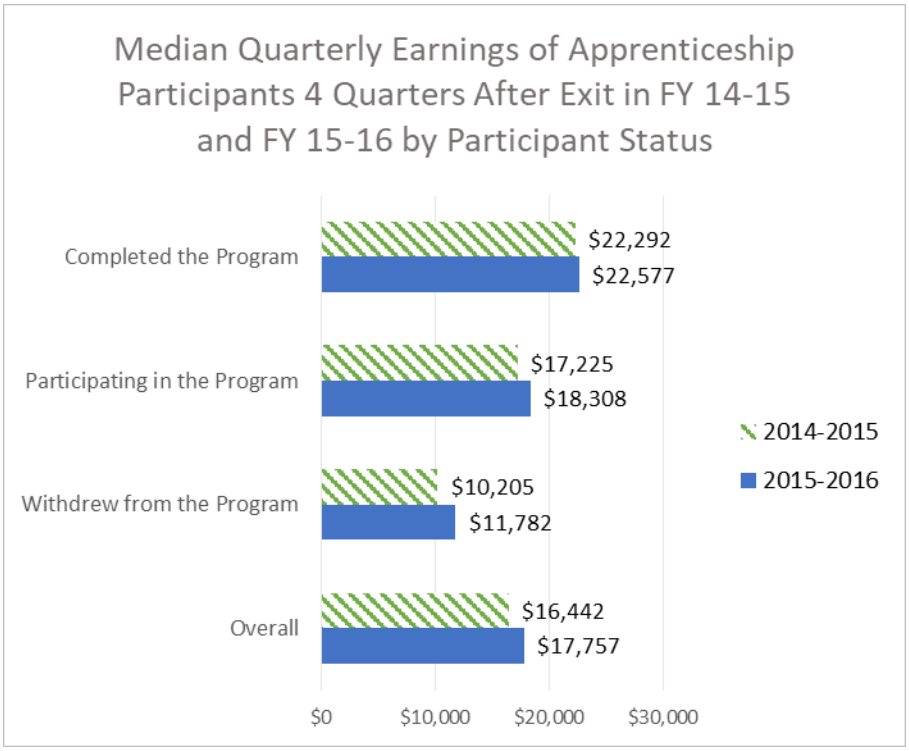


DAS participants who completed their program consistently earned the most: participants who completed a DAS program in FY 14-15 saw second-quarter earnings of $19,574, +$7,407 (61%) more than the median for DAS participants across all three participation categories, and +$11,868 (154%) more than participants who withdrew in that year. Earnings of DAS participants who completed their program in FY 15-16 of $19,354 were +$6,119 (46%) greater than the cross-program median and +$10,634 (122%) greater than earnings of participants who withdrew.

Earnings of active participant also exceeded those of participants who had withdrawn without completion. Participant earnings from the second quarter of FY 14-15 ($12,687) exceeded earnings of individuals who had withdrawn (reported in the second quarter after their withdrawal) by +$4,981 (65%). Earnings of active participants from the second quarter of FY 15-16 were similarly +$4,797 (55%) greater than those who had withdrawn.

These outcomes strongly suggest benefits that accrue to individuals who complete DAS programs.

13.1.1.6 Figure – 4th Quarter Median Earnings by Participant Status



In the fourth quarter after exit, earnings of those who had completed continued to exceed those of all other groups at $22,292 (FY 14-15) and $22,577 (FY 15-16).

In addition, completers' earnings advantage grew in dollar terms with respect to other participant groups, with fourth-quarter earnings of completers exceeding those of participants who had withdrawn by respective margins of + $12,087 following exit in FY 14-15 and + $10,796 following exit in FY 15-16.

Active apprentices' earning advantage over individuals who had withdrawn or dropped out also became more noticeable in the fourth quarter: earnings of the former exceeded those of the latter by +$7,021 (FY 14-15) and + $6,527 (FY 15-16).

The increase in earnings differential between active apprentices and program dropouts appears more driven by earnings increases on the part of the former: both groups saw an increase in earnings from the second-quarter stage, however active apprentices saw an increase of between $4,500 and $5,000 from Q2 to Q4 which was greater than the increase among participants who had withdrawn. The earnings increase among active participants is likely due to the scheduled wage increases that are a feature of apprenticeship programs.

13.2 Participant Demographics

Please see the Appendix for detailed discussion of concepts of ethnicity and race, along with program-specific information about how participant information is collected and reported, and how program reporting values have been accommodated to the federal classification system utilized in this report.

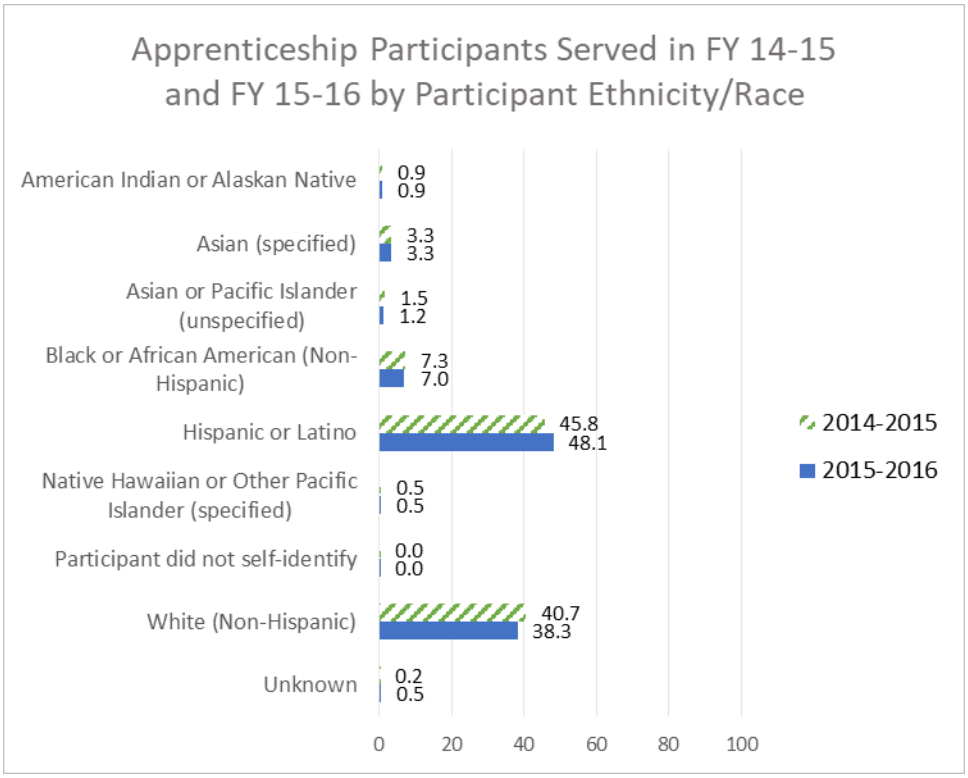
13.2.1 **Participant Ethnicity/Race**

13.2.1.1 Table Set – Participant Ethnicity/Race

FY 2014-2015											
Participant Ethnicity / Race	# Served	# Exited	# Completed Training	2 Quarters After Exit			4 Quarters After Exit				
				# Employed	% Employed	Median Earnings	# Attained Credential	% Attained Credential	# Employed	% Employed	Median Earnings
American Indian or Alaskan Native	482	92	21	57	61.96	$12,143	21	22.83	55	59.78	$13,961
Asian (specified)	1,763	387	73	254	65.63	$10,421	74	19.12	263	67.96	$10,761
Asian or Pacific Islander (unspecified)	781	174	73	132	75.86	$15,579	72	41.38	129	74.14	$16,503
Black or African American (Non-Hispanic)	3,900	1,160	168	703	60.60	$7,410	168	14.48	682	58.79	$8,239
Hispanic or Latino	24,596	6,570	1,301	4,727	71.95	$9,212	1,299	19.77	4,709	71.67	$9,860
Native Hawaiian or Other Pacific Islander (specified)	285	82	<10	65	79.27	$8,605	<10	10.98	64	78.05	$8,907
White (Non-Hispanic)	21,852	4,951	1,300	3,663	73.99	$12,190	1,298	26.22	3,623	73.18	$13,167
More than One Ethnicity / Race	0	0	0	0	0.00	$0	0	0.00	0	0.00	$0
Participant did not self-identify	<10	<10	0	<10	100.00	$18,182	0	0.00	<10	100.00	$16,706
Unknown	87	40	36	30	75.00	$18,068	36	90.00	29	72.50	$20,850
TOTAL	**53,749**	**13,458**	**2,980**	**9,633**	**71.58**	**$10,083**	**2,977**	**22.12**	**9,556**	**71.01**	**$10,797**

FY 2015-2016											
Participant Ethnicity / Race	# Served	# Exited	# Completed Training	2 Quarters After Exit			4 Quarters After Exit				
				# Employed	% Employed	Median Earnings	# Attained Credential	% Attained Credential	# Employed	% Employed	Median Earnings
American Indian or Alaskan Native	637	210	69	148	70.48	$14,460	70	33.33	147	70.00	$14,035
Asian (specified)	2,279	641	199	483	75.35	$12,527	198	30.89	480	74.88	$13,847
Asian or Pacific Islander (unspecified)	827	318	188	277	87.11	$18,640	187	58.81	273	85.85	$19,322
Black or African American (Non-Hispanic)	4,803	1,789	425	1,215	67.92	$9,280	419	23.42	1214	67.86	$10,327
Hispanic or Latino	32,811	11,140	3,181	8,350	74.96	$11,010	3147	28.25	8309	74.59	$11,898
Native Hawaiian or Other Pacific Islander (specified)	368	122	<10	85	69.67	$9,817	<10	7.38	80	65.57	$10,032
White (Non-Hispanic)	26,085	8,497	3,188	6,576	77.39	$16,629	3176	37.38	6526	76.80	$17,744
More than One Ethnicity / Race	<10	<10	0	0	0.00	$0	0	0.00	0	0.00	$0
Participant did not self-identify	12	<10	0	<10	100.00	$20,077	0	0.00	<10	87.50	$23,668
Unknown	347	117	70	80	68.38	$13,914	70	59.83	64	54.70	$14,331
TOTAL	68,170	22,843	7,329	17,222	75.39	$12,625	7,276	31.85	17,100	74.86	$13,629

13.2.1.2 Figure – Program Participation by Participant Ethnicity/Race



Values in Figure 13.2.1.2 show percent shares of participants by racial or ethnic self-identification. These values were computed by dividing the total of participants served in a given racial category (e.g., Asian) by the overall total of participants enrolled in registered apprenticeship programs during the noted fiscal year.

By comparing shares of program participants by ethnic or racial group with the same groups' shares of the statewide labor force, it is possible to gauge whether certain groups are being underrepresented in DAS programs.

Hispanic or Latino participants made up the single largest share – close to 50% – of all DAS participants in both years. Hispanic/Latinos were 45.8% of all participants served in FY 14-15, and 48.1% of all served in FY 15-16. These shares indicated program representation above the same population's share of the state's labor force (respectively by +9.2 and +12.5 percentage points), which was 36.6% in FY 14-15 and 35.6% in FY 15-16.

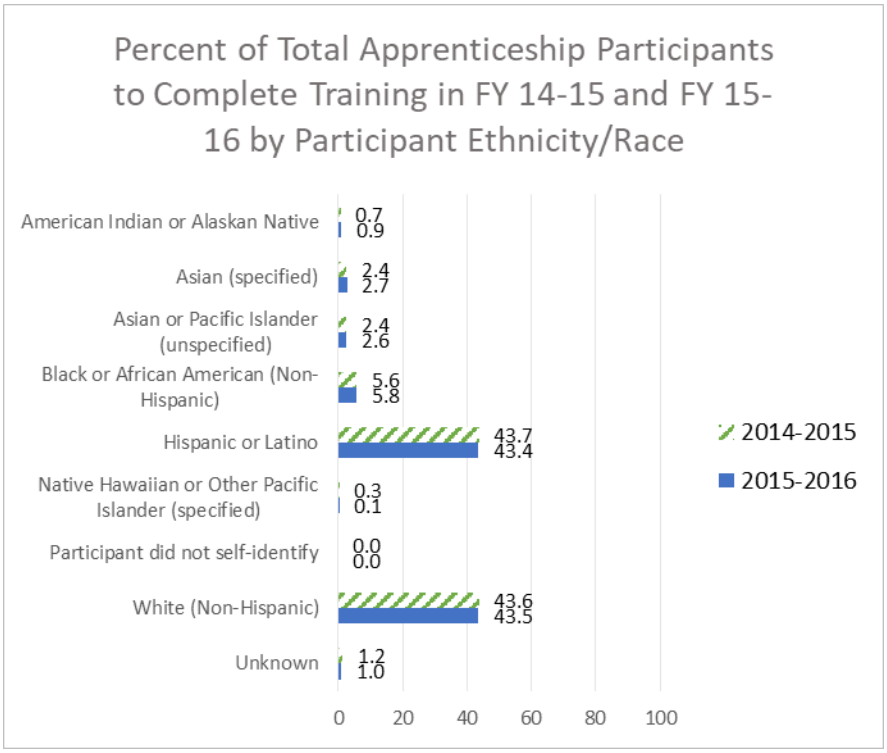
Representation of Hispanic or Latino individuals in DAS program enrollment appears to be a positive indication, particularly in light of data which suggest underrepresentation of racial and ethnic minorities in apprenticeship at a national level.[17]

[17] Hanks, Angela, Annie McGrew and Daniella Zessoules (July 11, 2018) "The Apprenticeship Wage and Participation Gap". Center for American Progress.

Native Hawaiian or Other Pacific Islander participants were the smallest share in both years, 0.5% of FY 14-15 participants and 0.5% of participants in FY 15-16.

In both FY 14-15 and FY 15-16, 0.9% of the state's labor force was Native Hawaiian and Other Pacific Islander (reflecting their similar share of the state's working age population, 0.8%). Compared with this benchmark, DAS enrollments from this population, 0.5% of the total in each year, were about 60% the size of the statewide labor force share.[18] This suggests that DAS programs may be under-enrolling participants from this demographic.

13.2.1.3 Figure – Training Completion by Participant Ethnicity/Race



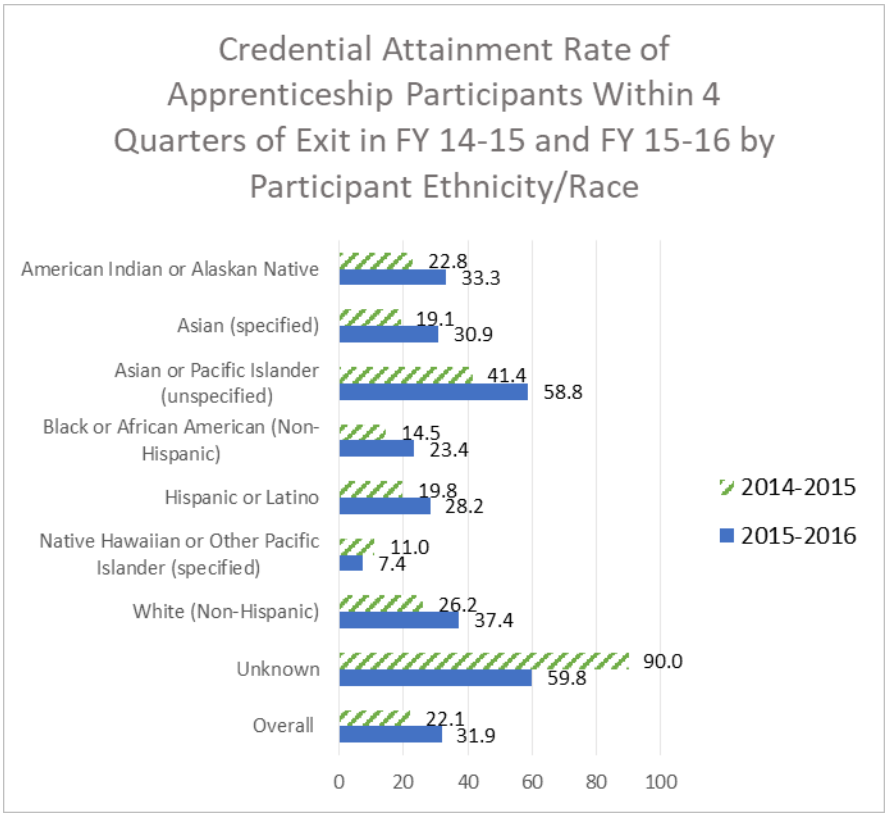
All participants in DAS programs receive training, meaning that 100% of enrolled participants have the opportunity to meaningfully "complete" their program. By comparing completion shares (Figure 13.2.1.3) with shares of participants served by racial or ethnic group, it is therefore possible to identify discrepancies between participation and completion that could indicate the presence of systematic barriers. Note that information in this report (which does not provide an ability to other potentially unmeasured sources of difference between populations) is unable to provide information on causes, beyond displaying descriptive statistics shown here.

[18] This statistic is derived by dividing the program enrollment share by the labor force share and represents a ratio of program enrollments to labor force share.

While the share of program completions made by Hispanic or Latino participants was the largest of any group in FY 14-15 (43.7%), completions by white non-Hispanic participants were a close second (43.6%).

Among participants to exit in FY 15-16, completion shares of white non-Hispanic and Hispanic/Latino participants were nearly identical, respectively 43.5% and 43.4% of the year's total. Native Hawaiian and Other Pacific Islanders contributed the smallest shares of participant completions in absolute terms, making up just 0.3% of all FY 14-15 completions and only 0.1% of all completions in FY 15-16.

13.2.1.4 Figure – Credential Attainment Rate by Ethnicity/Race



Values in Figure 13.2.1.4 show rates of credential attainment within four quarters of program exit by participant ethnicity or race.[19]

Credentials tracked in this report's data are credentials issued upon successful completion of an apprenticeship (or trainee) program. Upon successful completion of all required coursework,

[19] Please note that direct comparison with credential rates in this report and those shown in the previous Workforce Metrics report should not be made for this program. In the inaugural report, credential attainment was only reported for those participants who had completed an apprenticeship. Because only participants who complete an apprenticeship (or a trainee program) have the opportunity to earn a terminal credential, credential rates shown in this report are therefore lower than rates reported in the previous report.

training, and on-the-job hours and DAS' review and approval of a petition from the individual's program to ensure all requirements have been fulfilled, DAS issues every graduating apprentice with a State Certificate of Completion (Occupational Certification).[20] While apprentices may also earn additional certificates during the course of the program as they complete specific courses or other requirements (for instance, a certification for completion of an OSHA safety course) only completion credentials are counted in this chapter's data for better parity with other program reporting.

Besides occupational certifications, a small number of credentials (fewer than 300 in total) are also captured for individuals who completed on-the-job training programs. These certificate programs are shorter in duration, but lead to industry-valued credentials.

In interpreting credential rates generally for this program, readers should bear in mind that the denominator used comprises all individuals to exit from a DAS program. Readers should be aware that exit from a DAS apprenticeship may happen for a variety of reasons, including administrative forms of exit that might not represent an individual's terminal exodus from apprenticeship.[21] At the same time, because DAS programs are lengthier than many other kinds of workforce training, they may be subject to greater attrition than shorter term training programs. This is one of the reasons for which DAS publishes completion rates over a period of five years.

Because the sole credential tracked in the data is awarded for completion, only the subset of exiting participants who complete their training is eligible to earn a credential. However, for parity with calculation of the rate across programs, the total exiting population is used as the

[20] For details, see: https://www.dir.ca.gov/t8/224.html

[21] Exit statuses include: (completed – trade certificate issued), indicating a participant who both completed all program requirements and successfully passed an exam demonstrating competency in all areas and becoming certified in his/her field; (cancelled – less than a year under agreement) indicating a participant whose apprenticeship agreement was cancelled due either to non-progress on requirements or for some other reason;, (Cancelled for cause); (Completed – no certificate issued) describes a situation in which a participant completed all requirements associated with his/her program, but did not successfully pass a final exam and therefore did not become certified in his/her field; (Leave granted disability or military); (Automatic cancellation new agreement – a year or more under agreement) and (Automatic cancellation new agreement – less than a year under agreement) respectively describe situations in which a participant's apprenticeship agreement was cancelled administratively, because the same individual became enrolled in a new DAS agreement; (Completed – trade certificate issued electronic) indicates a participant who completed all program requirements and successfully passed an exam demonstrating competency in all areas and becoming certified in his/her field; (Cancelled – less than a year under agreement electronic) describes a participant whose apprenticeship agreement was cancelled due either to non-progress on requirements or for some other reason; (Amended and completed – trade certificate issued) describes a scenario in which the program discretionarily deemed it appropriate to award the participant credits necessary to facilitate that participant's completion. A participant in registered apprenticeship can only be enrolled in one program at a time. It should be noted that: participants who were enrolled prior to FY 14-15, were served one day in FY 14-15, and exited on that day, were not included as participants in FY 14-15. It should also be noted that some (<50) individuals in each year exited and then re-entered. These individuals were included in the "exit" population.

denominator. This necessarily causes rates to appear low in comparison with DAS' own published legislative reports or with the CWDB's inaugural Workforce Metrics Dashboard report. Readers should avoid making direct comparisons between credential rates shown in this report and the previous one due to this difference in calculation.

Values show the rate of attainment of program-recognized credentials within four quarters (one calendar year) of exiting from the program in the specified fiscal year.

In both years, participants identifying as Asian or Pacific Islander (unspecified) had the highest rates of credential attainment among participants of known ethnicity or race: 41.4% of participants in this category earned a completion credential within four quarters of exit in FY 14-15, and 58.8% did so after exit in FY 15-16. These rates exceeded the program-wide rate by +19.3 percentage points in FY 14-15, and +27.0 percentage points in FY 15-16.

Native Hawaiian or Other Pacific Islander (specified) participants had the lowest credential attainment rates following exit in both years, of 11% within four quarters after exit in FY 14-15, and just 7.4% within four years of exit in FY 15-16. Rates associated with this group were -11.2 percentage points lower than the first fiscal year's overall rate, and -24.5 percentage points lower than the rate among participants exiting in the second fiscal year.

Given that the category captured by this label partly overlaps with the Asian or Pacific Islander category description, these outcomes appear puzzling. Further investigation should be made to determine barriers Native Hawaiian or Other Pacific Islanders may be facing in DAS programs.

13.2.1.5 Figure – 2nd Quarter Employment Rate by Participant Ethnicity/Race

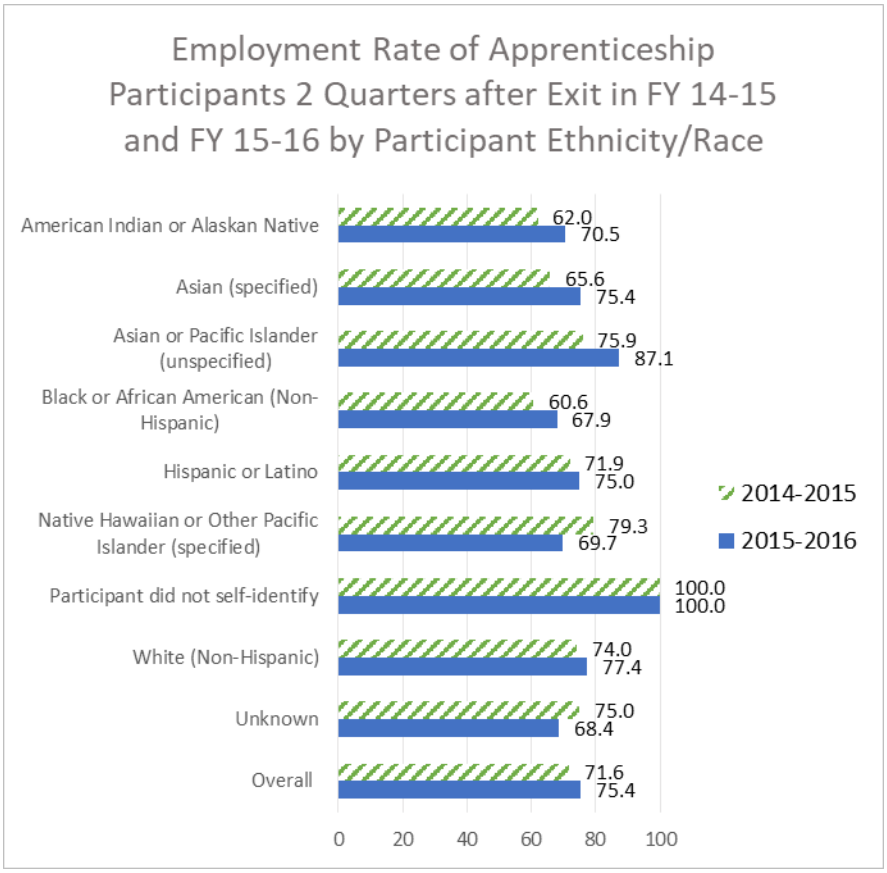


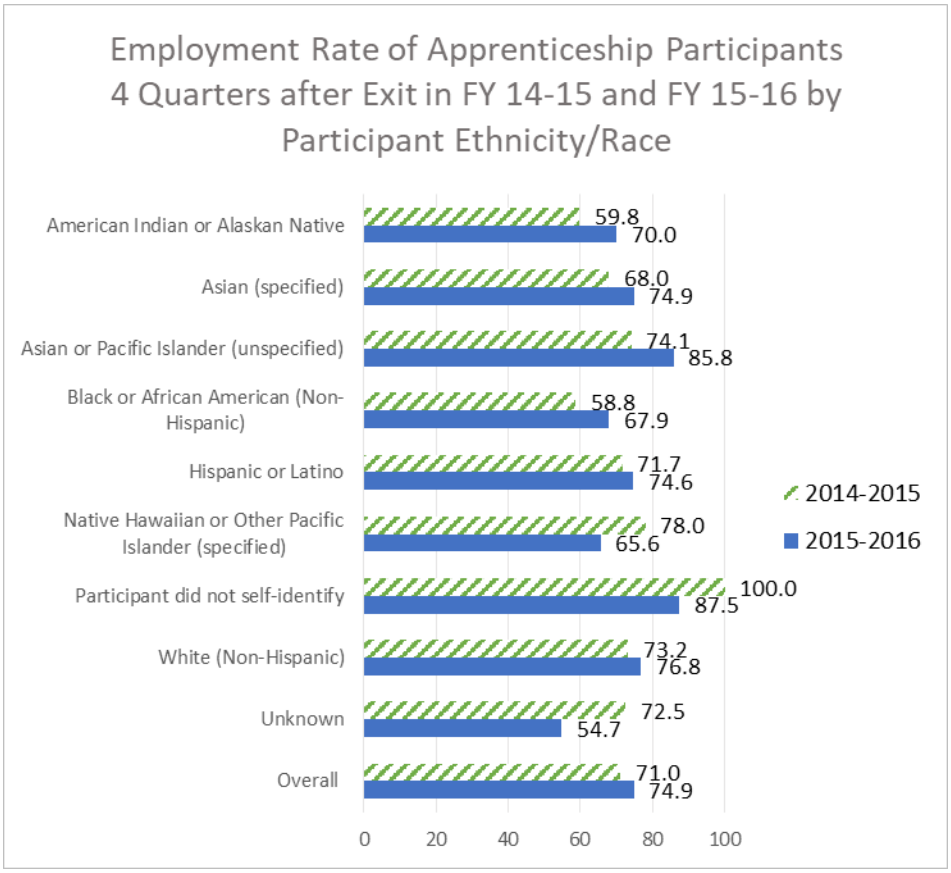
Figure 13.2.1.5 shows employment rates among former DAS participants in the second quarter after exit by participant ethnicity or race. [22]

Apart from rates among the <5 individuals without ethnic or racial identification in either year, the employment rate two quarters after exit in FY 14-15 was highest among Native Hawaiian or Other Pacific Islander (specified) participants, 79.3% of whom had reported earnings (+7.7 percentage points above the program-wide rate). Two quarters after exit in FY 15-16, the highest rate of employment was found among Asian or Pacific Islander (unspecified) participants, at 87.1%, +11.7 percentage points above the program-wide rate.

[22] Employment at the second quarter after exit is calculated as a rate, in which the denominator comprises all participants within a given racial group to have exited the program during a given fiscal year period, and the numerator is made up of all participants from this pool to have been employed at any point during the second quarter following that exit. A participant is considered to have been employed (and thus counted in the numerator) if that participant had reported earnings of more than $0 at any point in the quarter. These rates represent outcomes specific to individual racial/ethnic groups and may be directly compared with one another and with the aggregate rate of attainment across all participants (shown in Table Set 13.2.1.1 in the bottom cell of column, "% employed at 2nd quarter").

Employment was lowest among Black or African American participants in both years, 60.6% in the second quarter after exit in FY 14-15 and 67.9% at the same point after exit in FY 15-16. These rates were -11 and -7.5 percentage points lower than the associated program-wide rates. Employment rates below the program average among Black participants might reflect effects of job market discrimination and employer hiring bias, and/or could indirectly reflect differences in employment rates by occupation or sector, if program enrollment patterns are uneven by sector and/or occupation. In any case, the causes of such lower than average employment rates among these participants should be further explored.

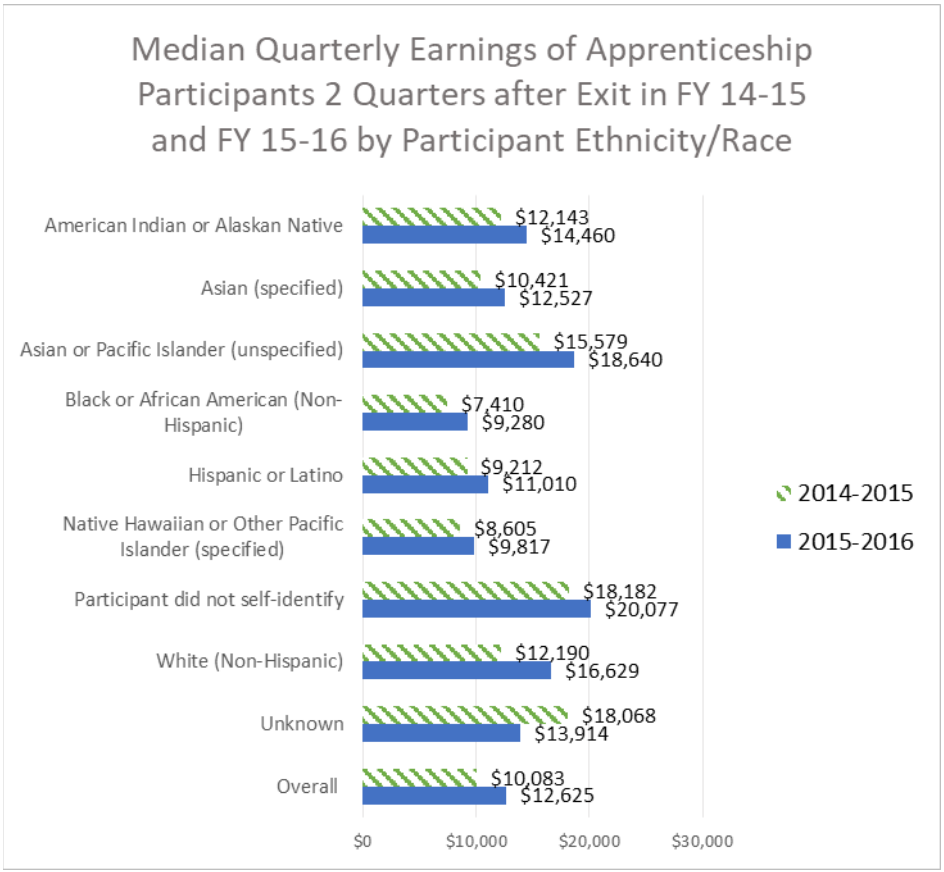
13.2.1.6 Figure – 4th Quarter Employment Rate by Participant Ethnicity/Race



In the fourth quarter after exit, highest rates of employment continued to be seen in the same participant categories as at the second-quarter stage.

Participants who were Black or African American continued to see lowest employment at the fourth quarter after exit in FY 14-15. At this stage after exit in FY 15-16, employment was lowest (excluding the Unknown category) among Native Hawaiian or Other Pacific Islander participants, at 65.6%.

13.2.1.7 Figure – 2nd Quarter Median Earnings by Participant Ethnicity/Race



The median value is the middle value when earnings of all participants in the group are arranged from lowest to highest.[23] A program-wide median is also provided in Table Set 13.2.I as a benchmark.[24]

Asian or Pacific Islanders (unspecified) saw both cohorts' highest second-quarter earnings among participants of known ethnicity or race in, of $15,579 (FY 14-15) and $18,640 (FY 15-16). Respectively, earnings of this group were +$5,496 and +$6,015 higher than the respective years' program-wide medians.

Lowest earnings were found among Black or African American participants, of $7,410 (FY 14-15) and $9,280 (FY 15-16). These medians were respectively -$2,673 and -$3,345 lower than each year's program-wide median.

[23] When the total range of participant earnings is an even number, the median is found by averaging the two middle values.

[24] The median is preferred in this report to the mean as a measure of central tendency due to its greater resistance to influence by outliers, or extremely high or low values which may be unrepresentative of most participant outcomes. Therefore, medians have been used throughout this report to provide information about participant earnings outcomes.

As noted in the section above, Black jobseekers face hiring and wage discrimination in most areas of the job market. Factors involved are multiple, and include explicit pay discrimination (i.e., paying less to perform the same occupational role), hiring discrimination (employers' discrimination in hiring qualified Black candidates for higher-paying positions), in addition to the effects from systematic inequalities in educational access that stem from the racially unequal wealth distribution, and the interconnected history of residential segregation and resultant disparities in home values, school quality, and the other resources afforded by parental wealth.[25]

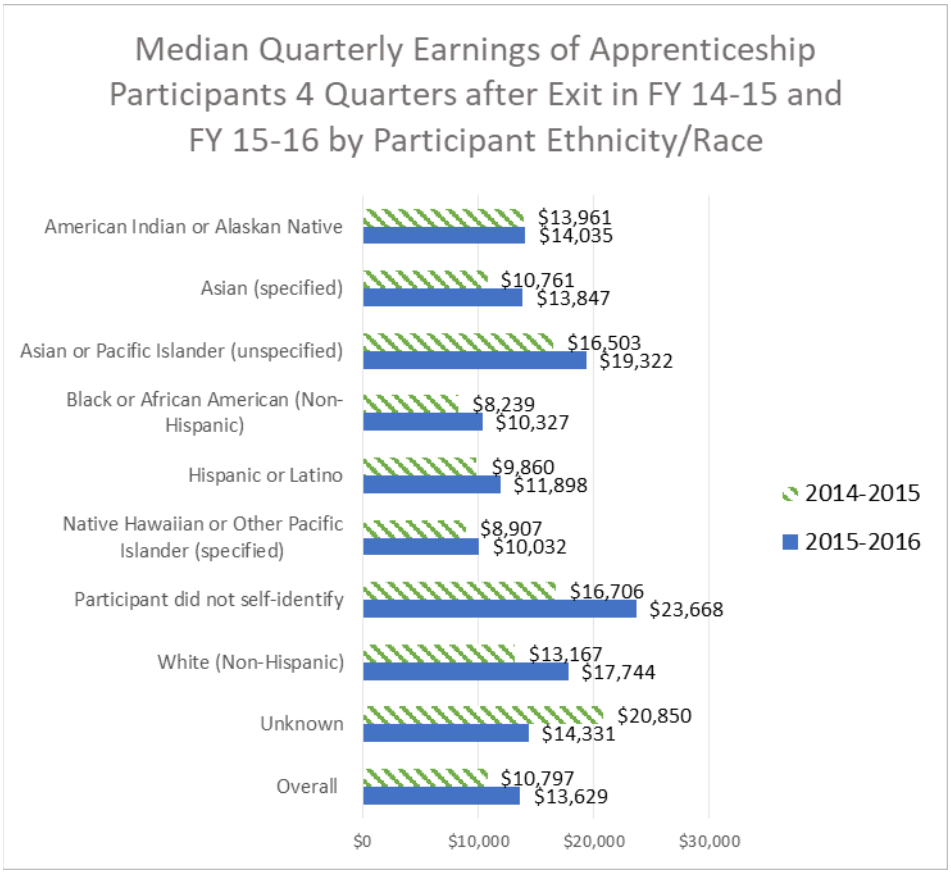
Black participants – like Hispanic/Latino, Native American, and Pacific Islander participants—also appeared (from the comparison of completion share with share of individuals served) to have lower rates of DAS program completion in comparison with white non-Hispanic participants. While barriers to completion alone do not appear to tell the whole story (given that Black participants appear to suffer an additional wage penalty beyond that faced by other groups), they may be another factor in observed earnings disparities.[26]

---

[25] Socioeconomic inequality by race and ethnicity has multiple, intersecting causes. Inequality in incomes by race and ethnicity (see: Kochar, Rakesh and Anthony Ciluffo, "Key findings on the rise in income inequality within America's racial and ethnic groups," Pew Research Center, 2018) is caused by direct discrimination in hiring and pay as well as inequalities of access to education and training. Inequality today is also shaped by past policies that gave financial assistance to white Americans to obtain higher education and buy a home, while shutting Black Americans and other Americans of color out. Two key examples are the G.I. Bill and policies of the Federal Housing Administration. The G.I. Bill of 1944 provided returning servicemen with benefits including low-cost mortgages, low-interest business loans, and subsidization of education and training. However, Black Americans were overwhelmingly excluded from these benefits (see, Kotz, Nick "Review: 'When Affirmative Action Was White': Uncivil Rights" *The New York Times,* August 28, 2005). For data showing the current racial wealth gap, see Erin Currier and Sheida Elmi, Sheida "The Racial Wealth Gap and Today's American Dream," Pew Research, February 16, 2018. For discussion of the history of racist housing policy in California, see: Alexis Madrigal, Alexis "The Racist Housing Policy That Made Your Neighborhood," *The Atlantic*, May 22, 2014

[26] Data available for this report do not provide a disaggregation of enrollment in specific occupational or sectoral apprenticeships. DIR-DAS' own annual legislative reporting provides some of this information. For instance, the legislative report for 2017 indicates that Hispanics are the largest group, comprising more than half (56.1%) of all construction apprentices, followed by white non-Hispanics (31.4%). (p 4). This phenomenon has been especially studied and found to be occurring in gender-based patterns of apprenticeship enrollment, with women tending to be concentrated in apprenticeships for lower-paying occupations (see for instance, a "An Effectiveness Assessment and Cost-Benefit Analysis of Registered Apprenticeship in 10 States (Mathematica Policy Research, 2012).https://wdr.doleta.gov/research/FullText_Documents/ETAOP_2012_10.pdf). For discussion of race and occupational segregation, see Hamilton, Darrick, Algernon Austin, and William Darity. "Whiter Jobs, Higher Wages: Occupational Segregation and the Lower Wages of Black Men." Economic Policy Institute Briefing Paper #288, Washington, DC, 2011; Tomaskovic-Devey, Donald. "The Gender and Race Composition of Jobs and the Male/Female, White/Black Pay Gaps." *Social Forces*, vol. 72, no. 1, 1993, p. 45–76For a recent summary of peer-reviewed studies demonstrating the persistence of racial hiring bias see, for example, Quillian, Lincoln, Devah Pager, Arnfinn H. Midtboen and Ole Hexel, "Hiring Discrimination Against Black Americans Hasn't Declined in 25 Years,"Harvard Business Review, https://hbr.org/2017/10/hiring-discrimination-against-black-americans-hasnt-declined-in-25-years, October 11, 2017.see also, Price, Lee. "Racial discrimination continues to play a part in hiring decisions." Economic Policy Institute, September 17, 2003 https://www.epi.org/publication/webfeatures_snapshots_archive_09172003/; for a review of this literature, see

13.2.1.8 Figure – 4th Quarter Median Earnings by Participant Ethnicity/Race



In the fourth quarter after exit in both years and excluding participants whose ethnicity or race was not provided, earnings were once again highest among Asian or Pacific Islander (unspecified) participants, respectively $16,503 (FY 14-15) and $19,322 (FY 15-16).

Four quarters after exit in FY 14-15, Black participants again had lowest earnings, $8,239. In the fourth quarter after exit in FY 15-16 however, lowest earnings were among native Hawaiian or Other Pacific Islander (specified) participants of $10,032.

Manduca, Robert. "Income Inequality and the Persistence of Racial Economic Disparities." *Sociological Science,* vol.5, 2018, p.182-205.

13.2.2 **Participant Ethnicity/Race as Reported**

13.2.2.1 Table Set – Participant Ethnicity/Race as Reported

FY 2014-2015														
							2 Quarters After Exit			4 Quarters After Exit				
Participant Ethnicity / Race	# Served	% Of Total Served	# Exited	% Of Total Exited	# Completed Training	% Of Total Completed Training	# Employed	% Employed	Median Earnings	# Attained Credential	% Attained Credential	# Employed	% Employed	Median Earnings
American Indian or Alaskan Native	482	0.90	92	0.68	21	22.83	57	61.96	$12,143	21	22.83	55	59.78	$13,961
Asian or Pacific Islander (unspecified)	781	1.45	174	1.29	73	41.95	132	75.86	$15,579	72	41.38	129	74.14	$16,503
Asian - Bangladeshi	<10	0.00	0	0.00	0	0.00	0	0.00	$0	0	0.00	0	0.00	$0
Asian - Cambodian	68	0.13	23	0.17	<10	8.70	17	73.91	$9,244	<10	8.70	19	82.61	$9,367
Asian - Chinese	324	0.60	66	0.49	<10	12.12	46	69.70	$10,453	<10	12.12	42	63.64	$12,850
Asian - Filipino	768	1.43	164	1.22	44	26.83	112	68.29	$11,974	45	27.44	117	71.34	$11,933
Asian - Hmong	82	0.15	11	0.08	0	0.00	<10	63.64	$6,526	0	0.00	<10	63.64	$7,518
Asian - Indian	61	0.11	20	0.15	<10	20.00	10	50.00	$9,940	<10	20.00	12	60.00	$9,802
Asian - Indonesian	<10	0.01	0	0.00	0	0.00	0	0.00	$0	0	0.00	0	0.00	$0
Asian - Japanese	106	0.20	19	0.14	<10	15.79	12	63.16	$18,152	<10	15.79	10	52.63	$17,898
Asian - Korean	75	0.14	20	0.15	<10	30.00	11	55.00	$9,126	<10	30.00	12	60.00	$9,964
Asian - Laotian	40	0.07	<10	0.04	0	0.00	<10	80.00	$7,514	0	0.00	<10	100.00	$5,912
Asian - Malaysian	<10	0.01	<10	0.01	0	0.00	0	0.00	$0	0	0.00	0	0.00	$0
Asian - Pakistani	12	0.02	<10	0.01	0	0.00	<10	100.00	$13,500	0	0.00	<10	100.00	$13,500
Asian - Sri Lankan	<10	0.01	0	0.00	0	0.00	0	0.00	$0	0	0.00	0	0.00	$0
Asian - Taiwanese	<10	0.02	<10	0.03	<10	25.00	<10	100.00	$15,166	<10	25.00	<10	100.00	$15,657
Asian - Thai	26	0.05	<10	0.03	0	0.00	<10	100.00	$7,651	0	0.00	<10	100.00	$9,377
Asian - Vietnamese	173	0.32	48	0.36	<10	10.42	26	54.17	$9,822	<10	10.42	30	62.50	$9,488
Black or African American	3,900	7.26	1,160	8.62	168	14.48	703	60.60	$7,410	168	14.48	682	58.79	$8,239
Caucasian	21,852	40.66	4,951	36.79	1,300	26.26	3,663	73.99	$12,190	1,298	26.22	3,623	73.18	$13,167
Hispanic	24,596	45.76	6,570	48.82	1,301	19.80	4,727	71.95	$9,212	1,299	19.77	4,709	71.67	$9,860
Pacific Islander - Fijian	28	0.05	<10	0.06	<10	12.50	<10	87.50	$12,155	<10	12.50	<10	87.50	$13,470
Pacific Islander - Guamanian	48	0.09	16	0.12	<10	12.50	10	62.50	$6,479	<10	18.75	<10	56.25	$8,199
Pacific Islander - Hawaiian	70	0.13	22	0.16	0	0.00	20	90.91	$8,970	0	0.00	19	86.36	$8,841
Pacific Islander - Samoan	90	0.17	24	0.18	<10	12.50	18	75.00	$7,097	<10	12.50	19	79.17	$8,075
Pacific Islander - Tongan	49	0.09	12	0.09	<10	16.67	10	83.33	$9,755	<10	16.67	10	83.33	$9,945
Did not self-identify	<10	0.01	<10	0.01	0	0.00	<10	100.00	$18,182	0	0.00	<10	100.00	$16,706
More than one ethnicity/race	0	0.00	0	0.00	0	0.00	0	0.00	$0	0	0.00	0	0.00	$0
Unknown	87	0.16	40	0.30	36	90.00	30	75.00	$18,068	36	90.00	29	72.50	$20,850
Total	53,749	0.00	13,458	0.00	2,980	22.14	9,633	71.58	$10,083	2,977	22.12	9,556	71.01	$10,797

FY 2015-2016														
Participant Ethnicity / Race	# Served	% Of Total Served	# Exited	% Of Total Exited	# Completed Training	% Of Total Completed Training	2 Quarters After Exit			4 Quarters After Exit				
							# Employed	% Employed	Median Earnings	# Attained Credential	% Attained Credential	# Employed	% Employed	Median Earnings
American Indian or Alaskan Native	637	0.93	210	0.92	69	32.86	148	70.48	$14,460	70	33.33	147	70.00	$14,035
Asian or Pacific Islander (unspecified)	827	1.21	318	1.39	188	59.12	277	87.11	$18,640	187	58.81	273	85.85	$19,322
Asian - Bangladeshi	<10	0.00	0	0.00	0	0.00	0	0.00	$0	0	0.00	0	0.00	$0
Asian - Cambodian	95	0.14	31	0.14	<10	12.90	21	67.74	$7,735	<10	12.90	19	61.29	$8,767
Asian - Chinese	393	0.58	105	0.46	24	22.86	73	69.52	$10,696	24	22.86	77	73.33	$11,321
Asian - Filipino	964	1.41	303	1.33	131	43.23	243	80.20	$15,798	130	42.90	232	76.57	$17,766
Asian - Hmong	132	0.19	14	0.06	<10	14.29	<10	64.29	$6,882	<10	14.29	10	71.43	$7,229
Asian - Indian	98	0.14	28	0.12	<10	14.29	21	75.00	$4,576	<10	14.29	22	78.57	$7,764
Asian - Indonesian	12	0.02	<10	0.01	0	0.00	<10	50.00	$10,989	0	0.00	<10	50.00	$12,316
Asian - Japanese	148	0.22	36	0.16	<10	13.89	26	72.22	$12,495	<10	13.89	28	77.78	$18,279
Asian - Korean	100	0.15	26	0.11	<10	19.23	20	76.92	$17,894	<10	19.23	19	73.08	$13,248
Asian - Laotian	57	0.08	15	0.07	<10	26.67	12	80.00	$11,677	<10	26.67	12	80.00	$12,751
Asian - Malaysian	11	0.02	<10	0.01	<10	33.33	<10	100.00	$25,213	<10	33.33	<10	100.00	$22,972
Asian - Pakistani	25	0.04	<10	0.02	<10	20.00	<10	80.00	$11,215	<10	20.00	<10	80.00	$10,792
Asian - Sri Lankan	<10	0.00	<10	0.00	<10	100.00	<10	100.00	$13,026	<10	100.00	<10	100.00	$3,738
Asian - Taiwanese	<10	0.01	0	0.00	0	0.00	0	0.00	$0	0	0.00	0	0.00	$0
Asian - Thai	32	0.05	<10	0.04	<10	55.56	<10	100.00	$10,224	<10	55.56	<10	100.00	$12,359
Asian - Vietnamese	200	0.29	63	0.28	12	19.05	40	63.49	$9,940	12	19.05	43	68.25	$11,103
Black or African American	4,803	7.05	1,789	7.83	425	23.76	1,215	67.92	$9,280	419	23.42	1,214	67.86	$10,327
Caucasian	26,085	38.26	8,497	37.20	3,188	37.52	6,576	77.39	$16,629	3,176	37.38	6,526	76.80	$17,744
Hispanic	32,811	48.13	11,140	48.77	3,181	28.55	8,350	74.96	$11,010	3,147	28.25	8,309	74.59	$11,898
Pacific Islander - Fijian	35	0.05	<10	0.03	<10	14.29	<10	71.43	$8,405	<10	14.29	<10	100.00	$9,093
Pacific Islander - Guamanian	54	0.08	15	0.07	<10	6.67	<10	53.33	$8,814	<10	6.67	<10	53.33	$8,297
Pacific Islander - Hawaiian	95	0.14	34	0.15	<10	5.88	24	70.59	$11,118	<10	5.88	22	64.71	$10,349
Pacific Islander - Samoan	122	0.18	46	0.20	<10	8.70	32	69.57	$9,482	<10	8.70	29	63.04	$11,250
Pacific Islander - Tongan	62	0.09	20	0.09	<10	5.00	16	80.00	$9,451	<10	5.00	14	70.00	$7,680
Did not self-identify	12	0.02	<10	0.04	0	0.00	<10	100.00	$20,077	0	0.00	<10	87.50	$23,668
More than one ethnicity/race	<10	0.00	<10	0.00	0	0.00	0	0.00	$0	0	0.00	0	0.00	$0
Unknown	347	0.51	117	0.51	70	59.83	80	68.38	$13,914	70	59.83	64	54.70	$14,331
Total	68,170	0.00	22,843	0.00	7,329	32.08	17,222	75.39	$12,625	7,276	31.85	17,100	74.86	$13,629

Table Set 13.2.2.1 shows participation, exit, and outcome data using the participant demographic categories reported by the program.

Information presented provides access to participant numbers and outcomes at a more disaggregated level than that shown in the Participant Ethnicity and Participant Race tables, revealing greater nuance in outcomes and meeting state statutory requirements for the reporting and display of demographic data among Asian and Pacific Islander groups.[27]

[27] In Table Set 13.2.1.1, categories shown are those directly used by DIR-DAS to report participant demographic information for apprenticeship participants. As noted in the introductory portion of this chapter section, program reporting allows *one* category selection per each participant, from among all of the racial and ethnic categories presented in Table Set 13.2.2.1., participant selections for certain categories that DAS reports directly were collapsed under federally-defined master categories but are shown as reported in Table Set 13.2.2.1 Also of note is that while participants who selected the DAS category "Asian or Pacific Islander" are presented as "Unknown" in Table these participants are represented in Table II as this table presents a direct representation of the program's categories. Columns displaying participant counts (numbers served, to exit, etc.) are hidden for better visibility. Percentages shown for participants served, to exit, and to complete training are percent shares of the total. Percentages shown for employment and credential attainment are group-specific rates associated with the participant category at left. Median earnings are group-specific and were calculated according to the manner specified elsewhere in this chapter. Minor inconsistencies will be noticed in the display of White and Black race categories between Table Set 13.2.1.1 and Table 13.2.2.1. This is due to differences between the presentation of categories in the actual form that a participant sees (visible here) and the way in which DAS reports these categories. Specifically: the apprenticeship agreement form presents categories of with the qualifier, "not of Hispanic origin". This qualifier is not included in DAS reporting,

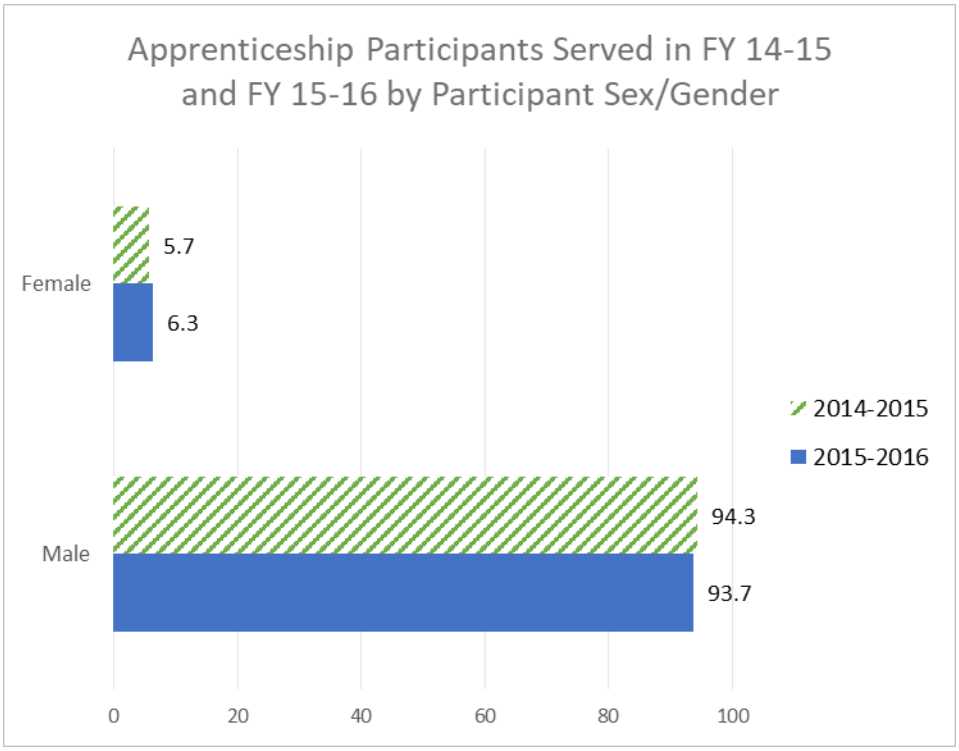
13.2.3 **Participant Sex/Gender**

13.2.3.1 Table Set – Participant Sex/Gender

FY 2014-2015											
Participant Sex / Gender	# Served	# Exited	# Completed Training	2 Quarters After Exit			4 Quarters After Exit				
				# Employed	% Employed	Median Earnings	# Attained Credential	% Attained Credential	# Employed	% Employed	Median Earnings
Male	50,670	12,656	2,735	9,223	72.87	$10,177	2,727	21.55	9,155	72.34	$10,929
Female	3,079	802	245	410	51.12	$6,479	250	31.17	401	50.00	$7,467
TOTAL	53,749	13,458	2,980	9,633	71.58	$10,083	2,977	22.12	9,556	71.01	$10,797

FY 2015-2016											
Participant Sex / Gender	# Served	# Exited	# Completed Training	2 Quarters After Exit			4 Quarters After Exit				
				# Employed	% Employed	Median Earnings	# Attained Credential	% Attained Credential	# Employed	% Employed	Median Earnings
Male	63,859	21,640	6,756	16,492	76.21	$12,640	6,702	30.97	16,367	75.63	$13,641
Female	4,311	1,203	573	730	60.68	$12,345	574	47.71	733	60.93	$12,973
TOTAL	68,170	22,843	7,329	17,222	75.39	$12,625	7,276	31.85	17,100	74.86	$13,629

13.2.3.2 Figure – Program Participation by Participant Sex/Gender



Women made up just under 6% of all participants in DAS programs in FY 14-15, and just over 6% in FY 15-16. These numbers represent a substantial margin of underrepresentation compared with women's share of the state labor force, of which they comprised 45.4% in both report years.

Male participants made up the overwhelming majority of participants in DIR-DAS apprenticeship training in both fiscal years, 94.3% of participants in FY 14-15 and 93.7% in FY 15-16.

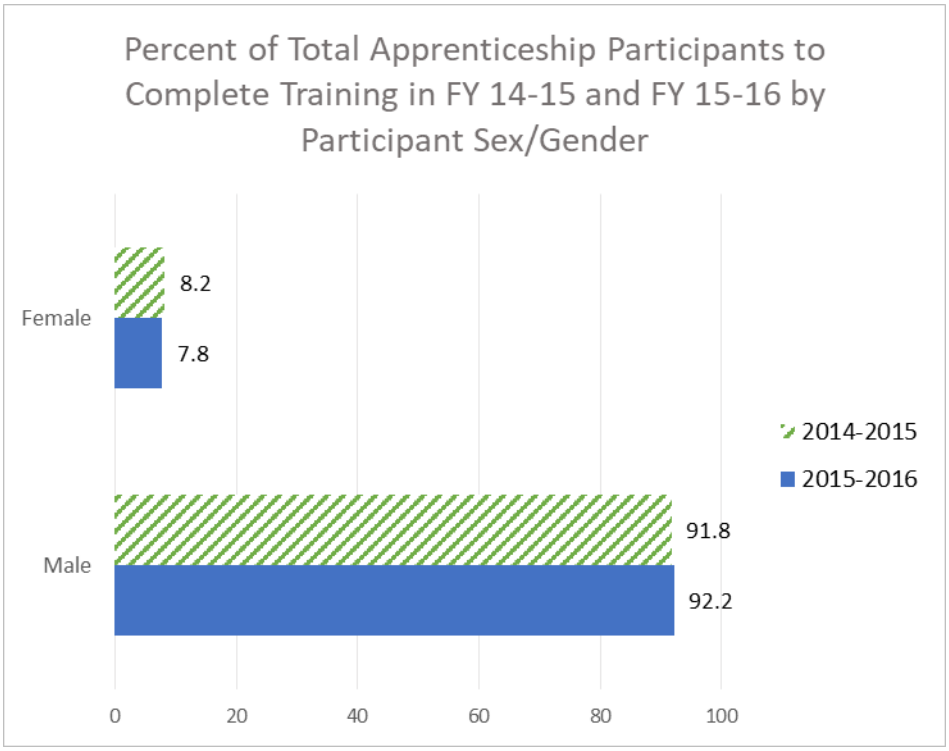
Women's underrepresentation in apprenticeship is a national pattern that has several causes. Key is the hyper-concentration of DAS programs in the construction sector (about 80% of all active apprentices in DAS programs are in construction programs), in light of that gendered employment patterns within that sector: construction has been and continues to be a male-dominated field, and women may experience forms of overt or indirect discrimination or discouragement that keep them from seeking construction careers. Thus, a recent issue brief by Mathematica Policy Research based on national data on a number of workforce training programs found that nationally "only 1 of 10 participants in Registered Apprenticeship (RA) programs are women, and most of these women are enrolled in apprenticeships in social services occupations. In 2010, women accounted for 9 of 10 apprentices in the child care and nursing aide fields, but less than 5 percent of apprentice electricians, plumbers, pipefitters,

carpenters, tractor drivers, electrical powerline installers, and sheet metal workers."[28] According to DAS' most recent legislative report (2017), a mere 1,186 (2.3%) of all 52,146 individuals in construction apprenticeship programs were women, compared with a somewhat larger percentage (6%) of the total of apprenticeship enrollees in all industries (63,959) in that year—suggesting that, indeed, women are underrepresented in DAS construction apprenticeship programs. If it is, however, differences in male and female employment could be linked to differing employment profiles within industries, sectors, or specific occupations in which male versus female DAS participants are employed.

As apprenticeships in building trades tend to lead to secure and lucrative careers, the fact that even within apprenticeship enrollment women remain underrepresented in this sector is also important in its implications for gendered earnings imbalances. This point will be returned to in discussion of median earnings.

In recent years the percentage of women enrolled in apprenticeship programs under DAS has been increasing.[29]

13.2.3.3 Figure –Training Completion by Participant Sex/Gender

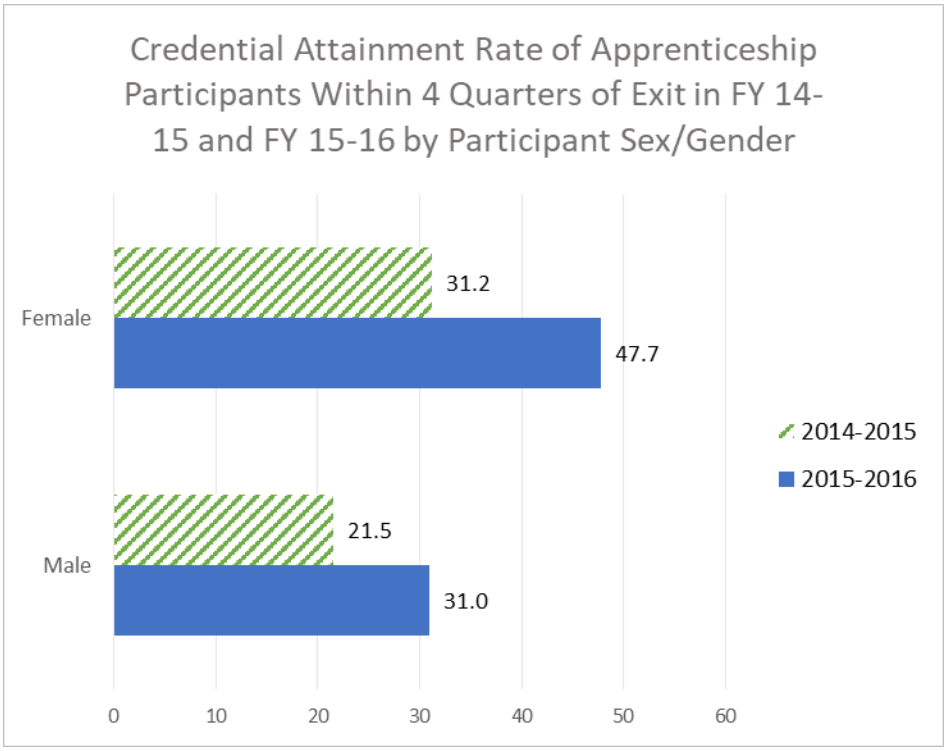


[28] Mathematica Policy Research, 2012, "An Effectiveness Assessment and Cost-Benefit Analysis of Registered Apprenticeship in 10 States."

[29] State of California Department of Industrial Relations Division of Apprenticeship Standards 2017 Legislative Report.

In both years, female participants in DAS programs had completion shares that were somewhat larger than their enrollment shares, at 8.2% of all FY 14-15 completions and 7.8% of all FY 15-16 completions.

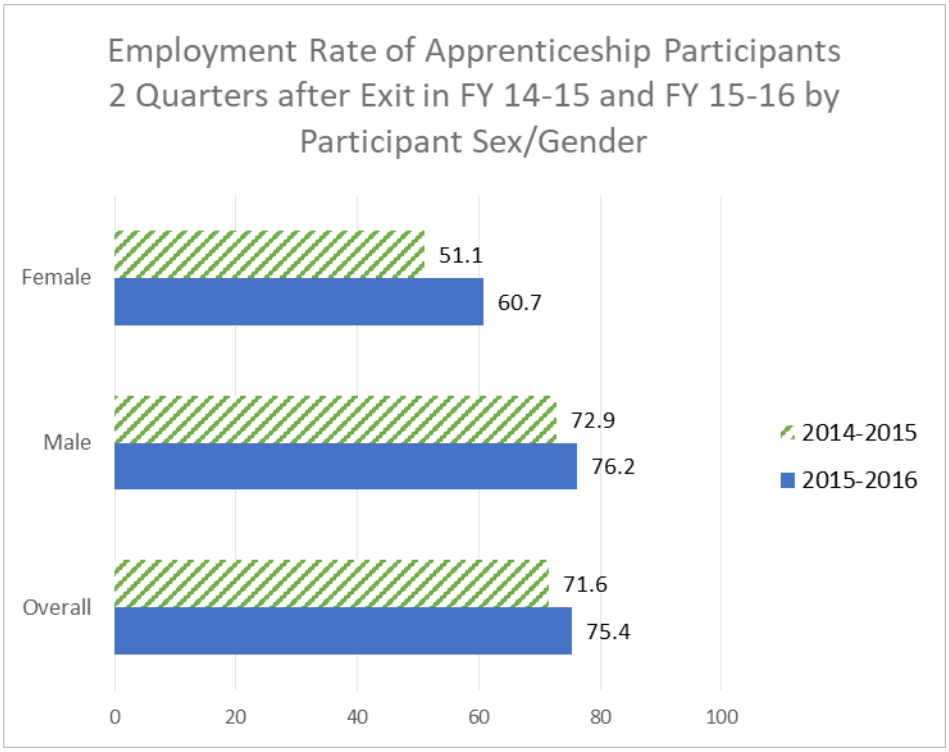
13.2.3.4 Figure – Credential Attainment Rate by Participant Sex/Gender



Women outperformed men in both years in their rates of credential attainment: 31.2% of women earned a credential (occupational certification or occupational skills certificate) within a year of exit in FY 14-15, compared with 21.6% of men (a difference of 9.6 percentage points). Following exit in FY 15-16, 47.7% of women earned a credential, +16.7 percentage points higher than the rate among men.

Women's credential attainment advantage tracks with their completion advantage described in the previous section, as expected.

13.2.3.5 Figure – 2nd Quarter Employment Rate by Participant Sex/Gender



While women had higher credential attainment rates, male DAS program participants saw higher rates of employment in the second quarter after exit in both years: two quarters after exit in FY 14-15, 72.9% of male participants were employed compared with just over half (51.1%) of female participants. After exit in FY 15-16, a similar 76.2% of males were employed. However, the rate of employment among female participants was higher in comparison with the previous year's cohort, at 60.7% employment.

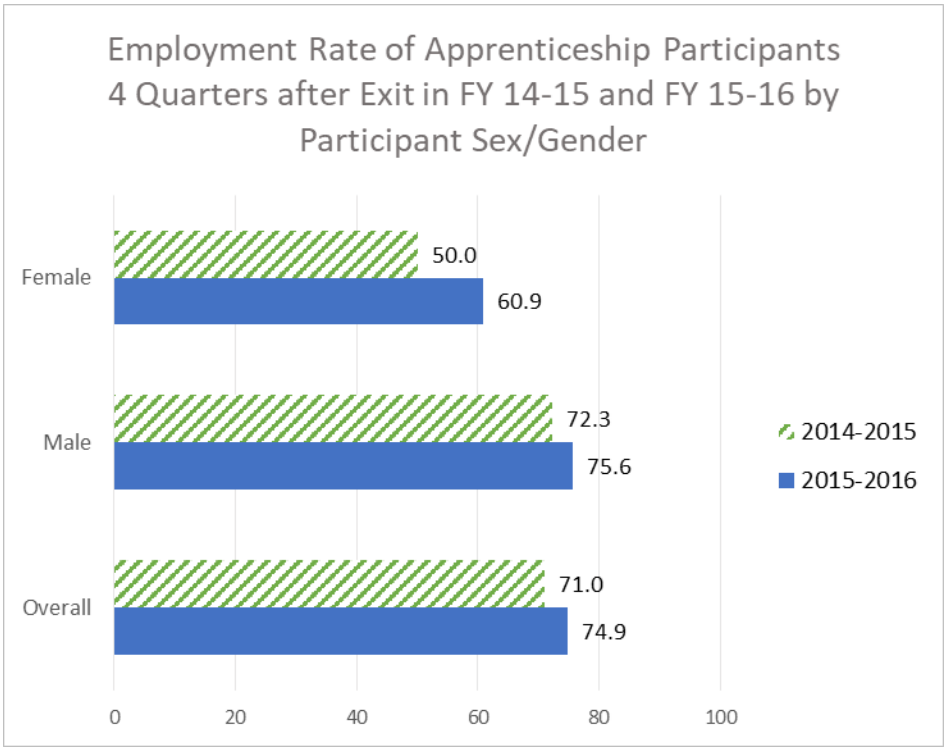
This positive difference in the second year could reflect the larger share of female participants who completed in FY 15-16 (and higher associated credential rate) compared with those to exit in FY 14-15.

Occupational segregation refers to patterned differences by gender in the types of occupations in which men and women are employed. Because of the prevalence of such segregation in the labor market-- with women remaining concentrated in lower-paying occupations such as health and personal care, and underrepresented in higher-paying occupations including craft and

technical fields.[30] It appears likely that the same phenomenon may prevail at the level of training.

Female DAS' participants' somewhat lower observed rates of employment could also in part be linked with dynamics related to occupational segregation and their data impacts—such as, overrepresentation of women in programs in sectors such as cosmetology, a sector in which most workers are independent contractors and whose earnings and employment status are therefore not captured by the employer-reported earnings data in the Unemployment Insurance base wage file.

13.2.3.6 Figure – 4th Quarter Employment Rate by Participant Sex/Gender



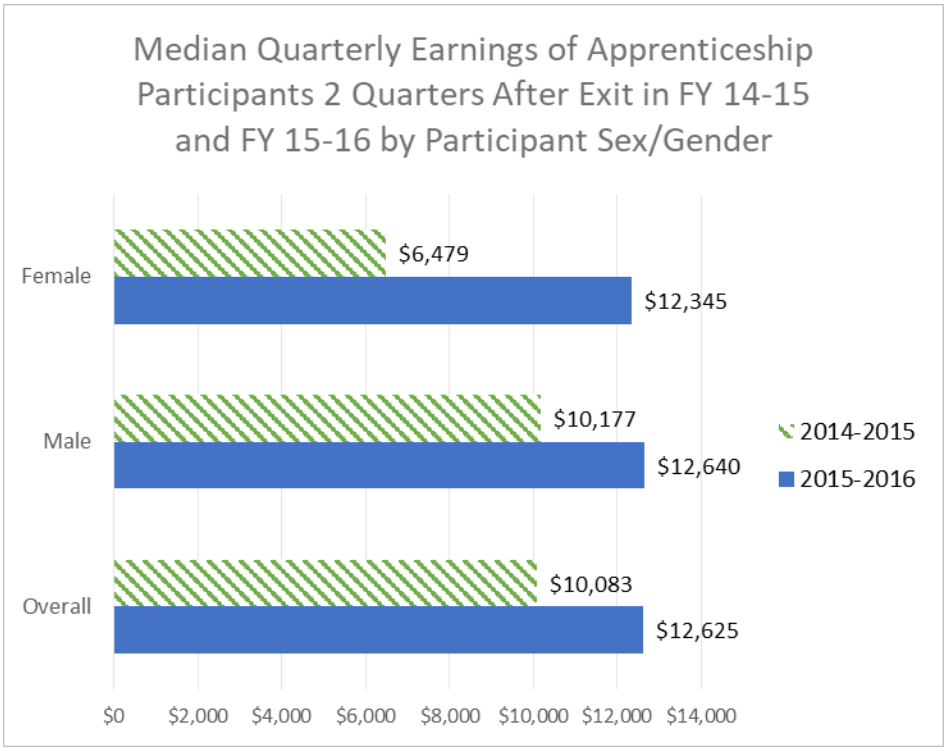
At the fourth quarter after exit, gendered discrepancies in employment rates remained among both years' participant cohorts—but interestingly they exhibited differing trends compared with second-quarter rates: four quarters following exit in FY 14-15, although both male and female employment rates dropped slightly, the disparity between them grew as female employment dipped more greatly; on the other hand, the disparity between male and female

[30] See, for instance, Hande Inanc (Mathematica) "To Address the Gender Pay Gap, we Have to Address Occuaptional Gender Segregation" (April 10, 2018); Ariane Hegewish and Heidi Hartman (2014) "Occupational Segregation and the Gender Wage Gap: A Job Half Done". Institute for Women's Policy Research.

employment rates among DAS participants to exit in FY 15-16 narrowed somewhat in the fourth quarter after exit in FY 15-16.

This pattern is interesting and appears as though it may also be consistent with higher hypothesized rates of female employment in a trained-for occupation or field among FY 15-16 exiting participants relative to participants who exited in FY 14-15.

13.2.3.7 Figure – 2nd Quarter Median Earnings by Participant Sex/Gender



Two quarters after exit in both years, male DAS participants out-earned female participants. Curiously however, the margin of difference varied widely between the two years: while male median earnings of $10,177 were +$3,698 higher than female median earnings of $6,479 two quarters after exit in FY 14-15, the difference between males' earnings of $12,640 and females' earnings of $12,345 was just under $300 at the second quarter after exit in FY 15-16.

Gender-based discrepancy in earnings may relate to gendered patterns in apprenticeship enrollment, with female participants enrolling more frequently in apprenticeships to lower-paying occupations (e.g., cosmetology) compared with enrollment into higher-paying occupations among male participants. A report prepared by Equal Rights Advocates for the Select Committee on the Status of Girls and Women of Color (CA Assembly) in 2016 found that women were disproportionately segregated with apprenticeships that lead to jobs in lower-

paying occupations like cosmetology and home health care.[31] The same report cited findings that in the construction trades, which employ approximately 70 percent of the more than 53,000 apprentices in California, the workforce is only 2.2% women.[32]

Employer bias in hiring and pay is a second possible explanation for the earnings discrepancy. It is also possible that both mechanisms are occurring concurrently.[33]

As discussed, there was no clear completion advantage seen among male participants. This suggests that women's earnings disadvantage is not due to a lesser likelihood that female participants are seeing their programs through to the end. Both men and women appear to be completing DAS programs at similar rates.

Women's dramatically higher earnings among those to exit in the second fiscal year is not immediately clear and certainly warrants investigation. Several possibilities present themselves: given that women's completion share and credential rate also jumped up following exit in the previous year, it may be that a larger proportion of women exiting from DAS programs found work in their trained-for occupations. This effect may have been enough to mitigate the effects from broader forces of wage inequality and occupational segregation that cause women's earnings to fall below those of men in the wider labor market.

A different but related possibility concerns the fact that DAS apprenticeship programs are run on a cohort basis—with the result that a large share of completions from individual programs will often occur in the same year. FY 5-16 could have been a completion year for a comparatively greater number of DAS programs that enroll large shares of female participants than FY 14-15. This, in turn, may have led a larger share of female exiters to be working in their field, where they were able to attain earnings more akin to those of their male counterparts.

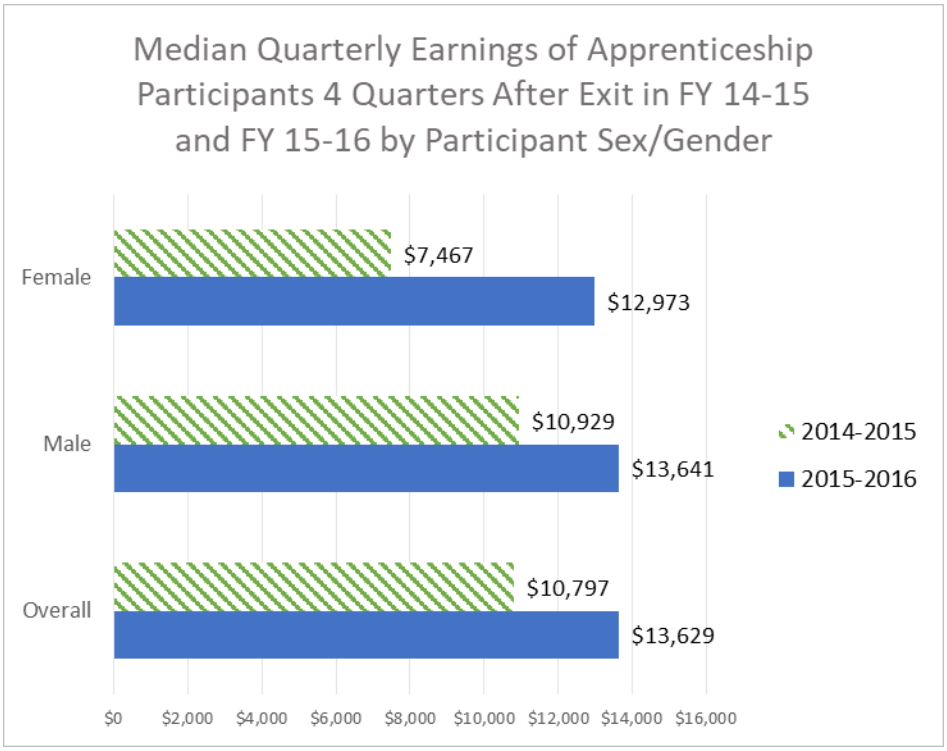
---

[31] See, e.g., Katherine G. Robbins, The Story Behind the Numbers: The Wage Gap, National Women's Law Center (Sept. 15, 2014).NWLC, 50 Years and Counting: The Unfinished Business of Achieving Fair Pay (2013Claudia Goldin, Gender Gap, 2nd edition, in The Concise Encyclopedia of Economics, available at Francine D. Blau and Lawrence Kahn, The Gender Pay Gap: Have Women Gone as Far as They Can? in Academy of Management Perspectives (2007) 21, pp. 7-23.

[32] See, Gender Wage Gap Reports and Best Practices Literature Review, Published by the California Commission on the Status of Women and Girls for the California Pay Equity Task Force (July 22, 2016).

[33] The size of the gender-based earnings differential is markedly larger in this data than in the PY 12-13 and 13-14 data in last year's report, where the difference between male and female completers' second-quarter median earnings was between $1300 and $1550 a quarter. This still represented a notable difference, with female earnings 8.6% and 14.2% lower in each respective year than male earnings. However, the size of this year's differential is much larger. Because the V1 report relied on/used a denominator equivalent to the total of participants in a given demographic category to have completed training, only—rather than the total to have exited the program—it may be that the greater gender-based discrepancy in earnings apparent in this report's data is in fact capturing gender-based occupational, work-hour, and pay disparities in the labor market outside of apprenticed-for occupations.

13.2.3.8 Figure – 4th Quarter Median Earnings by Participant Sex/Gender



The relationship between male and female earnings was similar in the fourth quarter after exit to the second-quarter relationship in each year. Once again, male earnings a year after exit in FY 14-15 continued to be much higher than those of women (at $10,929, +$3,462 above women's earnings of $7,467). The gender differential was once again smaller between male and female DAS participants exiting in the second year, although it was increased from the second-quarter difference: median male earnings increased by about +$1,000 from the second quarter to $13,641 while female earnings rose only by about +$600 over the same period, such that the difference between them was $668. Consistent with an interpretation of the differences between the two cohort's outcomes being linked with a larger share of women working in their trained for field after exit in FY 15-16, this incremental growth in the disparity between male and female earnings could be caused by scheduled wage increases, if women are being employed in lower-paying occupations.

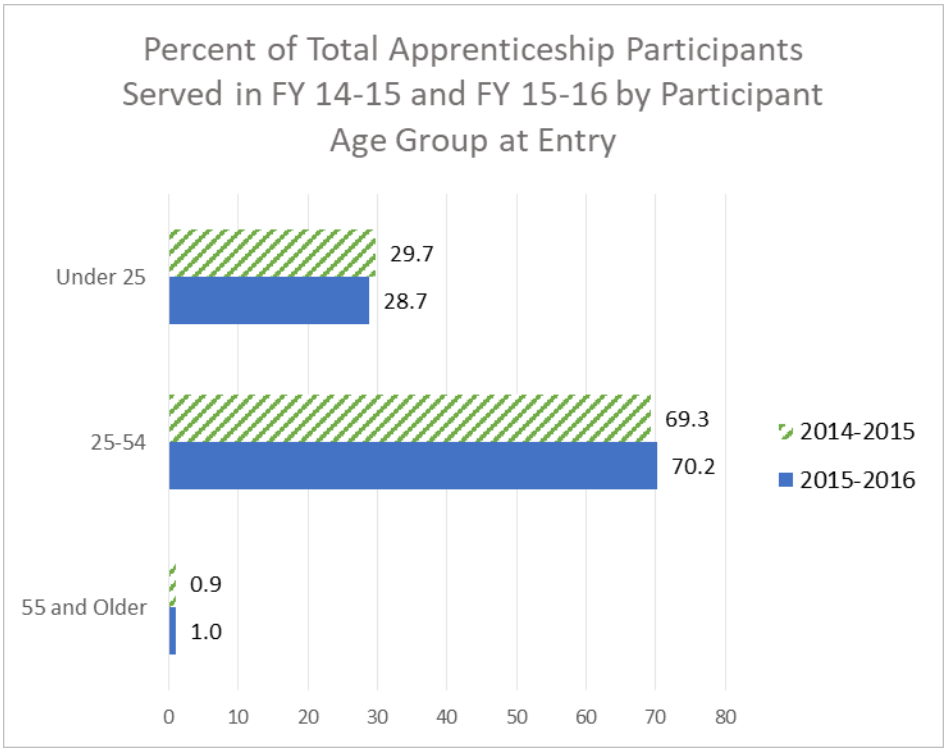
13.3 Participant Age Group at Entry

13.3.1.1 Table Set – Participant Age Group at Entry

FY 2014-2015												
Participant Age Group at Entry	# Served	# Exited	# Completed Training	2 Quarters After Exit			4 Quarters After Exit					
				# Employed	% Employed	Median Earnings	# Attained Credential	% Attained Credential	# Employed	% Employed	Median Earnings
Under 25	15,978	4,289	716	3,083	71.88	$8,296	715	16.67	3,079	71.79	$8,767
25-54	37,264	9,001	2,228	6,460	71.77	$11,341	2,226	24.73	6,373	70.80	$12,345
55 and older	507	168	36	90	53.57	$10,529	36	21.43	104	61.90	$9,772
TOTAL	53,749	13,458	2,980	9,633	71.58	$10,083	2,977	22.12	9,556	71.01	$10,797

FY 2015-2016												
Participant Age Group at Entry	# Served	# Exited	# Completed Training	2 Quarters After Exit			4 Quarters After Exit					
				# Employed	% Employed	Median Earnings	# Attained Credential	% Attained Credential	# Employed	% Employed	Median Earnings
Under 25	19,578	6,820	1,734	5,035	73.83	$9,546	1,719	25.21	4,978	72.99	$10,568
25-54	47,888	15,764	5,518	12,016	76.22	$14,500	5,480	34.76	11,954	75.83	$15,410
55 and older	704	259	77	171	66.02	$11,793	77	29.73	168	64.86	$10,791
TOTAL	68,170	22,843	7,329	17,222	75.39	$12,625	7,276	31.85	17,100	74.86	$13,629

13.3.1.2 Figure – Program Participation by Age Group at Entry



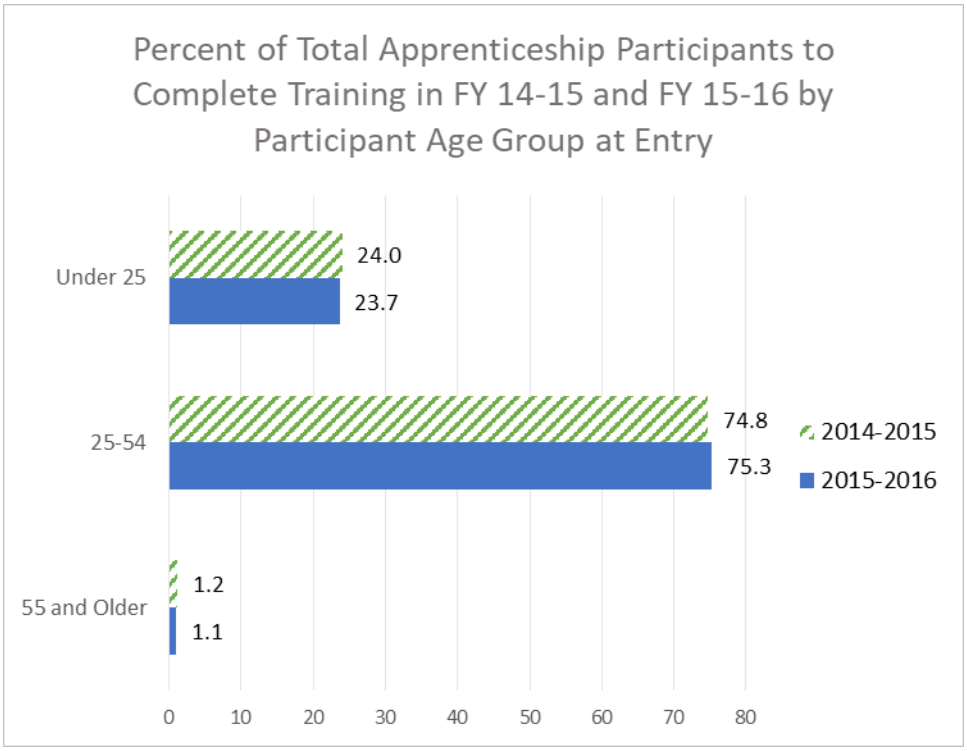
Participants who were 25-54 at the time of entry made up the majority of participants in DAS apprenticeship programs in both fiscal years, 69.3% of all enrollees in FY 14-15, and 70.2% of all participants in FY 15-16. Program shares were slightly larger than shares of this age group in the statewide labor force in this age range which were respectively, 65.9% in FY 14-15 and 65.8% in 15-16.

The slight overrepresentation of individuals in the middle age range in DAS programs is consistent with national statistics on apprenticeship participation. Participants in apprenticeship are often in their later twenties or above when beginning a program, with a recent report by Social Policy Research Associates finding that the median age of a current apprentice in California is 29.[34]

Individuals in the oldest age cohort, 55 and older, made up a small percentage of all participants in DAS programs in each year: about 1% of all participants in either year. These shares were much smaller than the same group's share of the statewide labor force, which was 20.6% and 21.1% in each respective year. It is possible that the discrepancy might be caused in part or in large part by self-selection among members of the age range closest to retirement, especially given the long duration (3-6 years) of DAS programs.

[34]Koller, Vinz "Closing the Gap: The Future of Apprenticeship in California". Social Policy Research Associates, p. December 2018

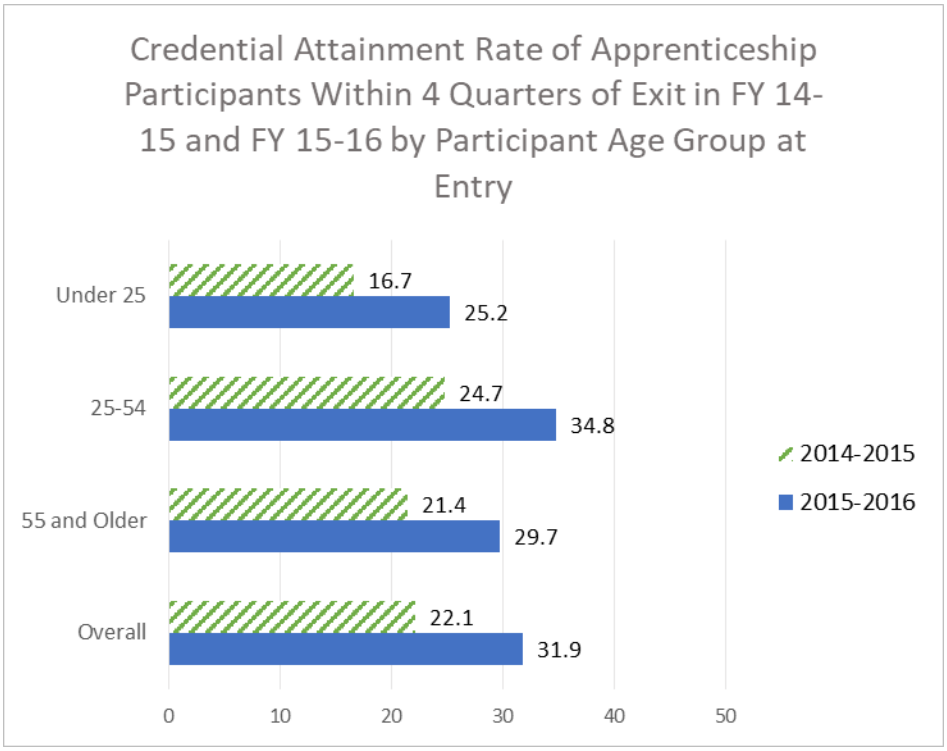
13.3.1.3 Figure – Training Completion by Participant Age Group at Entry



DAS participants in the middle age range also made up the largest shares of participants to complete training in each fiscal year, 74.8% in FY 14-15 and 75.3% in FY 15-16. The completion share among participants 55 and older at the time of entry smallest, similar in size to the same age population's shares of all participants: 1.2% of all completions in FY 14-15 and 1.1% of all completions in FY 15-16.

It is important to recall that the report presents only two years of participant data and therefore might not be representative of trends observable across a broader period of time. Apprenticeship programs are cohort-based, meaning that (especially for programs which employ a time-based completion model) it is likely that many of the completions during the two fiscal years of data captured in this report were in the same programs. It could therefore be that age- (or other demographic-) based patterns in outcomes reflect dynamics in the specific mix of programs reporting completions during the two report years, which might or might not also be representative of trends across all DAS programs and participants.

13.3.1.4 Figure – Credential Attainment Rate by Participant Age Group at Entry

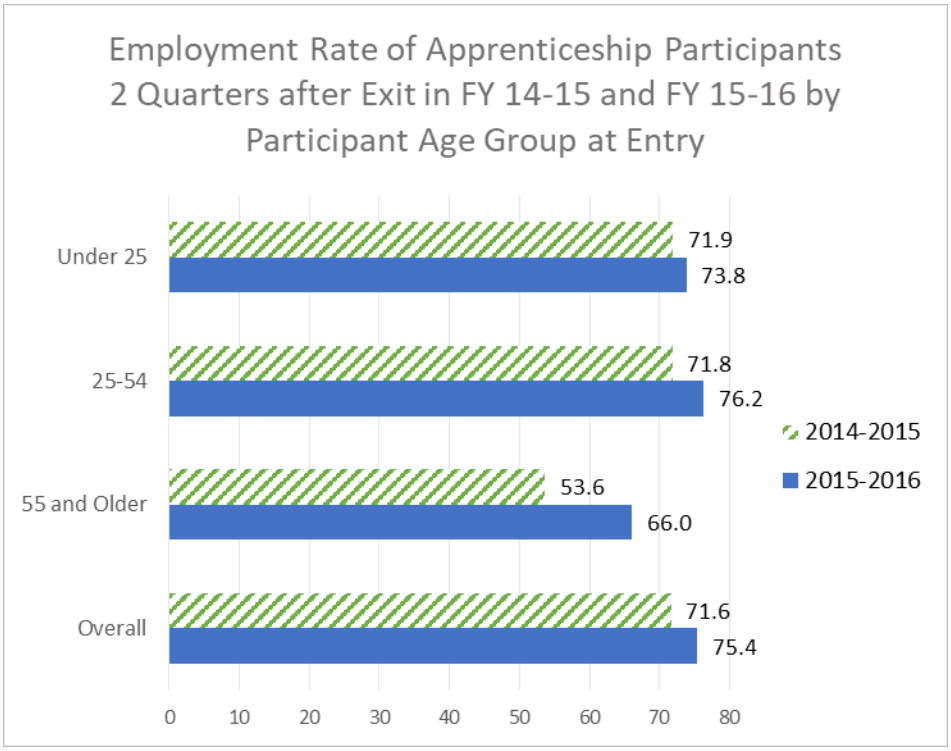


DAS participants in the middle age range had highest rates of credential attainment in both years, with 24.7% of all participants in this age range who exited in FY 14-15 and 34.8% of all participants in this age range who exited in FY 15-16 attaining a credential within one year of their exit. Participants in this age range outperformed participants as a whole by +2.6 percentage points (FY 14-15) and +2.9 percentage points (FY 15-16).

The youngest participants had the lowest rates of credential attainment: 16.7% within four quarters of exit in FY 14-15 (-5.5 percentage points lower than the overall rate) and 25.2% with four quarters of exit in FY 15-16. Although the rate in the second year was higher for participants in this age range, it was lower in comparison with the overall rate (-6.7 percentage points).

It is unsurprising that age group-specific differences in ratios of completion to program representation are reflected in differences in age group-specific credential rates, given the relationship of those two indicators. However, the additional information provided by the comparison of credential rates suggests that at least some of the completion-to-participation ratio differences are being caused by differences in completion rates, and not merely a lag in time to completion. Barriers facing the youngest DAS participants should be further investigated.

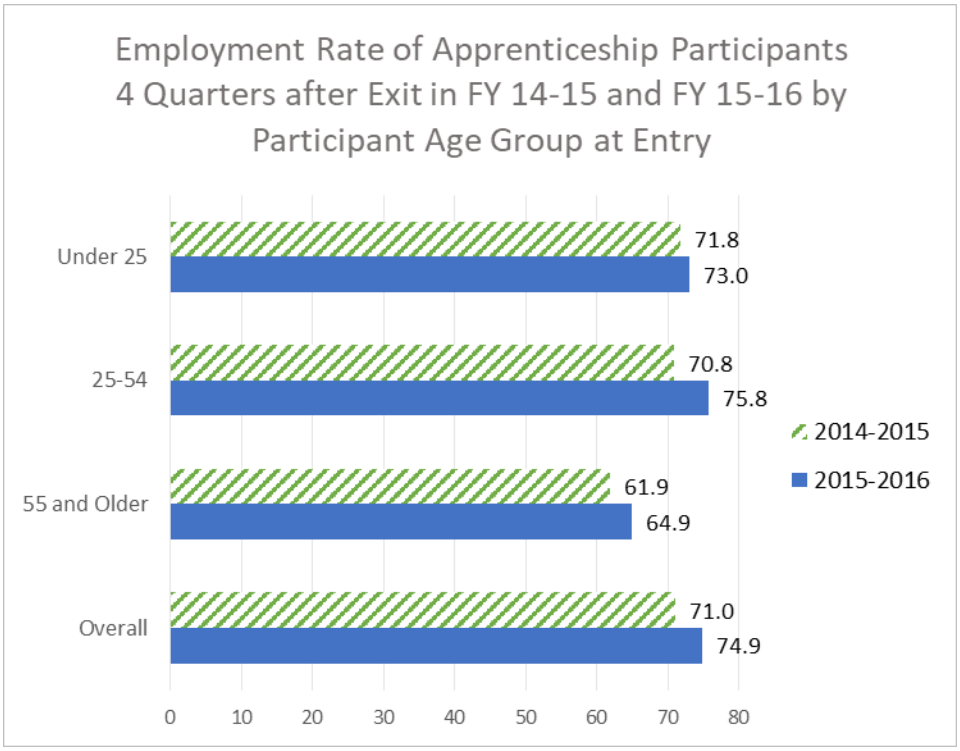
13.3.1.5 Figure – 2nd Quarter Employment Rate by Participant Age Group at Entry



Among both cohorts, employment rates in the second quarter after exit were similar among the younger two participant age groups: two quarters after exit in FY 14-15, 71.9% of the youngest participants to exit and 71.8% of those in the middle age range were employed. In the second year, employment among participants from the middle age range was 76.2% compared with 73.8% among the youngest participants.

The oldest DAS participants saw a clear disadvantage in employment compared with younger participants, with employment rates of 53.6% (FY 14-15) and 66.0% (FY 15-16). These rates were well below program-wide rates, by -18.0 percentage points and -9.4 percentage points respectively. Causes of the especially low employment rate among the oldest participants to exit in FY 14-15 are not known.

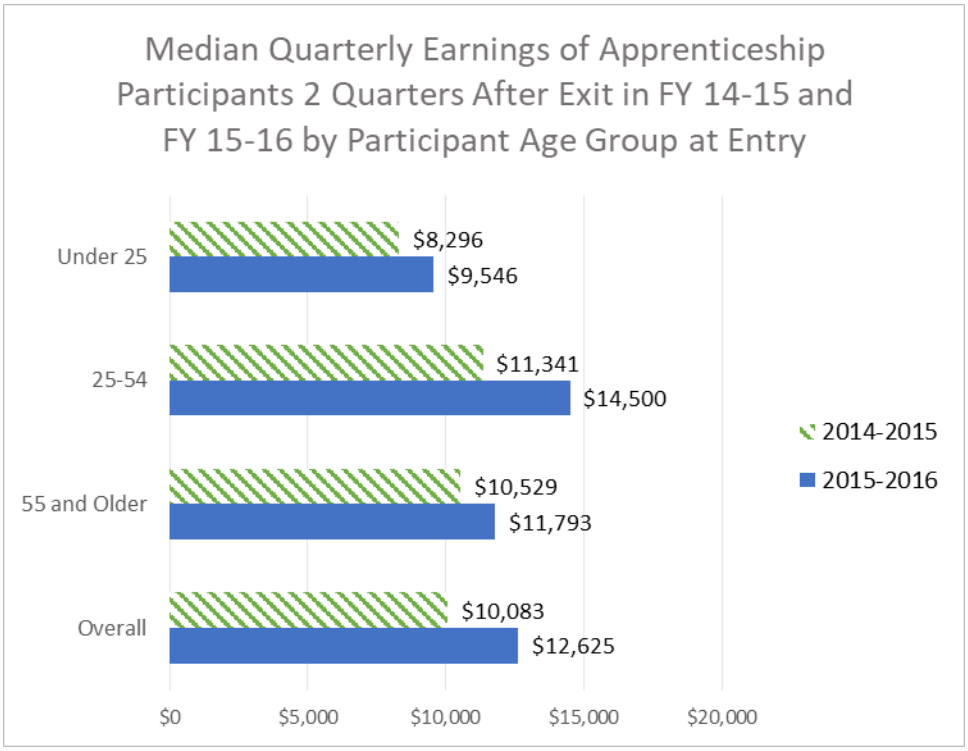
13.3.1.6 Figure – 4th Quarter Employment Rate by Participant Age Group at Entry



The same age-based patterns in employment from the second post-exit quarter were also seen at the fourth quarter after exit: the youngest two participant age groups were again employed at the highest rate, while older participants saw lower employment rates.

However, employment among the oldest participants exiting in FY 14-15 improved with respect to the especially low rate from the second post-exit quarter. Employment among the oldest participants was, at 61.9% (FY 14-15) and 64.9% (FY 15-16), respectively -9.1 and -10.0 percentage points lower than the program-wide rate.

13.3.1.7 Figure – 2nd Quarter Median Earnings by Participant Age Group at Entry



Participants aged 25-54 had the highest median earnings of all participants in both years. Earnings of participants in this age range were $11,341 two quarters after exit in FY 14-15 and $14,500 two quarters after exit in FY 15-16, +$1,258 (12%) and +$ 1,875 (15%) higher than the median associated with each respective fiscal year.

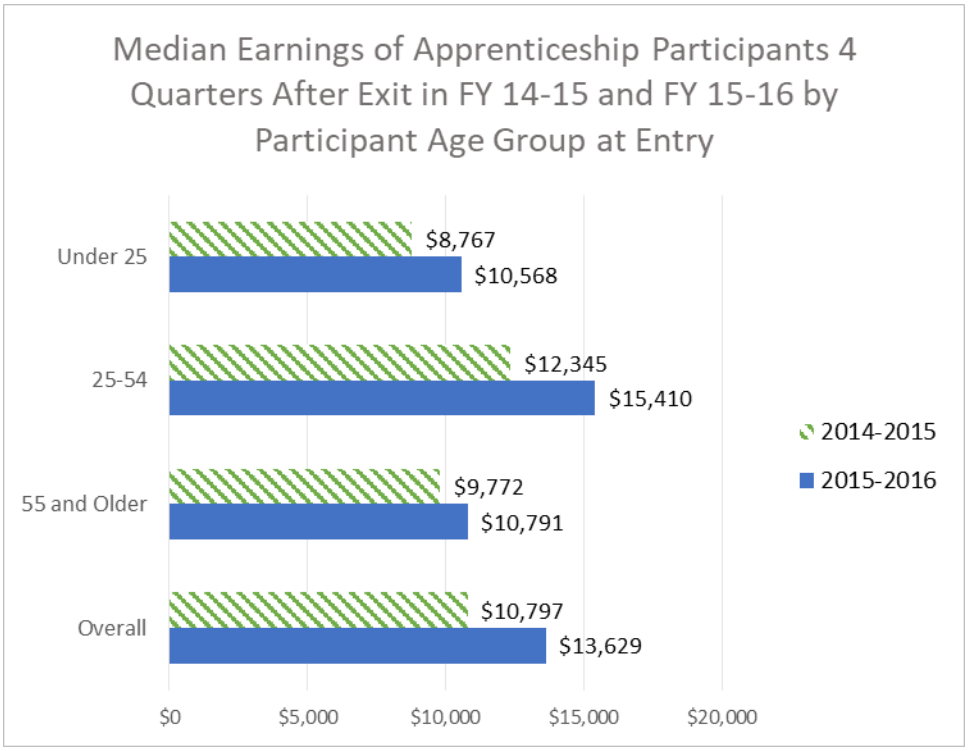
The youngest workers had the lowest earnings following exit in each year, which were -$1,787 lower than program-wide median earnings in FY 14-15 and -$3,079 lower than program-wide median earnings after exit in FY 15-16.

Several factors may explain this outcome. In general, younger workers tend to earn less because they have fewer years of experience and less time a field.

Lower median earnings of the youngest participants in this data may also be linked to lower completion rates among participants to exit in this age bracket. Given that members of the youngest age demographic were less likely to complete their program than was the middle age group, the range of earnings for the youngest participants would also be expected to include a greater proportion of participant earnings that come from occupations outside of skilled trades, such as lower-paying service work (e.g. in food service) which is a leading employment sector in the state.[35]

[35] Accommodation and Food Services has been among the state's top growth sectors in recent years, with the occupation of Waiters and Waitresses alone expected to grow by 12.8 percent, or 36,300 jobs between 2016 and

13.3.1.8 Figure – 4th Quarter Median Earnings by Participant Age Group at Entry



The same relationship in participant earnings was seen a year after exit, with those in the middle age range continuing to out-earn all other participants and the youngest participants earning least.

Among participants who exited in FY 14-15, the gap appeared to widen at the one-year mark, with both the size of the disparity in dollars between highest- and lowest-earnings groups to the program-wide median increasing. Among the followng year's participants, the amount of disparity remained similar.

2026 (LMID, Occupational Guide "Waiters and Waitresses"). Jobs in Accommodation and Food Services sector (NAICS 72) are often low-paying, offering non-supervisory workers an average of just 24.9 weekly hours, and (in California) quarterly pay of just $5,295 (FY 14-15) and $5,570 (FY 15-16). Food preparation is one of three occupational groups that comprise a majority of the state's low wage jobs (CWDB Unified State Plan 2016-2019, p. 44).

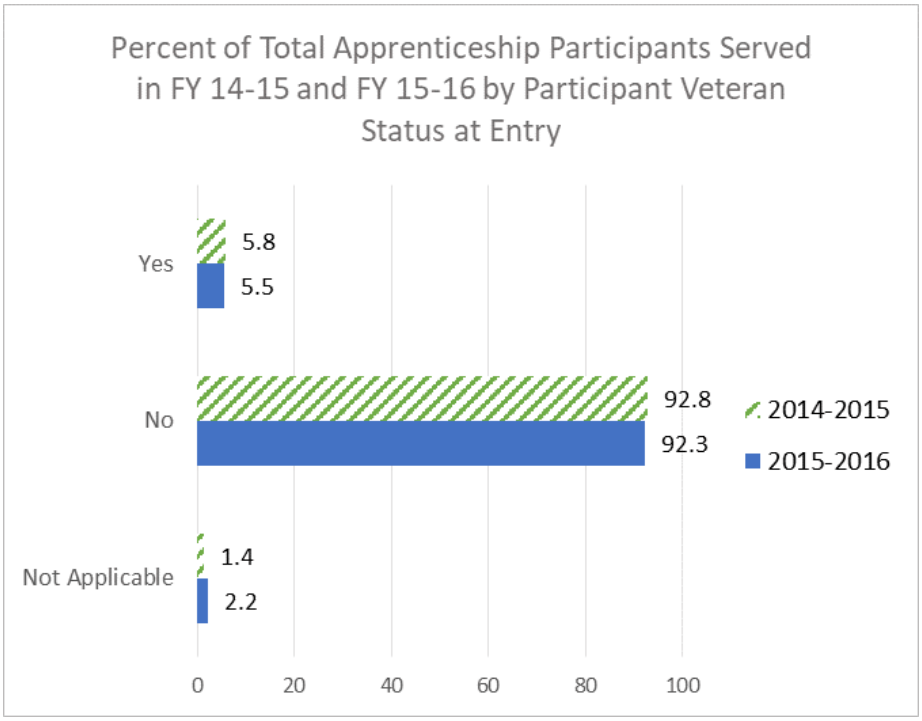
13.4 Participant Veteran Status

13.4.1.1 Table Set – Participant Veteran Status

FY 2014-2015												
Participant Veteran Status	# Served	# Exited	# Completed Training	2 Quarters After Exit			4 Quarters After Exit					
				# Employed	% Employed	Median Earnings	# Attained Credential	% Attained Credential	# Employed	% Employed	Median Earnings
Yes	3,140	849	172	577	67.96	$11,430	173	20.38	588	69.26	$12,465
No	49,874	12,547	2,769	8,996	71.70	$9,976	2,765	22.04	8,908	71.00	$10,691
Not Applicable	735	62	39	60	96.77	$34,420	39	62.90	60	96.77	$29,865
TOTAL	53,749	13,458	2,980	9,633	71.58	$10,083	2,977	22.12	9,556	71.01	$10,797

FY 2015-2016												
Participant Veteran Status	# Served	# Exited	# Completed Training	2 Quarters After Exit			4 Quarters After Exit					
				# Employed	% Employed	Median Earnings	# Attained Credential	% Attained Credential	# Employed	% Employed	Median Earnings
Yes	3,759	1,318	440	965	73.22	$15,476	440	33.38	947	71.85	$16,717
No	62,934	21,337	6,783	16,082	75.37	$12,350	6,729	31.54	15,981	74.90	$13,339
Not Applicable	1,477	188	106	175	93	32,913	107	56.91	172	91	32,673.24
TOTAL	68,170	22,843	7,329	17,222	75.39	$12,625	7,276	31.85	17,100	74.86	$13,629

13.4.1.2 Figure – Program Participation by Participant Veteran Status at Entry



Veterans made up 5.8% of all DAS participants in FY 14-15 and a similar 5.5% in FY 15-16. [36]

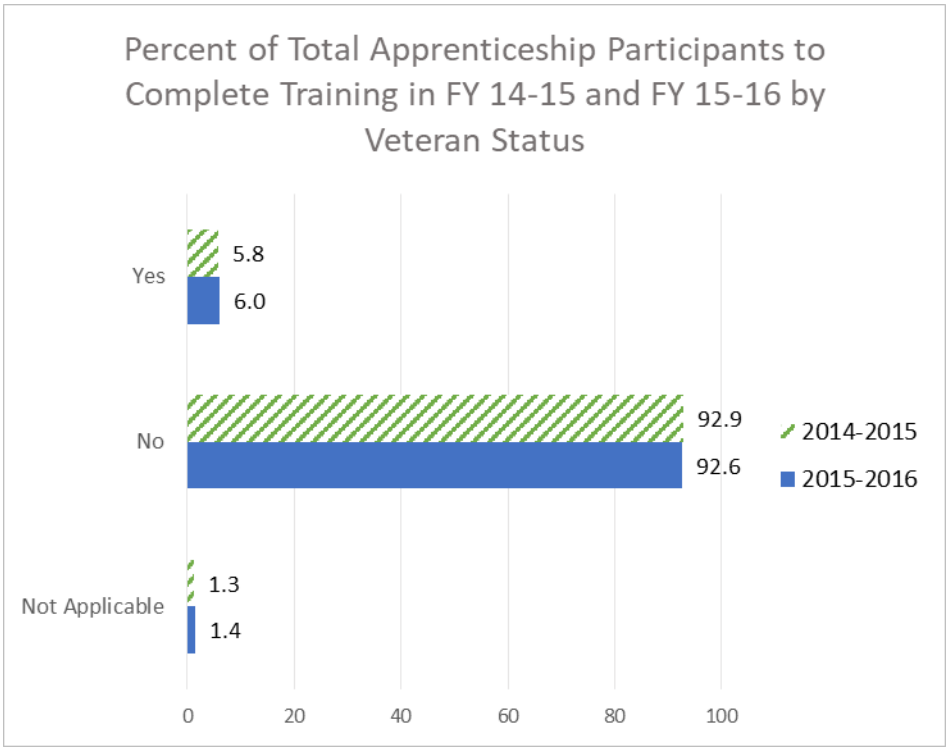
Compared with estimates of the state labor force, veterans appeared to make up a slightly larger share of all DAS participants: in CPS estimates, veterans made up 4.8% and 4.7% of the state's labor force in FY 14-15 and FY 15-16 respectively.

Veterans are encouraged to participate in apprenticeship programs while collecting veteran educational benefits. DAS participated in several career fairs and partnered with the Employment Development Department and the California Department of Veterans Affairs to engage more veterans.[37]

.

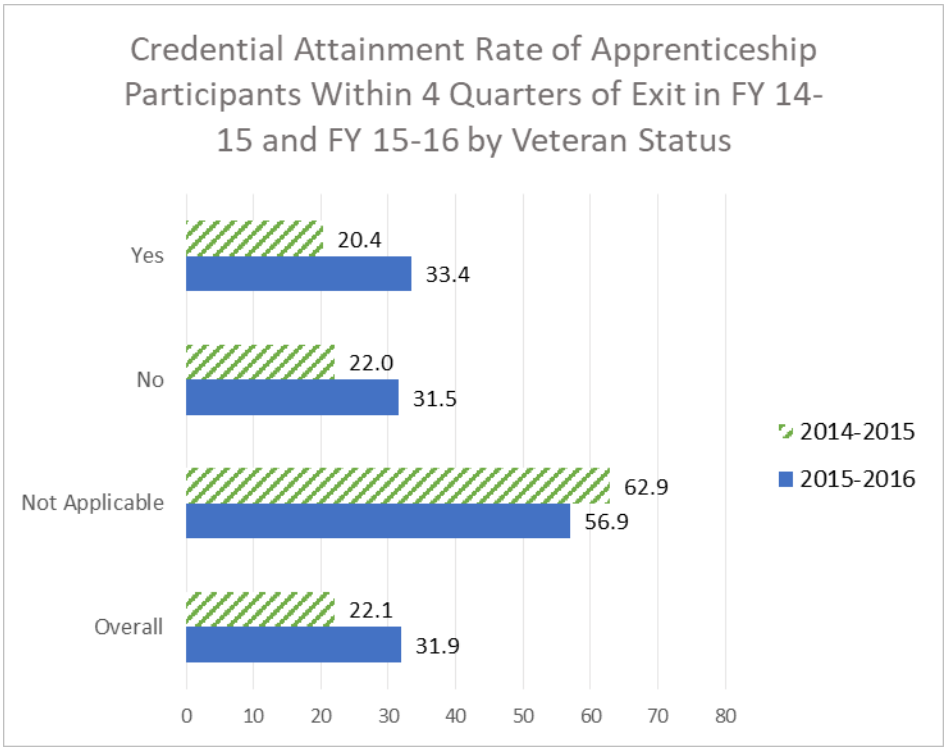
[36] DAS employs three categories to report veteran information: yes (participant is a veteran) no (participant Is not a veteran) and "not applicable".
[37] DAS Annual Legislative Report (2017)

13.4.1.3 Figure – Training Completion by Veteran Status



Shares of all program completions made by veterans were also similar to shares of participants served: 5.8% of FY 14-15 completions were made by veterans. In FY 15-16, veterans accounted for 6.0% of all completions.

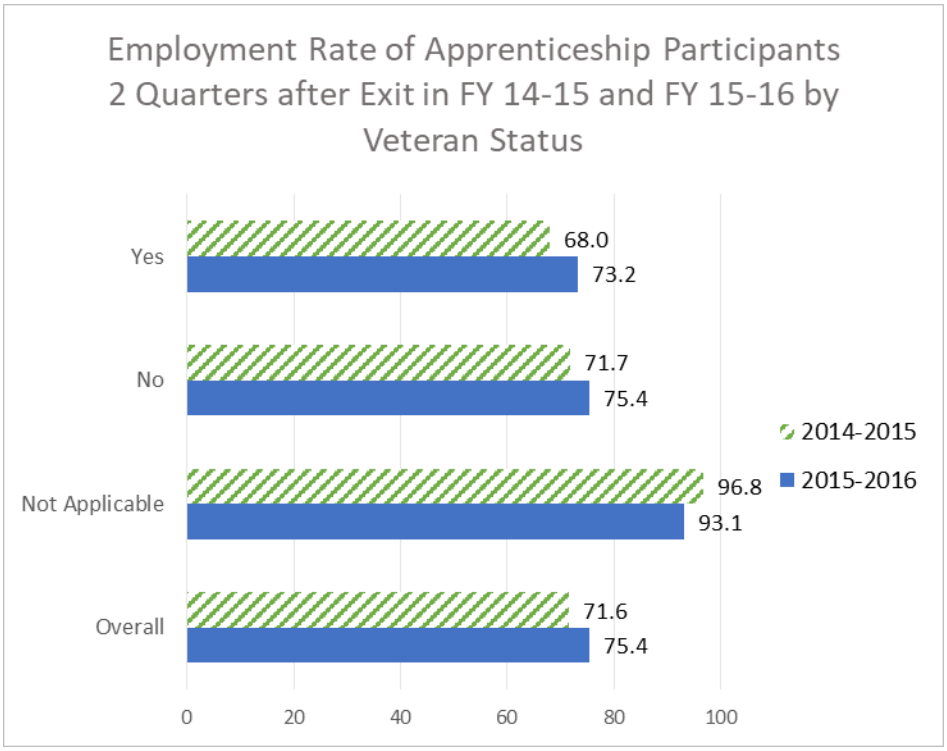
13.4.1.4 Figure – Credential Attainment Rate by Veteran Status



Rates of credential attainment were similar between veterans and non-veterans and with no consistent pattern between the two years. Among DAS participants exiting in FY 14-15, 20.4% of exiting veterans and 22.0% of non-veterans earned a credential within four quarters.

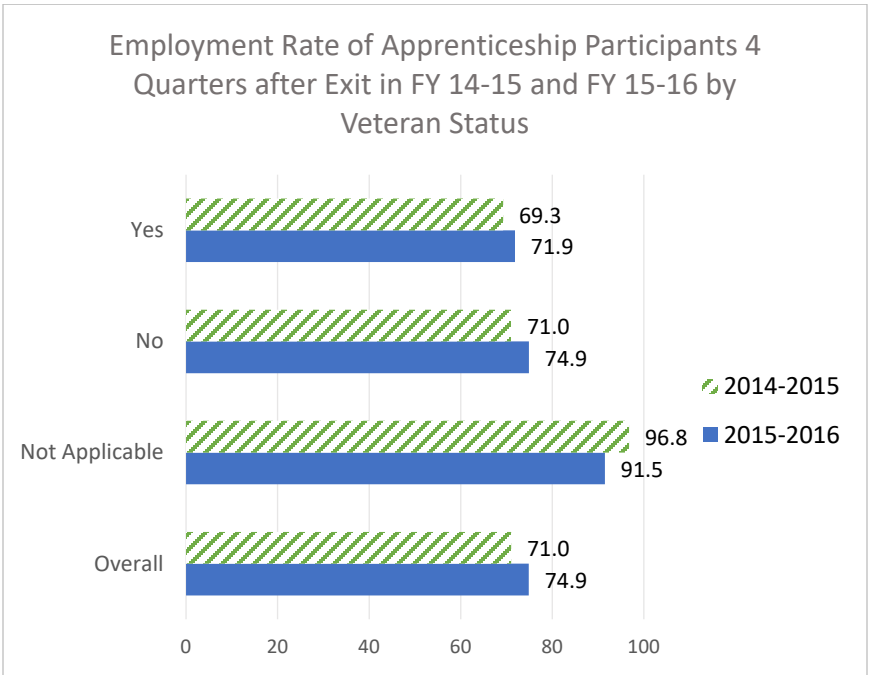
Following exit in FY 15-16, the rate among veterans was higher at 33.4% compared with 31.5% among exiting non-veterans.

13.4.1.5 Figure – 2nd Quarter Employment Rate by Veteran Status



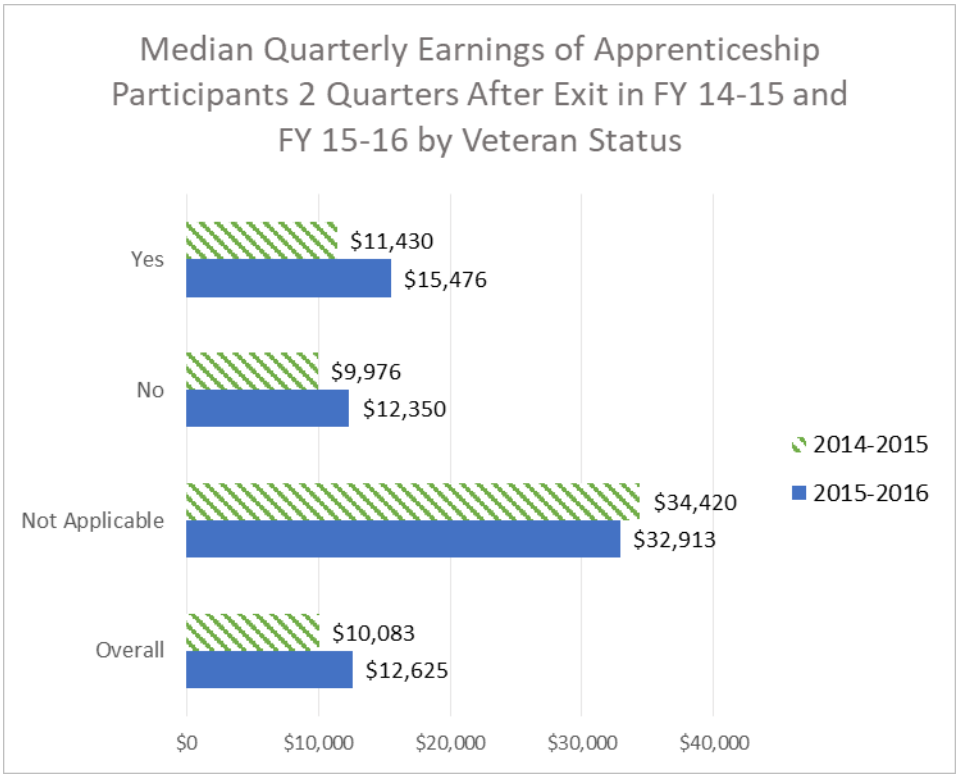
Two quarters after exit, non-veterans' rates of employment were slightly higher than those of veterans: 71.7% of non-veterans were employed two quarters after exit in FY 14-15 compared with 68.0% of veterans (+3.7 percentage point difference); and 75.4% of non-veterans were employed two quarters after exit in FY 15-16, +2.2 percentage points higher than the rate (73.2%) among veterans).

13.4.1.6 Figure – 4th Quarter Employment Rate by Veteran Status



Non-veterans continued to be employed at rates that were higher than those among veterans four quarters after exit in both fiscal years.

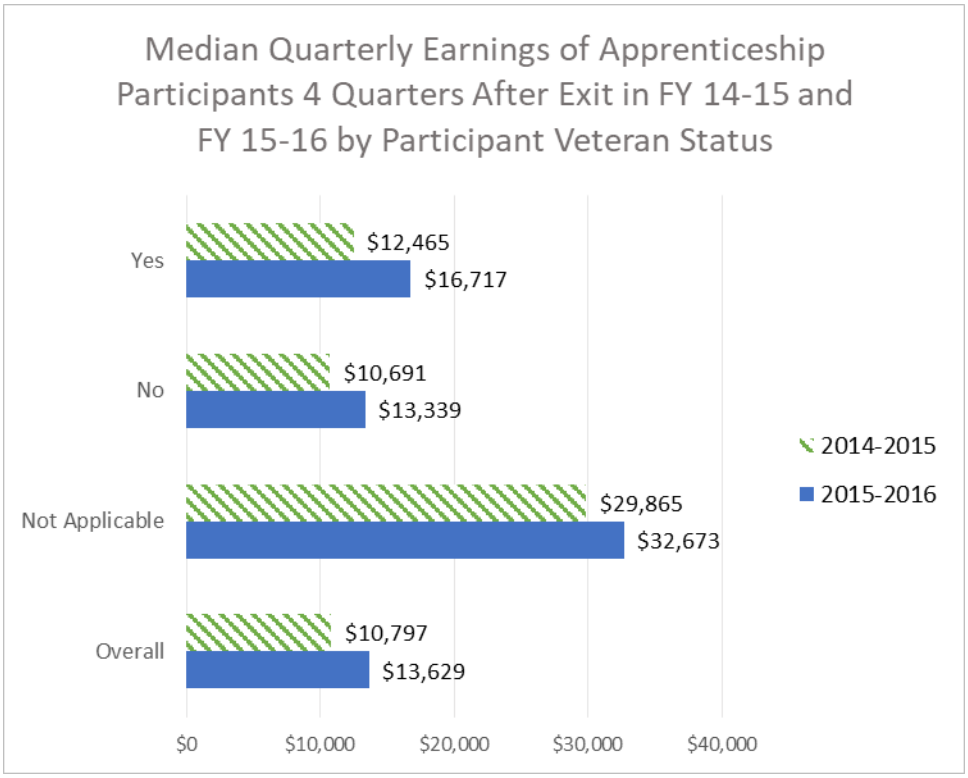
13.4.1.7 Figure – 2nd Quarter Median Earnings by Veteran Status



Although their rates of employment were lower, veterans' earnings exceeded non-veterans two quarters after exit in both years, with veterans out-earning non-veterans by +$1,453 (FY 14-15) and +3,126 (FY 15-16) respectively in each year.[38]

[38] A small number of DAS participants in each year were reported under the category of "veteran status - non applicable". Given small participant numbers and the large discrepancy in their earnings compared with a cross-section of DAS participants, it seems likely that these individuals were all participants in a single program—possibly (given the earnings shown) a journeyperson upgrade program which provides retraining or skill upgrading for individuals who have already completed an apprenticeship and are certified in their field.

13.4.1.8 Figure – 4th Quarter Median Earnings by Veteran Status



Veterans retained their earnings advantage in the fourth quarter after exit in both fiscal years, with veterans who exited in FY 14-15 out-earning their non-veteran counterparts by +$1,774, and veterans exiting in FY 15-16 earning +$3,379 more than non-veterans.

13.5 Training Completion Status

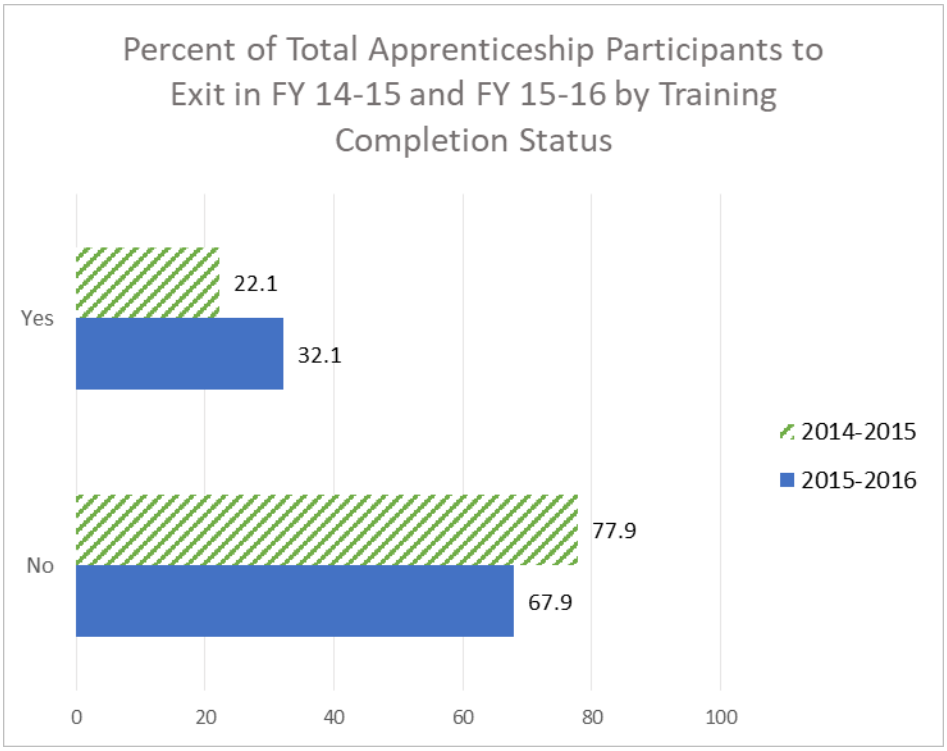
13.5.1.1 Table Set – Training Completion Status

FY 2014-2015									
Training Completion Status	# Exited	2 Quarters After Exit			4 Quarters After Exit				
		# Employed	% Employed	Median Earnings	# Attained Credential	% Attained Credential	# Employed	% Employed	Median Earnings
Yes	2,980	2,566	86.11	$20,840	2,958	99.26	2,516	84.43	$21,231
No	10,478	7,067	67.45	$8,275	19	0.18	7,040	67.19	$8,908
Other	0	0	0.00	$0	0	0.00	0	0.00	$0
Not Applicable	0	0	0.00	$0	0	0.00	0	0.00	$0
Unknown	0	0	0.00	$0	0	0.00	0	0.00	$0
TOTAL	13,458	9,633	71.58	$10,083	2,977	22.12	9,556	71.01	$10,797

FY 2015-2016									
Training Completion Status	# Exited	2 Quarters After Exit			4 Quarters After Exit				
		# Employed	% Employed	Median Earnings	# Attained Credential	% Attained Credential	# Employed	% Employed	Median Earnings
Yes	7,329	6,493	88.59	$20,581	7,257	99.02	6,411	87.47	$21,124
No	15,514	10,729	69.16	$9,094	19	0.12	10,689	68.90	$10,036
Other	0	0	0.00	$0	0	0.00	0	0.00	$0
Not Applicable	0	0	0.00	$0	0	0.00	0	0.00	$0
Unknown	0	0	0.00	$0	0	0.00	0	0.00	$0
TOTAL	22,843	17,222	75.39	$12,625	7,276	31.85	17,100	74.86	$13,629

Service descriptions are available in Appendix E.

13.5.1.2 Figure – Program Exit by Training Completion Status



In both fiscal years, a majority of participants who exited their DAS program did so without having completed: 77.9% of all to exit in FY 14-15, and a somewhat smaller majority (67.9%) of all to exit in FY 15-16.

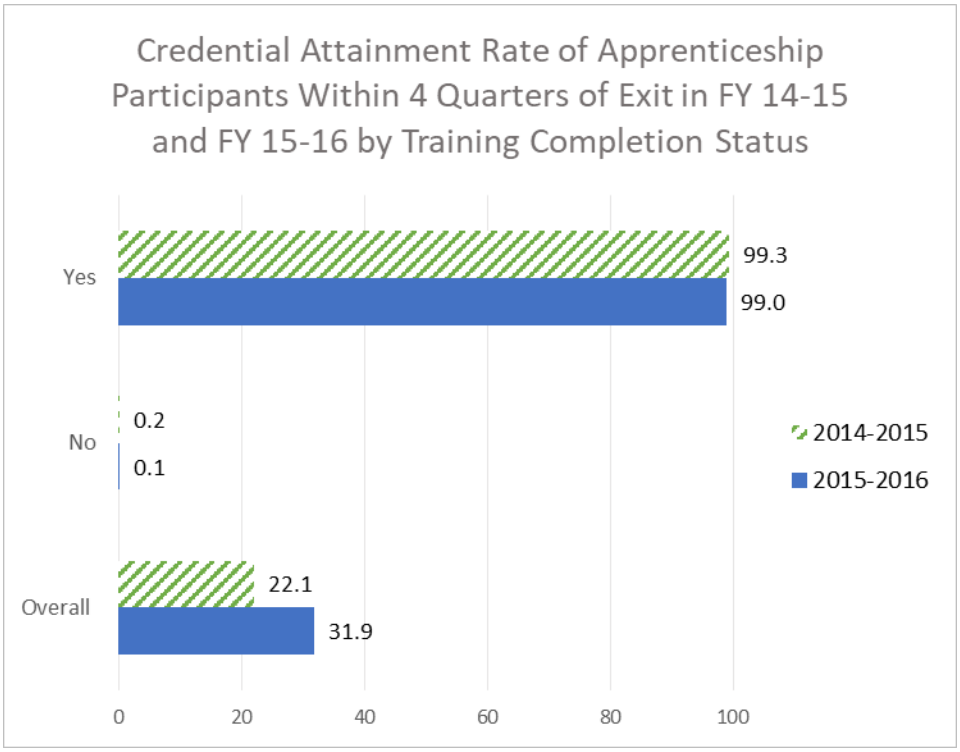
Exit includes all individuals who leave their program for any reason. This includes those participants who drop out, however it also includes those who may leave an apprenticeship before formal completion as a result of finding employment in their field. It is possible for an individual to exit and re-enter at a later date.

Because of the cohort-based nature of DAS enrollments, each program is likely to have few or no completions in certain years, if data are collected at a midpoint during the program. Evidence of this effect can be seen in year-to-year variation in completion rates reported in DAS' annual legislative reports, and represents a likely factor behind DAS' inclusion of five-year completion rate averages.[39] It should be noted that completion is defined in differing ways in DAS-overseen programs. Some are based upon a participant's demonstration of competency, where skill acquisition through the individual apprentice's successful demonstration of acquired skills and knowledge, as verified by the program sponsor. Programs utilizing this approach shall require apprentices to complete no less than six months of an on-the-job learning component

[39] DIR-DAS. "Completion Rates for Apprenticeship Programs: Five-Year Average and Last Year" (2013-2018). Available: https://www.dir.ca.gov/DAS/reports/Comp5yrAverage.pdf

of registered apprenticeship. The program standards shall address how on-the-job learning will be integrated into the program, describe competencies, meet industry-recognized standards or certifications, and identify an appropriate means of testing and evaluation for such competencies. Others are based on fulfillment of time-based requirements (completion of the industry standard for hours of on-the-job learning and related and supplemental instruction). The time-based approach measures skill acquisition through the individual apprentice's completion of at least 144 hours of related and supplemental instruction and 2,000 hours of on-the-job learning as described in a work process schedule. Other programs follow a hybrid model, combining elements of both.[40]

13.5.1.3 Figure – Credential Attainment Rate by Training Completion Status



Not surprisingly, credential attainment was almost directly associated with completion: the rate of credential attainment among participants who completed DAS training was over 99% in both years. Among non-completing participants, it was below 1%.

In this program data, a small number of credentials are also captured for individuals who completed on-the-job training programs. These certificate programs are shorter in duration, but lead to industry-valued credentials.

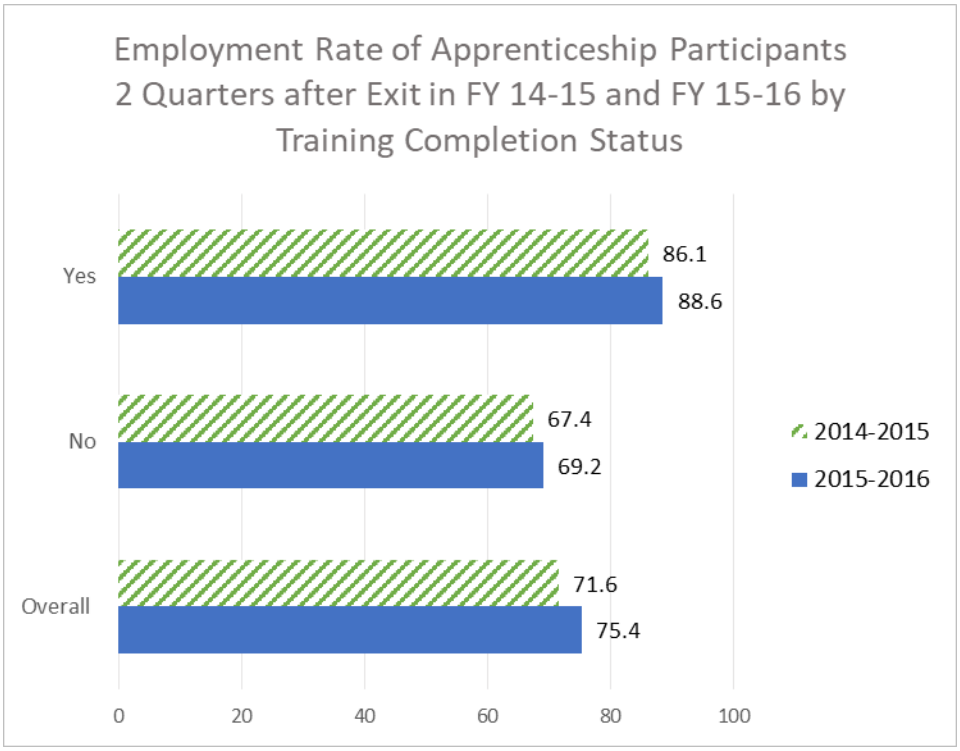
Program data shown here do not capture credentials which participants in apprenticeship typically earn as they progress in their program and complete individual courses. These "baked-

[40] CALC Section 3078.5.

in" credentials include career-technical education (CTE) certifications and may also include safety training certificates from OSHA, etc.

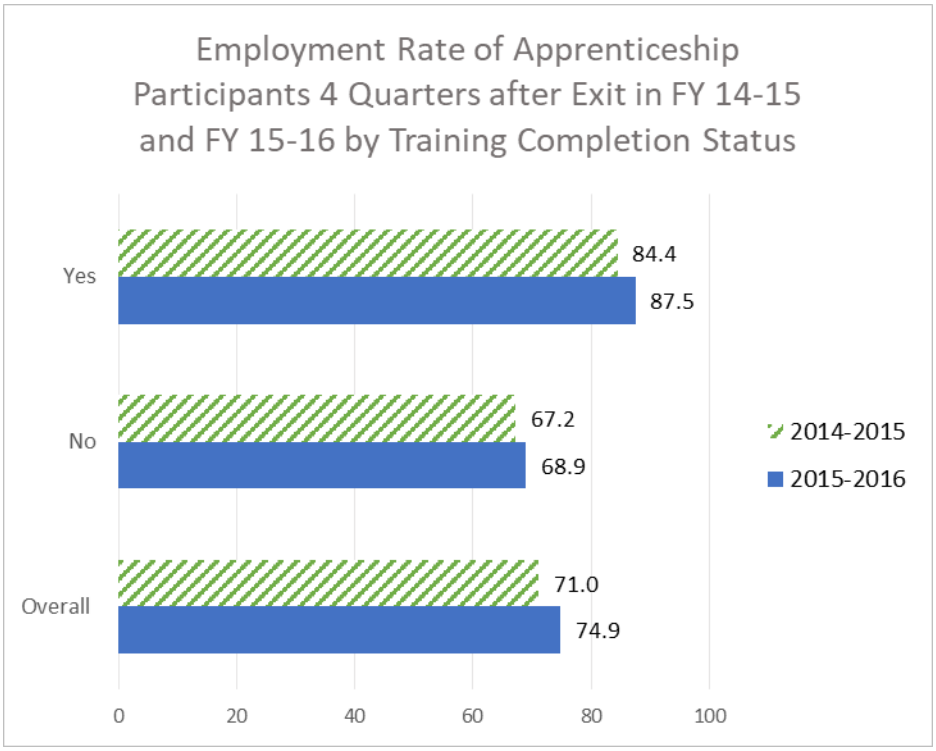
Among both fiscal years of participants, 100% of those who completed their apprenticeship program also attained a credential. This attainment rate is logical, given that completion is a necessary requirement to attain a credential.

13.5.1.4 Figure – 2nd Quarter Employment Rate by Completion Status



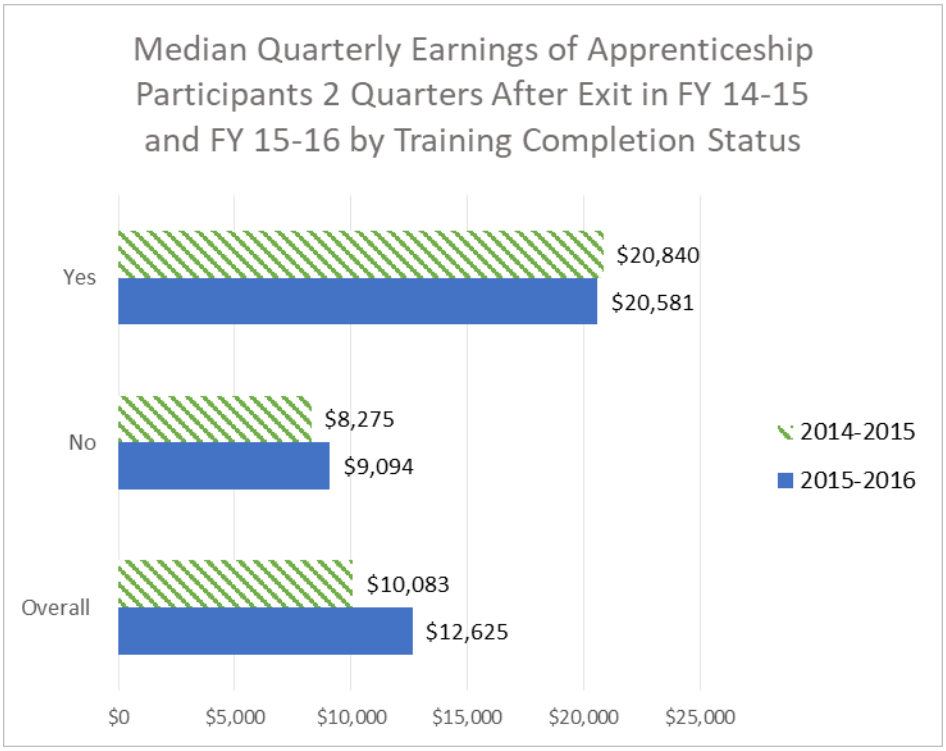
Employment was higher in each year among participants who completed was consistently higher than among non-completers: 86.1% of DAS participants to complete training in FY 14-15 were employed two quarters later, compared with only 67.4% of non-completers; 88.6% of those to exit with completion in FY 15-16 were employed, compared with 69.2% of exiting non-completers.

13.5.1.5 Figure – 4th Quarter Employment Rate by Training Completion Status



In the fourth quarter after exit, employment rates among participants who had completed remained higher than those among participants exiting without completion, with employment at 84.4% among exiting FY 14-15 DAS participants who had completed versus 67.2% among those exiting without completion; and a similar 87.5% among exiting FY 15-16 participants who completed their program compared with 68.9% among exiting non-completers.

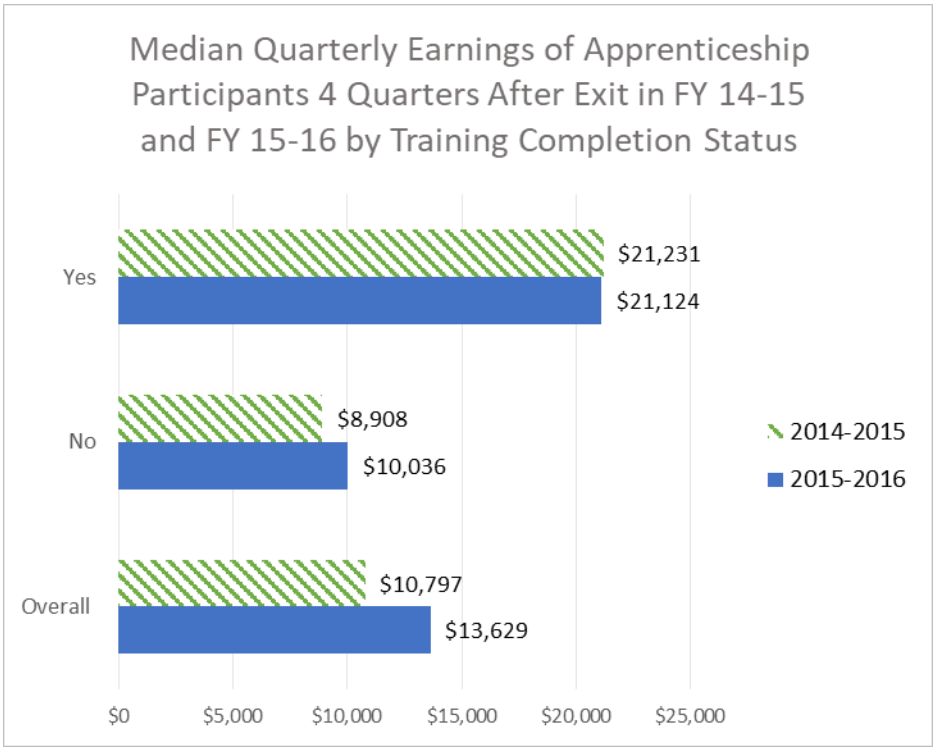
13.5.1.6 Figure – 2nd Quarter Median Earnings by Training Completion Status



Median earnings of DAS participants who completed their training exceeded those of non-completers during the second quarter after exit in both fiscal years, by a substantial amount: two quarters after exit in FY 14-15, earnings of participants who had completed were $20,840, +$12,565 (152%) higher than those of non-completers ($8,275). Two quarters after exit in FY 15-16, completers' earnings of $20,581 were + $11,487 (126%) higher than non-completers' earnings of $9,094.

Given the human capital investment conferred by completion of an apprenticeship program, the earnings advantage of completers is expected.

13.5.1.7 Figure – 4th Quarter Median Earnings by Training Completion Status



The pattern established at the 2nd quarter post-exit continued in the 4th post-program quarter: completers' median quarterly earnings were $21,231 (FY 2014-2015) and $21,124 (FY 2015-2016) versus $8,908 and $10,036 for those exiting without completion in the respective fiscal years.

13.6 Type of Recognized Credential

13.6.1.1 Table Set – Type of Recognized Credential

FY 2014-2015									
Type of Recognized Credential	# Exited	2 Quarters After Exit			4 Quarters After Exit				
		# Employed	% Employed	Median Earnings	# Attained Credential	% Attained Credential	# Employed	% Employed	Median Earnings
No Recognized Credential	10,498	7,078	67.42	$8,281	19	0.64	7,053	67.18	$8,910
High School Diploma or Equivalency	0	0	0.00	$0	0	0.00	0	0.00	$0
Associate's Degree	0	0	0.00	$0	0	0.00	0	0.00	$0
Bachelor's Degree	0	0	0.00	$0	0	0.00	0	0.00	$0
Post-Graduate Degree	0	0	0.00	$0	0	0.00	0	0.00	$0
Occupational Skills License	0	0	0.00	$0	0	0.00	0	0.00	$0
Occupational Skills Certificate	14	10	71.43	$3,769	14	0.47	10	71.43	$6,116
Occupational Certification	2,946	2,545	86.39	$20,902	2,944	98.89	2,493	84.62	$21,253
Other Recognized Diploma, Degree, or Certificate	0	0	0.00	$0	0	0.00	0	0.00	$0
Other Award (Non-Credit or Credit)	0	0	0.00	$0	0	0.00	0	0.00	$0
Other	0	0	0.00	$0	0	0.00	0	0.00	$0
More than One Type of Recognized Credential	0	0	0.00	$0	0	0.00	0	0.00	$0
Not Applicable	0	0	0.00	$0	0	0.00	0	0.00	$0
Unknown	0	0	0.00	$0	0	0.00	0	0.00	$0
TOTAL	13,458	9,633	71.58	$10,083	2,977	100.00	9,556	71.01	$10,797

FY 2015-2016									
Type of Recognized Credential	# Exited	2 Quarters After Exit			4 Quarters After Exit				
		# Employed	% Employed	Median Earnings	# Attained Credential	% Attained Credential	# Employed	% Employed	Median Earnings
No Recognized Credential	15,584	10,779	69.17	$9,118	19	0.26	10,738	68.90	$10,058
High School Diploma or Equivalency	0	0	0.00	$0	0	0.00	0	0.00	$0
Associate's Degree	0	0	0.00	$0	0	0.00	0	0.00	$0
Bachelor's Degree	0	0	0.00	$0	0	0.00	0	0.00	$0
Post-Graduate Degree	0	0	0.00	$0	0	0.00	0	0.00	$0
Occupational Skills License	0	0	0.00	$0	0	0.00	0	0.00	$0
Occupational Skills Certificate	50	28	56.00	$3,764	49	0.67	22	44.00	$4,425
Occupational Certification	7,209	6,415	88.99	$20,615	7,208	99.07	6,340	87.95	$21,175
Other Recognized Diploma, Degree, or Certificate	0	0	0.00	$0	0	0.00	0	0.00	$0
Other Award (Non-Credit or Credit)	0	0	0.00	$0	0	0.00	0	0.00	$0
Other	0	0	0.00	$0	0	0.00	0	0.00	$0
More than One Type of Recognized Credential	0	0	0.00	$0	0	0.00	0	0.00	$0
Not Applicable	0	0	0.00	$0	0	0.00	0	0.00	$0
Unknown	0	0	0.00	$0	0	0.00	0	0.00	$0
TOTAL	22,843	17,222	75.39	$12,625	7,276	100.00	17,100	74.86	$13,629

13.6.1.2 Figure – Credential Attainment by Earned Credential Type

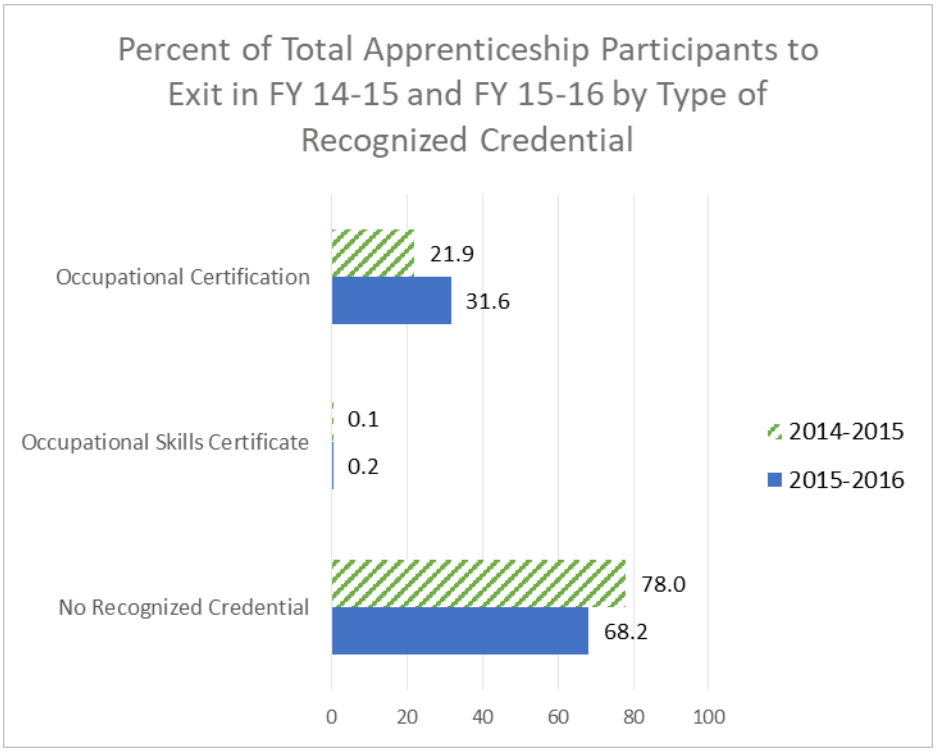


Figure 13.6.1.2 shows credential attainment disaggregated by the type of credential attained. The denominator includes all individuals who attained a recognized DAS completion credential within four quarters of exiting the program. Shares therefore sum to 100%.

In this program data, a small number of credentials are also captured for individuals who completed on-the-job training programs. These certificate programs are shorter in duration, but lead to industry-valued credentials.

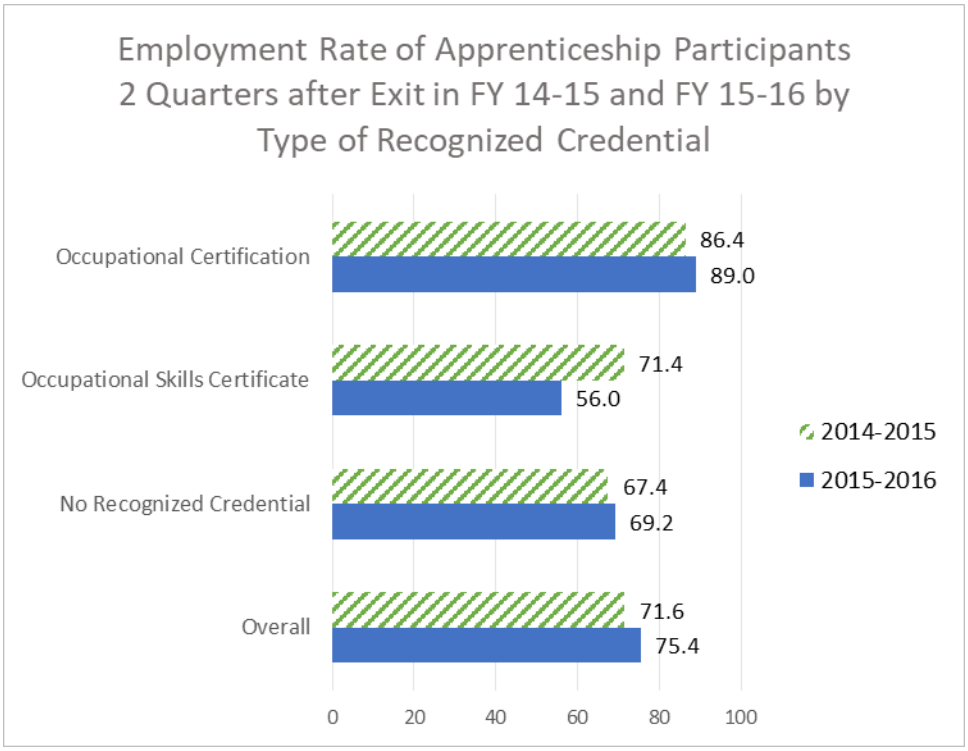
Program data shown here do not capture credentials which participants in apprenticeship typically earn as they progress in their program and complete individual courses. These “baked-in” credentials include career-technical education (CTE) certifications and may also include safety training certificates from OSHA, etc.

By far the most commonly-attained certification among participants to exit apprenticeship training in both years was an Occupational Certification, or State Certificate of Completion. About 99% of all credentials earned by DAS participants were Occupational Certifications. This credential type, which is also known as a State Certificate of Completion, certifies that an individual has completed his or her apprenticeship training and is a fully credentialed journeyperson in their trade or craft.

A small percentage of participants—those enrolled in trainee programs—earned an Occupational Skills Certificate, accounting for less than 1% of all credentials earned within 4

quarters of exit during either fiscal year. This type of credential signifies completion of a shorter term (6 months to 2 years) trainee program, and is an industry recognized credential. Alternatively, participants may be captured in this category if they completed a journeyperson upgrade program.

13.6.1.3 Figure – 2nd Quarter Employment by Earned Credential Type



Employment was highest among both fiscal years' participants among DAS participants who earned an Occupational Certification: 86.4% of all participants to exit in this category in FY 14-15 and 89.0% to exit in FY 15-16 were employed two quarters after exit.

These rates were respectively +14.8 and +13.6 percentage points higher than the program-wide rate.

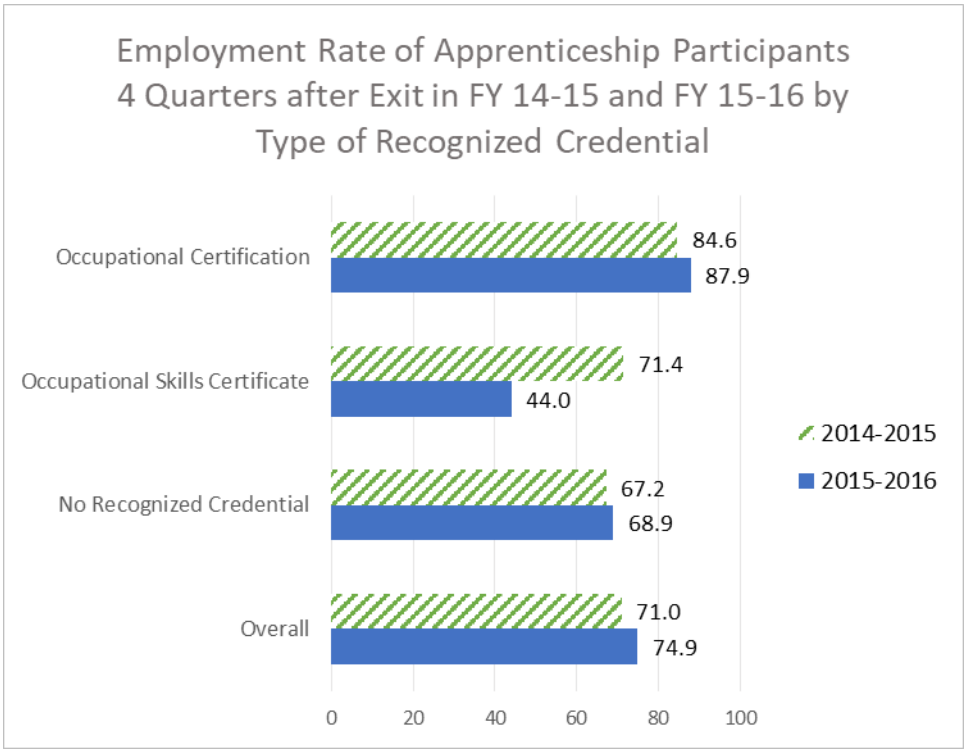
As noted, individuals in this category represent apprenticeship participants who have completed all program requirements and attained journey status.

Among individuals who received an Occupational Skills Certificate—awarded for completion of an on-the-job only Trainee program—employment rates showed variation between the two years, with 71.4% of these participants employed two quarters after exit in FY 14-15 but only 56.0% employed at the same stage after exit in the following fiscal year, the lowest rate among this year's exiting cohort and -19.4 percentage points below the program-wide rate for all exiting participants.

It is not clear what may have caused the low observed employment rate among individuals who earned this credential type. It is possible that fluctuations in demand explain this outcome. While apprenticeship programs are required to account for local labor market demand when enrolling apprentices (the "needs clause" set forth in CALC Section 3075), trainee programs do not face the same requirements.

Rates of employment among participants who did not earn a credential were 67.4% two quarters after exit in FY 14-15 (the lowest rate of any group of participants exiting in that year) and 69.2% two quarters after exit in FY 15-16.

13.6.1.4 Figure – 4th Quarter Employment by Earned Credential Type

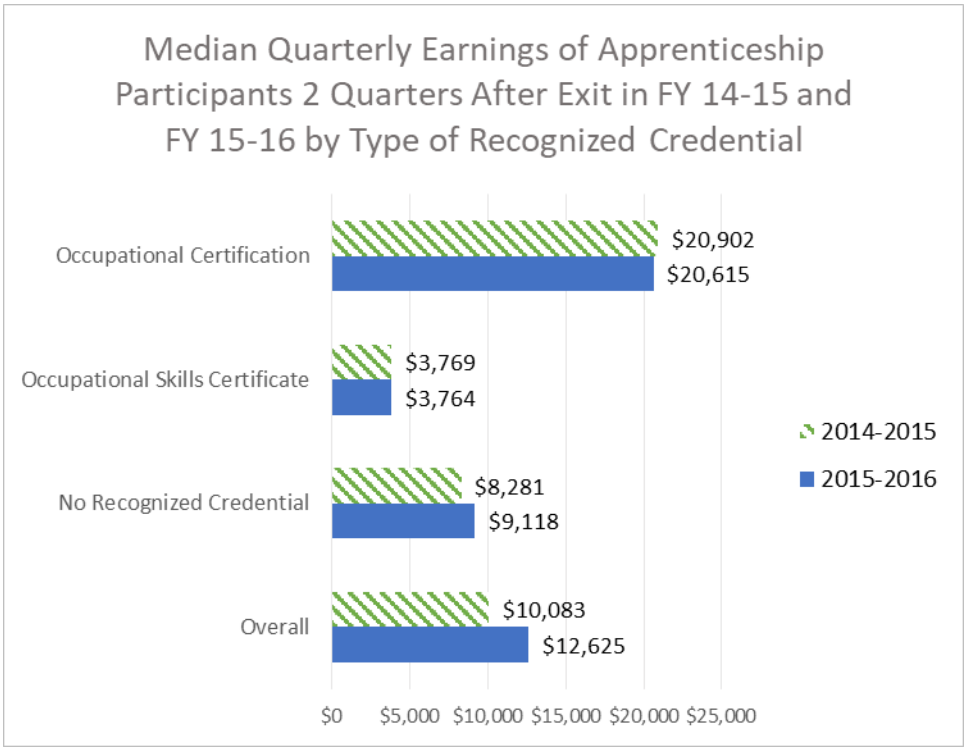


Four quarters after exit, employment rates remained highest among DAS participants who earned an Occupational Certification awarded for successful completion of an apprenticeship. These rates reflected a slightly drop from second-quarter rates, but still remained well above the program-wide rate of employment (by a margin of +13.6 and +13.1 percentage points respectively).

Similar to outcomes from the second quarter, there was a large gap between the employment rate for Occupational Skills Certificate earners with a date of exit in FY 14-15 versus those who exited in FY 15-16. While employment among the former remained unchanged from the second quarter rate of 71.4%, employment among the latter dropped to 44.0%-- less than half of exiting participants in this category employed.

Rates of employment among individuals who did not earn a recognized credential remained similar to the second quarter, respectively 67.2% (FY 14-15) and 68.9%).

13.6.1.5 Figure – 2nd Quarter Median Earnings by Type of Recognized Credential



Individuals who earned Occupational Certifications received the highest earnings out of all participant groups two quarters after exit in both years, with quarterly earnings of $20,902 (FY 14-15) and $20,615 (FY 15-16).

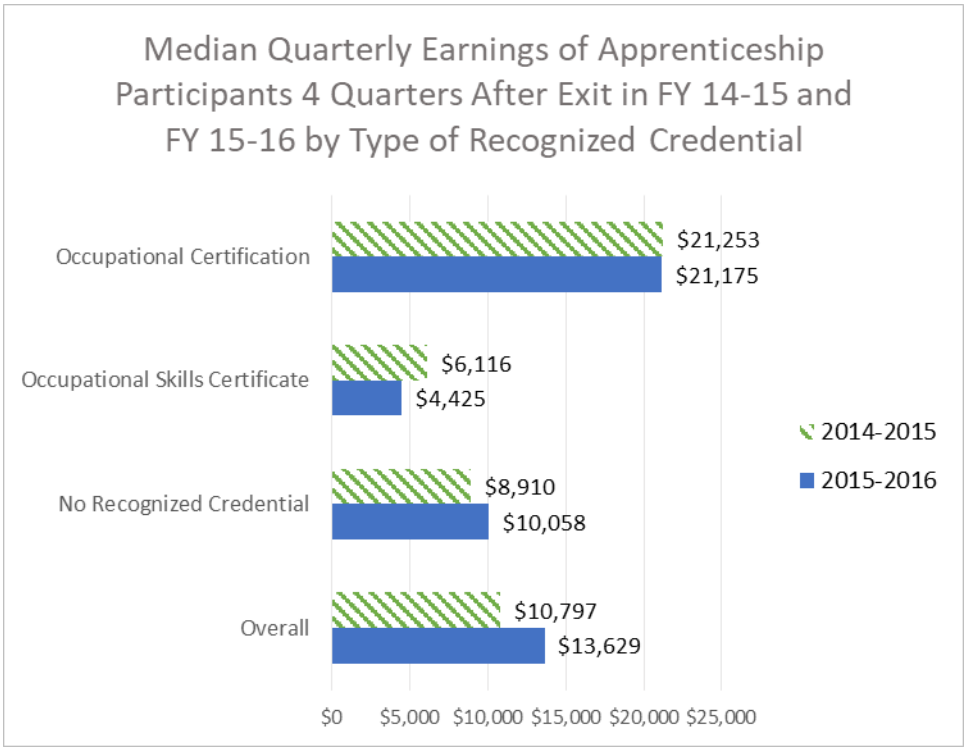
An Occupational Certification is awarded for successful completion of an apprenticeship. Because apprenticeship is an in-depth, multi-year program in which an individual gains full qualification in a skilled trade or craft, earnings represent the fruit of this intensive human capital investment. In addition, occupations associated with traditional apprenticeship such as those in the building trades tend to be high-paying.

Earnings of these participants were about twice the median among all employed participants two quarters after exit in FY 14-15 ($10,083), and +$7,990 greater than the median among participants employed two quarters after exit in FY 15-16 ($12,625).

Participants earning an Occupational Skills Certificate for completion of a trainee program saw lowest earnings, just $3,769 following exit in FY 14-15 and $3,764 following exit in FY 15-16. These participants' earnings were considerably lower than each year's program-wide median, respectively by -$6,314 (FY 14-15) and -$8,861 (FY 15-16).

It is likely that low participant earnings in this category are an effect of the occupational profile of fields offering trainee programs, as well as the shorter duration and less intensive training profile (including lack of a classroom training component) associated with these programs.

13.6.1.6 Figure – 4th Quarter Median Earnings by Type of Recognized Credential



Participants who received an Occupational Certification continued to receive the highest earnings out of all participant categories one year after exit, which continued to exceed participant earnings overall by a similar margin (+$10,456 above the FY 14-15 median and +$7,547 above the FY 15-16 median).

While participants who earned an Occupational Skills Certificate continued to see the lowest earnings out of all participant groups, individuals to exit in this category in FY 14-15 earned more at this stage relative to the program median: their earnings of $6,116 were now -$4,681 below the program-wide median, still a substantial gap but smaller than the difference in the second quarter. Individuals in this category who exited in FY 15-16 did not make similar gains, and their earnings of $4,425 diverged further from the program-wide median (-$9,204).

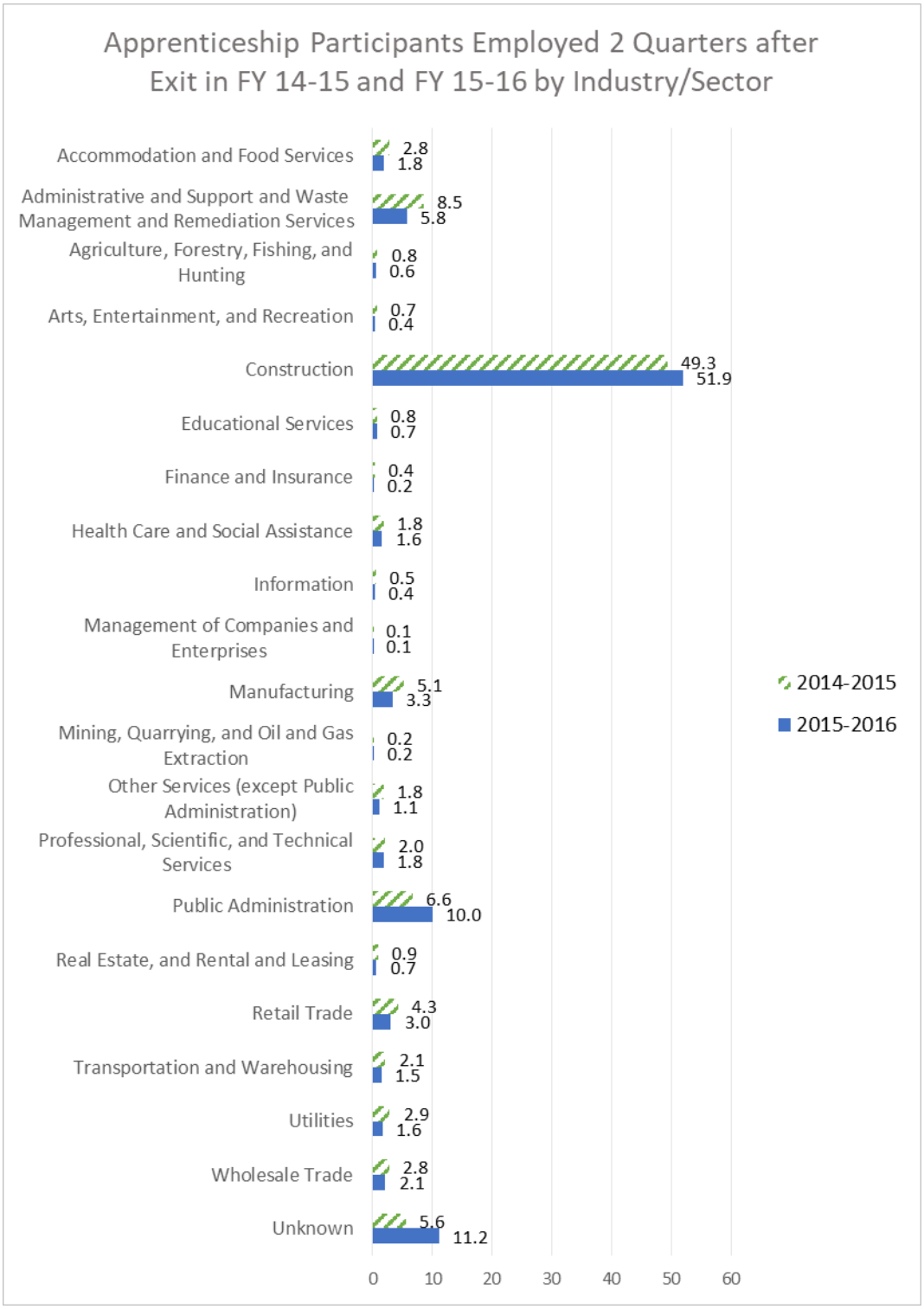
13.7 Industry / Sector of Employment

13.7.1.1 Table Set – Industry/Sector of Employment

FY 2014-2015						
Industry / Sector Description	2 Quarters After Exit			4 Quarters After Exit		
	# Employed	% Employed	Median Earnings	# Employed	% Employed	Median Earnings
Agriculture, Forestry, Fishing, and Hunting	81	0.84	$4,389	94	0.98	$4,615
Mining, Quarrying, and Oil and Gas Extraction	22	0.23	$11,591	23	0.24	$14,911
Utilities	277	2.88	$32,371	287	3.00	$33,187
Construction	4,748	49.29	$10,390	4,660	48.77	$11,173
Manufacturing	495	5.14	$9,735	493	5.16	$10,192
Wholesale Trade	268	2.78	$9,180	271	2.84	$9,438
Retail Trade	412	4.28	$4,770	405	4.24	$5,566
Transportation and Warehousing	206	2.14	$7,233	229	2.40	$7,936
Information	49	0.51	$6,758	52	0.54	$9,177
Finance and Insurance	37	0.38	$6,496	37	0.39	$7,888
Real Estate, and Rental and Leasing	83	0.86	$8,377	91	0.95	$9,583
Professional, Scientific, and Technical Services	191	1.98	$11,048	212	2.22	$10,935
Management of Companies and Enterprises	<10	0.05	$13,677	<10	0.09	$5,929
Administrative and Support and Waste Management and Remediation Services	817	8.48	$5,486	739	7.73	$6,024
Educational Services	76	0.79	$7,816	106	1.11	$8,142
Health Care and Social Assistance	178	1.85	$7,573	186	1.95	$7,049
Arts, Entertainment, and Recreation	71	0.74	$3,820	66	0.69	$3,661
Accommodation and Food Services	273	2.83	$4,218	254	2.66	$4,167
Other Services (except Public Administration)	173	1.80	$5,500	173	1.81	$5,552
Public Administration	635	6.59	$27,850	641	6.71	$29,053
Unknown	536	5.56	$19,915	528	5.53	$20,778
TOTAL	9,633	71.58	$10,083	9,556	71.01	$10,797

FY 2015-2016						
Industry / Sector Description	2 Quarters After Exit			4 Quarters After Exit		
	# Employed	% Employed	Median Earnings	# Employed	% Employed	Median Earnings
Agriculture, Forestry, Fishing, and Hunting	95	0.55	$4,865	101	0.59	$4,033
Mining, Quarrying, and Oil and Gas Extraction	38	0.22	$10,349	35	0.20	$15,107
Utilities	283	1.64	$35,552	295	1.73	$38,480
Construction	8,938	51.90	$11,342	8,777	51.33	$12,398
Manufacturing	561	3.26	$10,909	599	3.50	$11,017
Wholesale Trade	363	2.11	$10,661	345	2.02	$11,977
Retail Trade	525	3.05	$5,876	536	3.13	$6,251
Transportation and Warehousing	254	1.47	$8,033	277	1.62	$8,445
Information	67	0.39	$8,753	72	0.42	$9,721
Finance and Insurance	34	0.20	$8,223	41	0.24	$8,871
Real Estate, and Rental and Leasing	112	0.65	$9,627	121	0.71	$10,025
Professional, Scientific, and Technical Services	314	1.82	$12,097	308	1.80	$13,780
Management of Companies and Enterprises	10	0.06	$13,035	11	0.06	$13,583
Administrative and Support and Waste Management and Remediation Services	1,000	5.81	$5,888	953	5.57	$6,636
Educational Services	122	0.71	$7,492	127	0.74	$8,732
Health Care and Social Assistance	270	1.57	$8,184	288	1.68	$8,898
Arts, Entertainment, and Recreation	73	0.42	$5,406	69	0.40	$5,200
Accommodation and Food Services	316	1.83	$4,402	298	1.74	$4,665
Other Services (except Public Administration)	196	1.14	$5,282	204	1.19	$5,581
Public Administration	1,728	10.03	$30,493	1,761	10.30	$32,067
Unknown	1,923	11.17	$19,671	1,882	11.01	$19,806
TOTAL	17,222	75.39	$12,625	17,100	74.86	$13,629

13.7.1.2 Figure – 2nd Quarter Employment by Industry/Sector



Two quarters after exit, the largest single employment sector of DAS participants was construction, which employed 49.3% of all employed participants to have exited in FY 14-15,

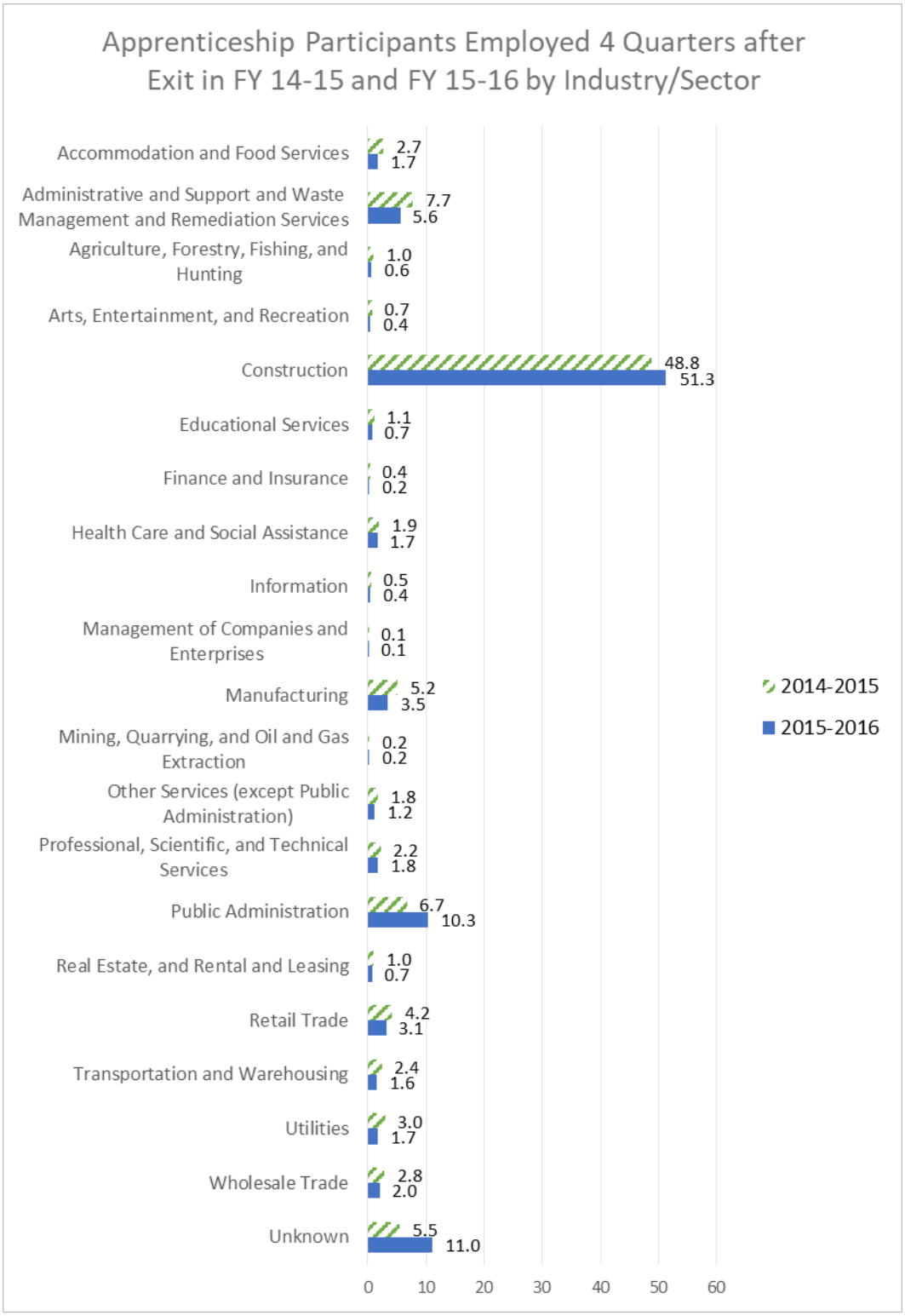
and 51.9% of all DAS participants in FY 15-16. No other sector came close in employment of DAS participants.[41] These shares indicate the extent of the density of DAS participant employment in construction: statewide, the construction sector was the employer of 4.3% of working Californians in FY 2014-2015 and 4.6% in FY 2015-2016.

A majority of DAS apprenticeships are in the construction sector, meaning that the predominance of this sector as an employer is likely to signal the successful entry of many trainees into their targeted field, although this cannot be substantiated with available high-level data.

Fewest former DAS participants were employed in Management of Companies and Enterprises (0.05% of all employed participants in the second quarter after exit in FY 14-15, and 0.06% following exit in FY 15-16). The management sector is a small sector in the state, employing 1.4% of the state's labor force in both FY 14-15 and FY 15-16. While DAS participants' employment in this sector was still far below the state as a whole, the lack of apprenticeship programs in this field makes the outcome unsurprising. Other sectors with low employment of DAS participants were Mining, Quarrying and Oil and Gas Extraction along with Finance and Insurance. Both sectors also employ small shares of the state's overall labor force.

[41] Industry sectors of participant employment were identified using the sector prefix (first two digits) of the NAICS code associated with an individual participant's majority of earnings in the quarter. This methodology enabled the CAAL-Skills data team to more completely match participant NAICS codes (which are subject to regular updates leading some 6-dgit codes to become obsolete over time) than would have been possible by classifying on the basis of full 6-digit codes. Despite this methodology, a certain number of reported earnings in every program were either reported without a NAICS code or using a code with an invalid prefix (99 or 00). These individuals—about 10-20% of all program participants—were classified as having worked in an unknown sector.

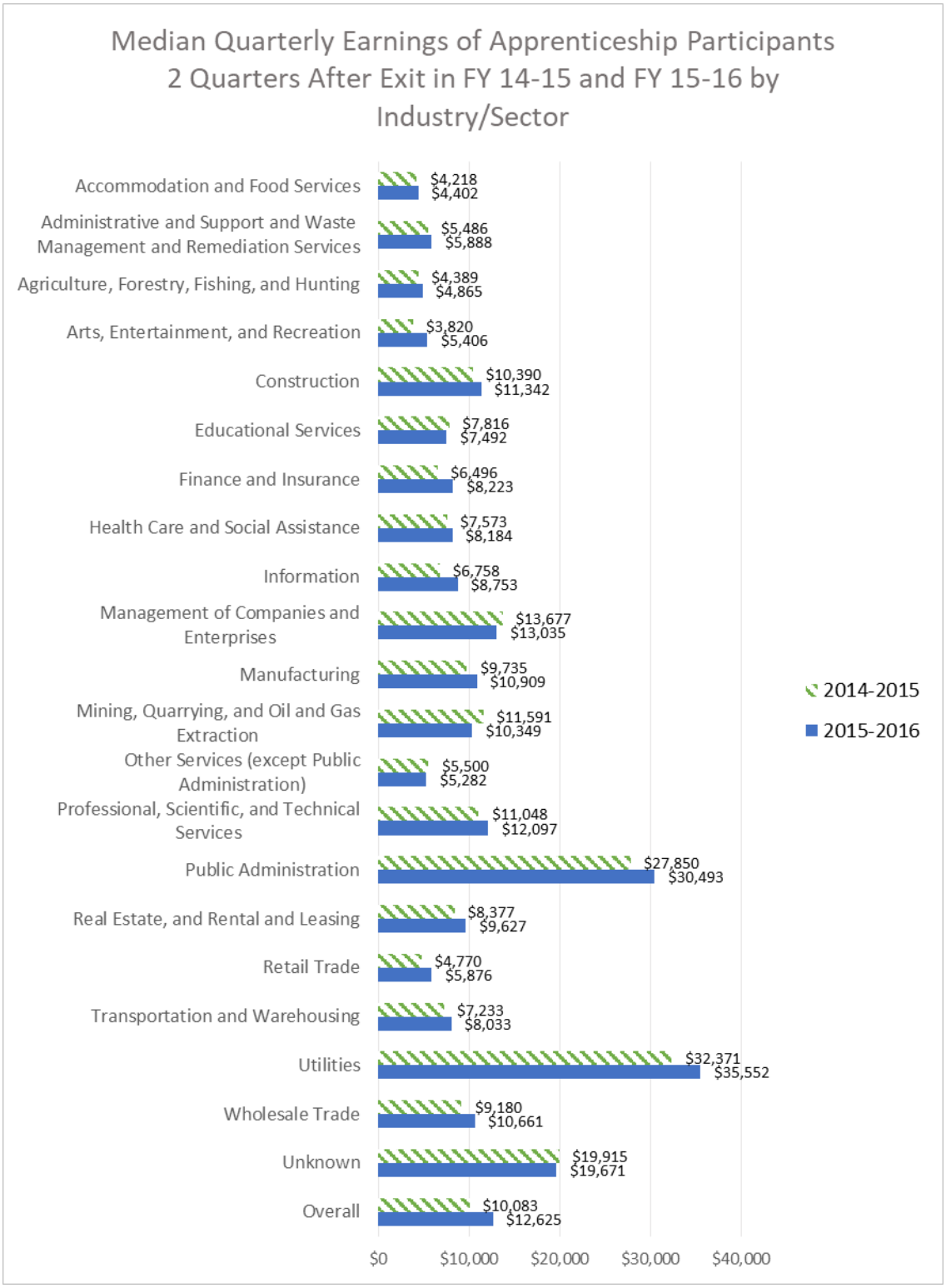
13.7.1.3 Figure – 4th Quarter Employment by Industry/Sector



In the fourth quarter after exit in FY 14-15, construction continued to employ the largest shares of former DAS participants, 48.8% of all to exit in FY 14-15 and 51.3% of all to exit in FY 15-16.

Sectors employing the smallest DAS participant shares remained unchanged from the second post-exit quarter.

13.7.1.4 Figure – 2nd Quarter Median Earnings by Industry/Sector



Highest participant earnings were found in the Utilities sector: DAS participants employed in this field two quarters after exit in FY 14-15 earned quarterly median pay of $32,371, which more than 200% greater (+$22,288) than the program-wide median of $10,083. DAS participants working in Utilities after exiting in FY 15-16 earned $35,552, + $22,927 or 182% greater than the program-wide median of $12,625. DAS participants' earnings in this sector were somewhat higher than the statewide sector median (see Chapter 3), exceeding it by + $2,390 (FY 14-15) and +$4,964 (FY 15-16).

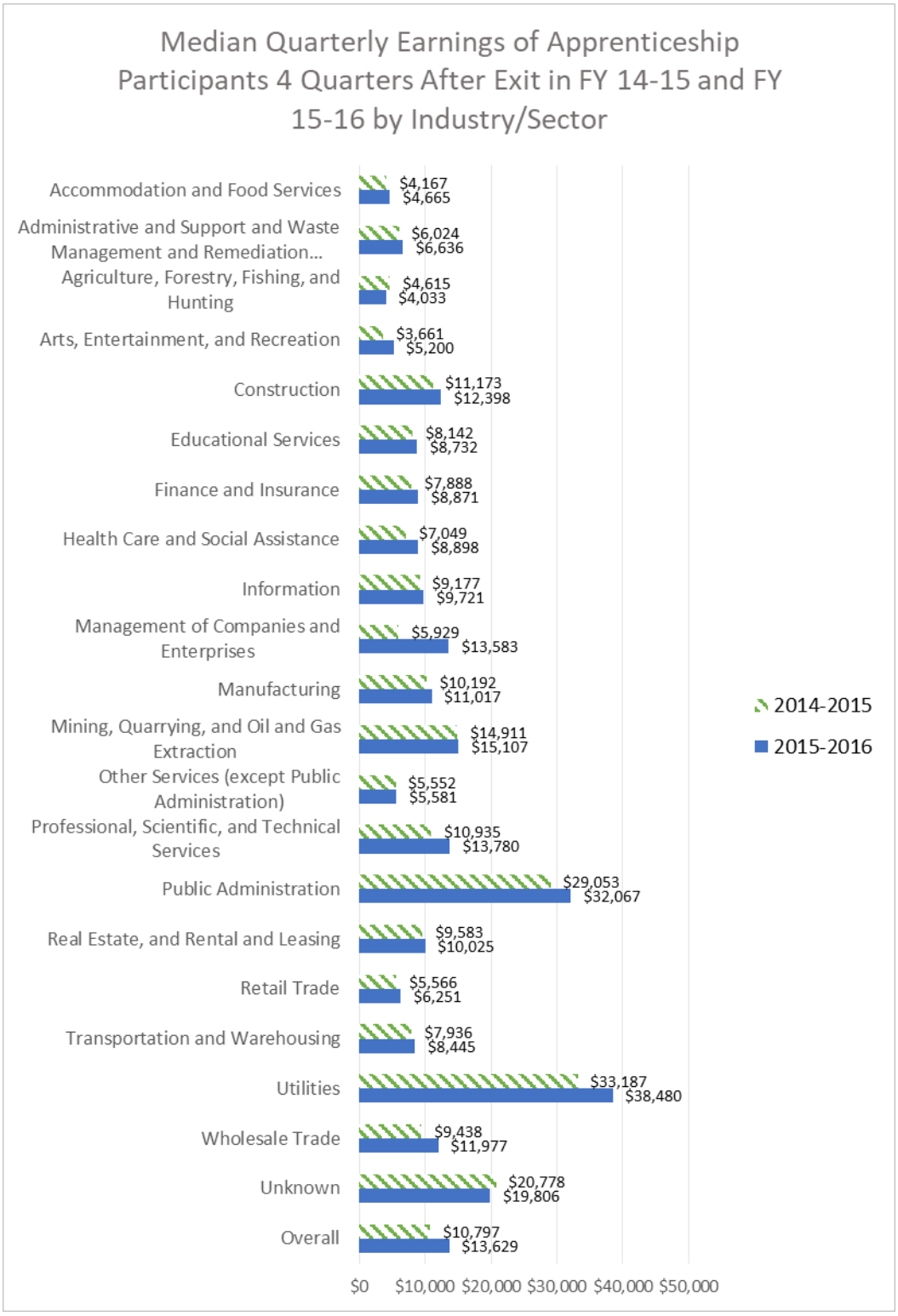
Among DAS participants to exit in FY 14-15, those working in Arts, Entertainment, and Recreation saw lowest median earnings of just $ 3,820 a quarter. Their earnings were -$6,263 or about 62% below the program-wide median.

The Arts, Entertainment, and Recreation sector is comprised of establishments that operate facilities or provide services to meet varied cultural, entertainment, and recreational interests of their patrons. Statewide, median quarterly earnings in this sector in FY 15-16 were $13,589, or about +$10,000 greater than median earnings of former DAS participants working in this sector. However, the sector comprises a wide range of occupations associated with different pay levels. Based on median earnings of DAS participants working in this sector, it seems likely that the types of occupations being filled are amusement and recreation attendants or similar (median hourly wage of $10.69).[42] It seems most likely, therefore, that the former DAS participants working in this sector are individuals who withdrew from their programs—rather than those who completed and are working in their trained-for field.

Of those to exit in the following year, the lowest earnings were seen in Accommodation and Food Services at $4,402, which were -8,223 or 65% below the program-wide median.
Like earnings in the Arts, Entertainment, and Recreation sector, these participant earnings were very low— Jobs in Accommodation and Food Services sector (NAICS 72) are often low-paying, offering non-supervisory workers an average of just 24.9 weekly hours,[43] and (in California) quarterly pay of just $5,295 (FY 14-15) and $5,570 (FY 15-16). Food preparation is one of three occupational groups that comprise a majority of the state's low wage jobs.[44]

[42] Median hourly wage is used in place of annual median earning for occupations in this sector due to the absence of availability of the latter in BLS reported data. This absence, in turn, reflects the fact that many occupations within this sector offer only seasonal, rather than year-round, employment.
[43] Bureau of Labor Statistics. Industries At a Glance: Accommodation and Food Services (NAICS 72)
[44] CWDB Unified State Plan 2016-2019, p. 44.

13.7.1.5 Figure – 4th Quarter Median Earnings by Industry/Sector



Earnings by sector were similar in the fourth quarter after exit. Utilities remained the highest-paying sector, with FY 14-15 participant median earnings of $33,187 (FY 14-15), +$22,390 or 207% larger than the program-wide median, and FY 15-16 participant median earnings of $38,480, +$9,596 or 135% above the program-wide median.

Arts, Entertainment and Recreation was consistently the lowest-paying sector of employment for DAS participants in the fourth quarter after exit in both years, with median participant earnings of 3,661 among those exiting in FY 14-15 (-$7,136 or 66% below the program median) and 4,033 among those exiting in FY 15-16 (-$9,596 or 70% below the program median).

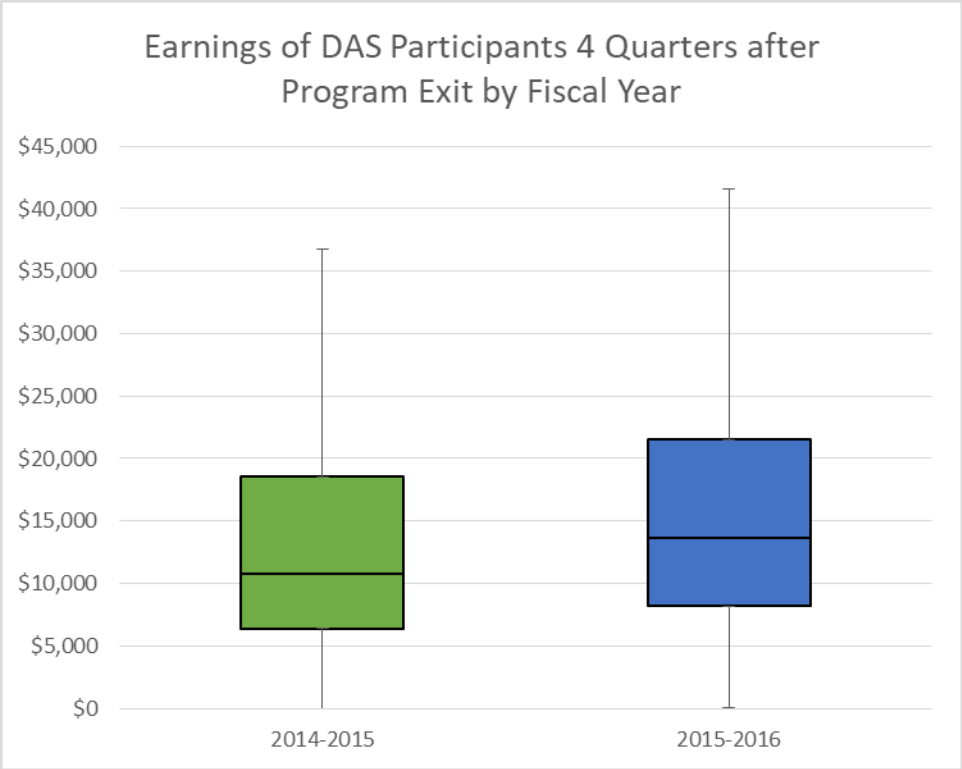
13.8 Quarterly Earnings

13.8.1.1 Table Set – Quarterly Earnings

FY 2014-2015					
Quarter After Exit	Minimum Earnings	Lower Quartile	Median Earnings	Upper Quartile	Maximum Earnings
Second	$0.30	$5,791	$10,083	$17,658	$35,458
Fourth	$0.28	$6,388	$10,797	$18,525	$36,730

FY 2015-2016					
Quarter After Exit	Minimum Earnings	Lower Quartile	Median Earnings	Upper Quartile	Maximum Earnings
Second	$2	$7,555	$12,625	$20,645	$40,280
Fourth	$4	$8,168	$13,629	$21,537	$41,590

13.8.1.2 Figure – 2nd Quarter Earnings by Fiscal Year



The box plots shown in Figures 13.8.1.2 and 13.8.1.3 summarize DAS apprenticeship participant earnings outcomes using five statistics: the lowest and highest individual participant earnings values in the range; and values of the 25th, 50th (median) and 75th, percentiles of earnings. The lower edge of the box represents the 25th percentile, the upper edge the 75th, with the median shown by a horizontal line down the middle. The highest and lowest participant earnings are shown by the whiskers.[45]

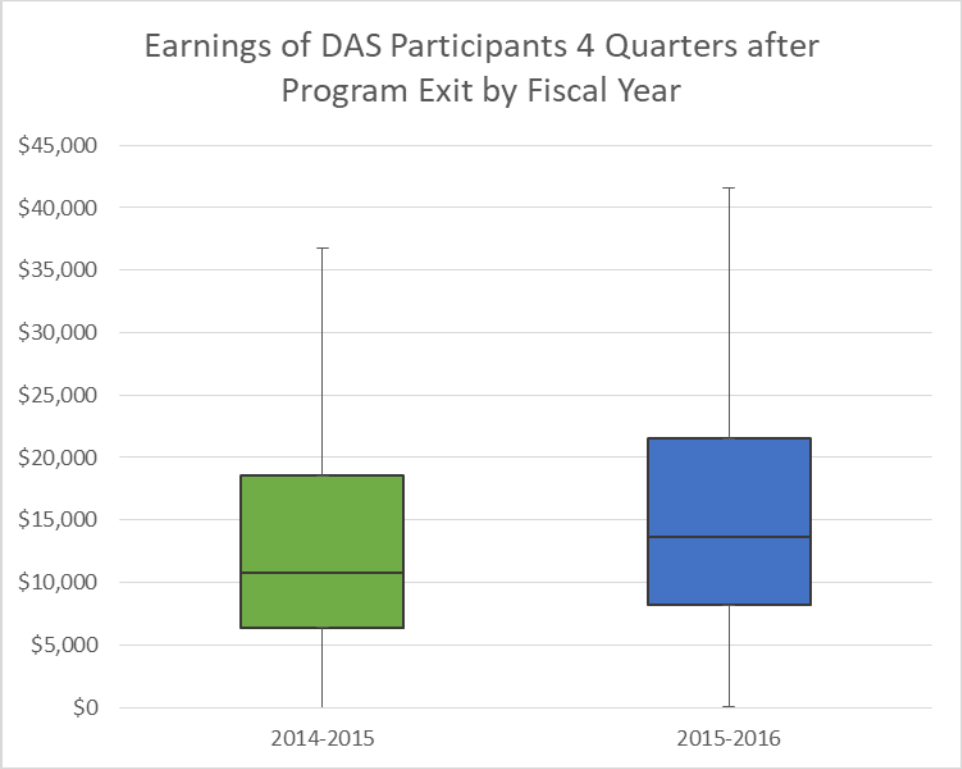
Compared with participant earnings in the second quarter after program exit during the 14-15 fiscal year, earnings of participants exiting in FY 15-16 were both higher, and more spread out. This is indicated visually in Figure 13.8.1.2, and can also be shown through difference in values: in the second quarter after exit in FY 14-15, the 25th percentile of participant earnings was

[45] In Table Set 13.8.1.1 and both box-and-whisker plots, upper whiskers are not drawn to actual participant earnings values but rather to the distributions' upper inner fences (equivalent to the value of the 75th percentile or Q3 plus one-and-a-half times the inter-quartile distance). This has been done to exclude extreme or outlier values in the upper range from both years' cohorts to avoid misrepresenting the data's trend visually, and to preserve participant confidentiality by avoiding display of individual earnings values. Low earnings values are actual participant earnings values, however confidentiality concerns did not apply because multiple participants shared this same low value in each year. Since the EDD Tax Branch lacks the resources to validate all employer-reported earnings, it cannot be determined further what very low participant earnings in the data may represent in substantive terms. In both years' participant data, the maximum individual earnings data points were outliers, or data points that lie far from the rest of the data.

$5,791, the median was $10,083, and the 75th percentile value was $17,658; the same statistics from two quarters after exit in FY 15-16 were $7,555 (+$1,764 greater), $12,625 (+$2,542 greater) and $20,645 (+$2,987greater). The distance from the median to 75th percentile was both wider among both years' participants compared with the distance from 25th percentile to the median, and increased by more from year to year. This (also shown by the off-center medians) indicate that earnings in the upper portion of the distribution were more spread out, compared with more clustered earnings in the lower part of the distribution: that is, there was a greater amount of difference in the earnings of the higher-earning participants compared with lower-earning. This pattern is consistent with most programs in this report.

Highest (non-outlier) earnings ranged to a maximum of $35,458 in the second quarter after exit in FY 14-15 and $40,280 in the second quarter after exit in FY 15-16. Lowest reported earnings (similar to what was found among every program's participants) appear quite low ($0.30 and $2), and are not representative of the majority of participants' earnings.

13.8.1.3 Figure – 4th Quarter Earnings by Fiscal Year



Four quarters after program exit in both years, the middle 50% of participant earnings increased from their second-quarter levels. The shape of the boxplots did not change, suggesting that increases occurred throughout the distribution.

This can also be shown by comparing values: in the fourth quarter after exit in FY 14-15, the 25th percentile of earnings rose by +$597 to $6,388; the median increased by +$714 to $10,797;

and the 75th percentile by +$867 to $18,525. This suggests participant earnings rose from the second to fourth quarters after exiting a DAS program.

Similarly from the second to fourth quarter after exit in FY 15-16, the 25th percentile of participant earnings increased by +$613 to $8,168; the median, by +$1,004 to $13,629; and the 75th percentile by +$892 to $21,537. Once again, earnings in the lower portion of the distribution among both years' cohorts were more clustered and those in the upper portion, more spread out.

Highest and lowest earnings values appeared similar, in both years' data, to the analogous values from the second quarter after exit.

13.9 Program Performance

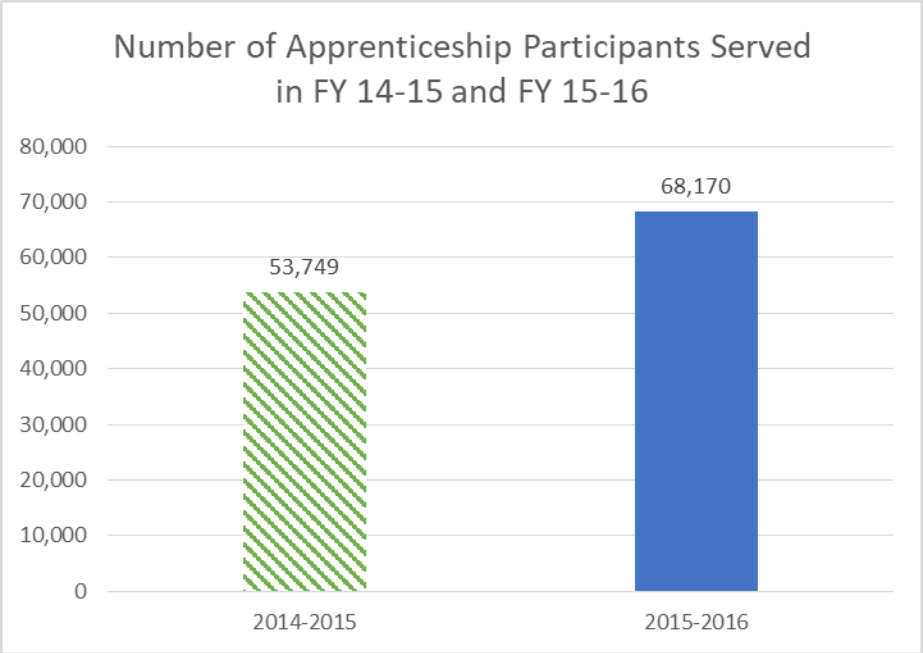
13.9.1 Program Performance

13.9.1.1 Table Set – Program Performance

FY 2014-2015											
Program	# Served	# Exited	# Completed Training	2 Quarters After Exit			4 Quarters After Exit				
				# Employed	# Employed	Median Earnings	# Attained Credential	% Attained Credential	# Employed	% Employed	Median Earnings
State Certified Apprenticeship	53,749	13,458	2,980	9,633	71.58	$10,083	2,977	22.12	9,556	71.01	$10,797

FY 2015-2016											
Program	# Served	# Exited	# Completed Training	2 Quarters After Exit			4 Quarters After Exit				
				# Employed	% Employed	Median Earnings	# Attained Credential	% Attained Credential	# Employed	% Employed	Median Earnings
State Certified Apprenticeship	68,170	22,843	7,329	17,222	75.39	$12,625	7,276	31.85	17,100	74.86	$13,629

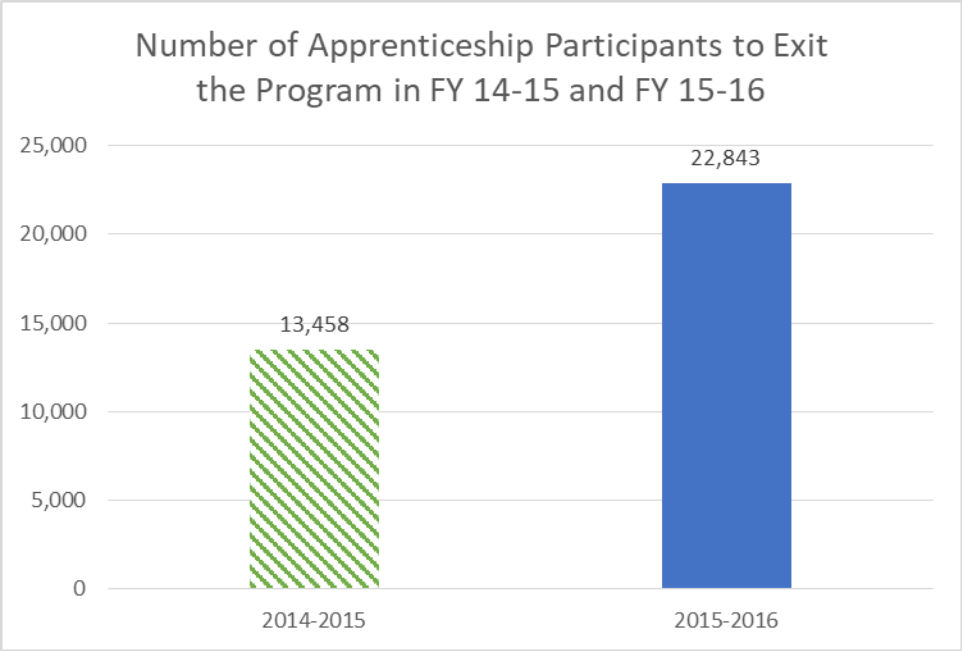
13.9.1.2 Figure – Program Participation in FY 14-15 and FY 15-16



The number of participants in DAS programs was larger in FY 15-16 compared with the number of participants in FY 14-15. There were 53,749 participants in DAS apprenticeship in FY 14-15, and 68,170 in FY 15-16, a positive difference of + 14,421 or 26.8%.

DAS continues to approve new programs, in both established and nontraditional areas (subject to regional labor market demand considerations). The increase in enrolled participants from FY 14-15 could be due to approval of programs in new areas. At the same time, the increase might also be connected to expanded enrollment in established programs in building trades supported by overall improvement in the economy and in the construction sector specifically, during continued recovery from the 2008-2009 economic downturn.

13.9.1.3 Figure – Program Exit in FY 14-15 and FY 15-16

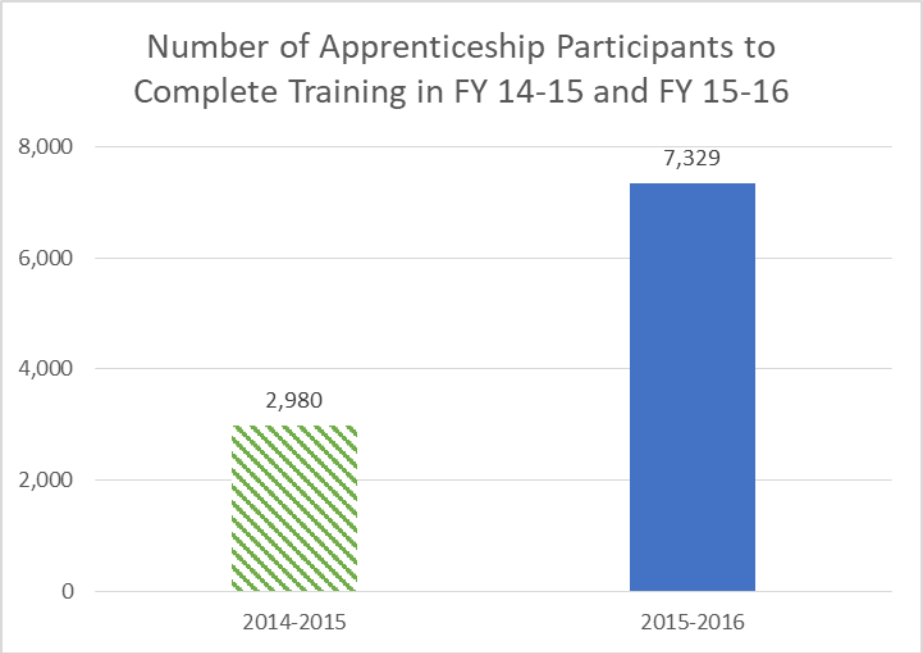


The number of individuals to exit from DAS programs was also larger in FY 15-16 compared with FY 14-15: 13,458 individuals in FY 14-15 and 22,843 in FY 15-16. This was a much larger positive difference compared with the difference in number of participants, of 69.7% (+9,385 individuals).

It is possible that some part of this positive difference in number of exits was directly due to the same dynamic—improved employment prospects in the construction sector—as the positive difference in number of participants. Despite the fact that an overwhelming number of exits in both years were not associated with program completion, it is still possible for apprentices to/that apprentices may be induced to exit early if they find employment based on increased demand.

If true, this suggests that the much smaller positive increase in enrollments may have more to do with an expansion of programs in new occupational fields than increased enrollments in existing programs in traditional areas.

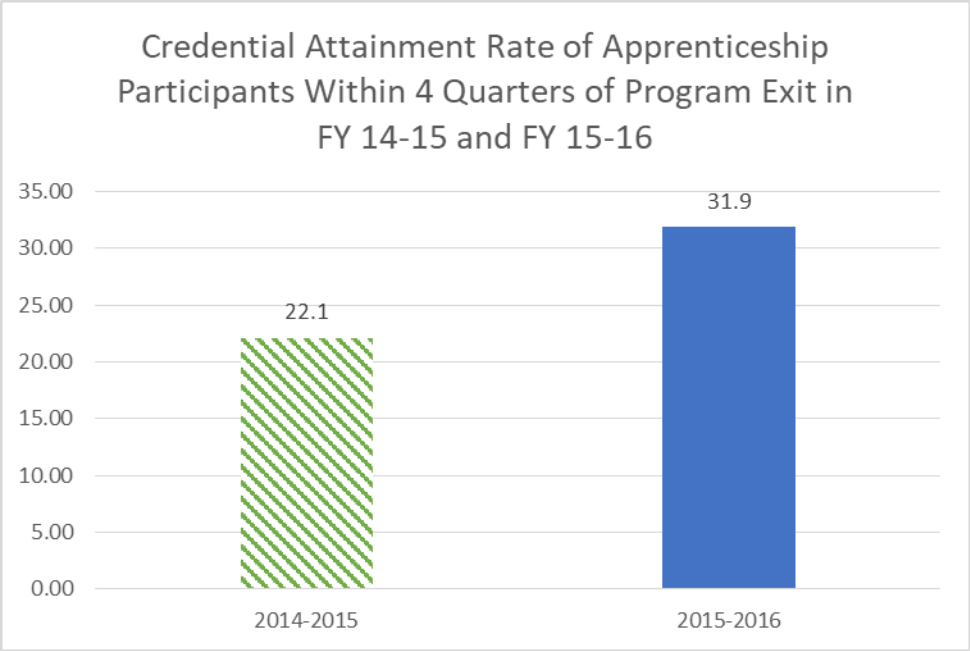
13.9.1.4 Figure – Training Completion in FY 14-15 and FY 15-16



The magnitude of the positive difference in completions from FY 14-15 to FY 15-16 was much larger than the magnitude of difference in either enrollments or in exits: there were 7,329 completions in FY 15-16, a nearly 150% increase over the 2,980 completions that occurred in FY 15-16.

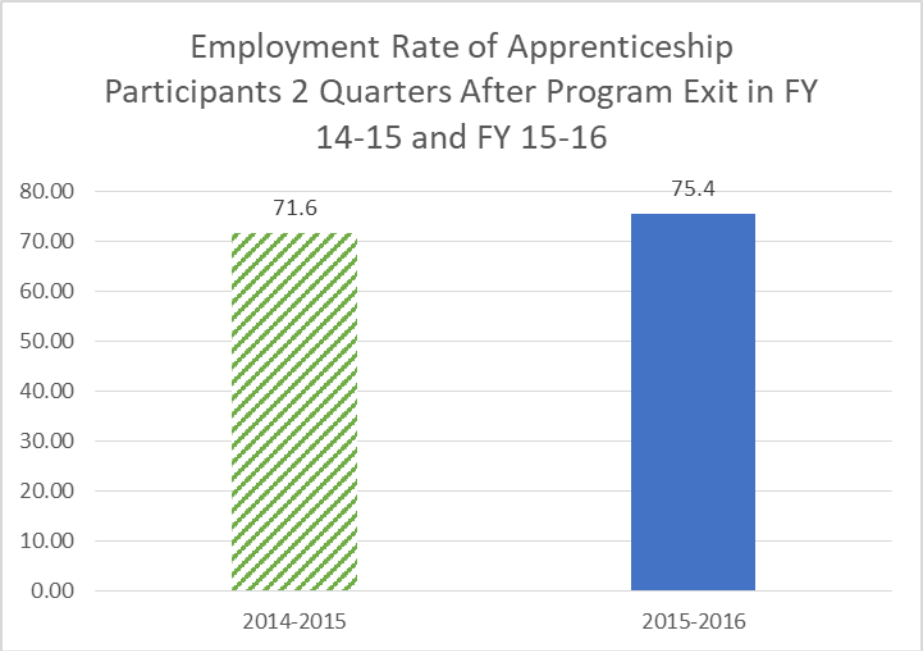
Given that apprenticeship is based on cohorts, it is also possible (particularly since only two years of program data is shown) that FY 15-16 was a completion year for cohorts in a larger number of programs compared with FY 14-15.

13.9.1.5 Figure – Credential Attainment Rate in FY 14-15 and FY 15-16



The rate of credential attainment was greater for participants to exit in FY 15-16 compared with participants who exited in FY 14-15, an outcome that is consistent with the greater number of completions in the second year. Among FY 14-15 participants, 22.1% of all to exit earned a completion credential within four quarters of exit. Among those to exit in the following year, the rate of credential attainment was 31.9%.

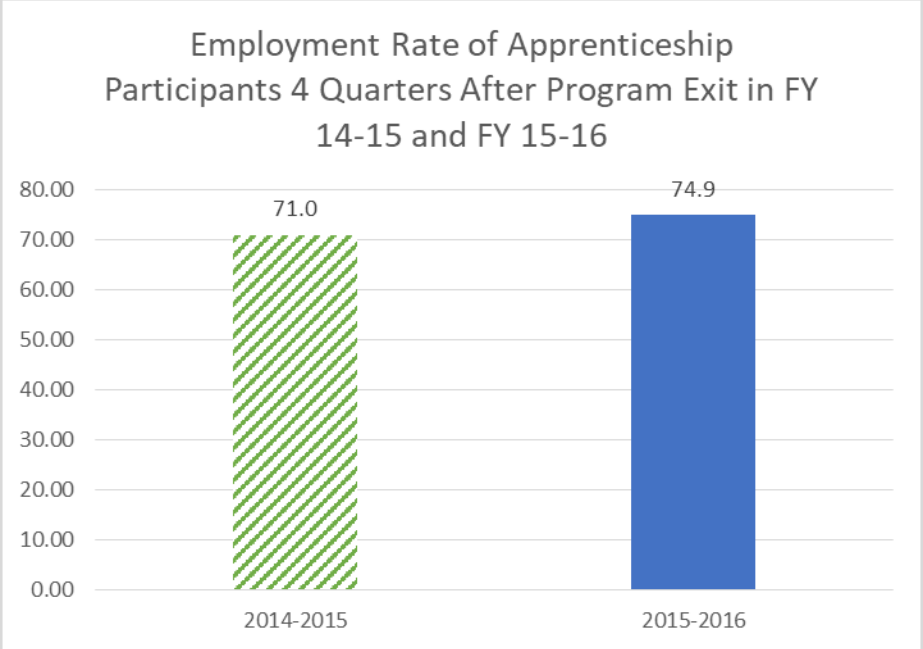
13.9.1.6 Figure – 2nd Quarter Employment Rate in FY 14-15 and FY 15-16



The employment rate among DAS participants exiting in FY 15-16 was 75.4%, compared with 71.9% among participants to exit in FY 14-15.

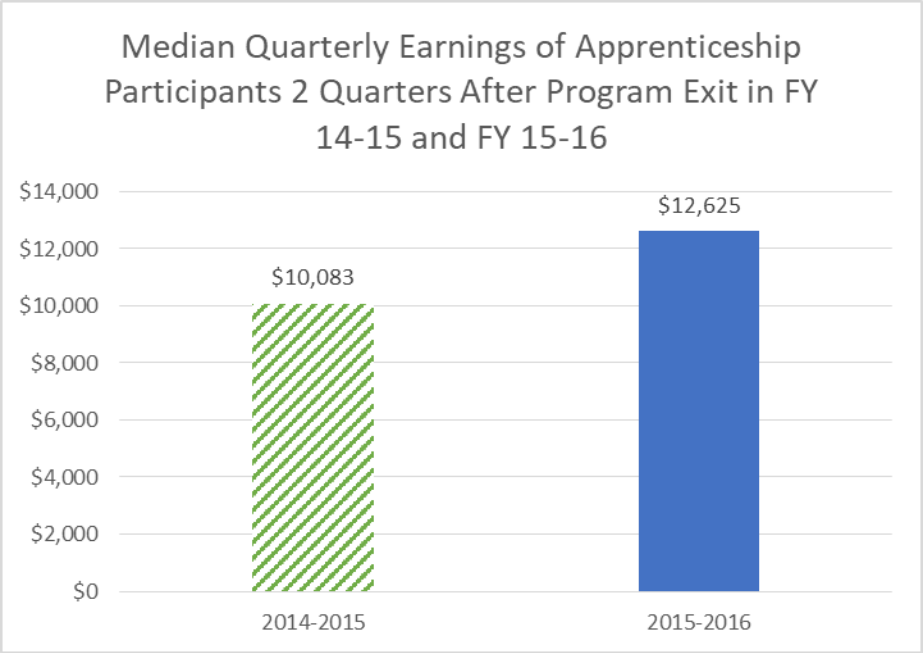
This positive difference in employment rate may be linked in part to continued recovery in the construction sector.

13.9.1.7 Figure – 4th Quarter Employment Rate in FY 14-15 and FY 15-16



Among both participant cohorts, employment rates dropped slightly from the second to the fourth quarter after exit: to 71.0% (FY 14-15) and 74.9% (FY 15-16). The rate among participants who exited in FY 15-16 remained higher (+3.9 percentage points) than the same rate among DAS participants to exit in FY 14-15.

13.9.1.8 Figure – 2nd Quarter Median Earnings in FY 14-15 and FY 15-16

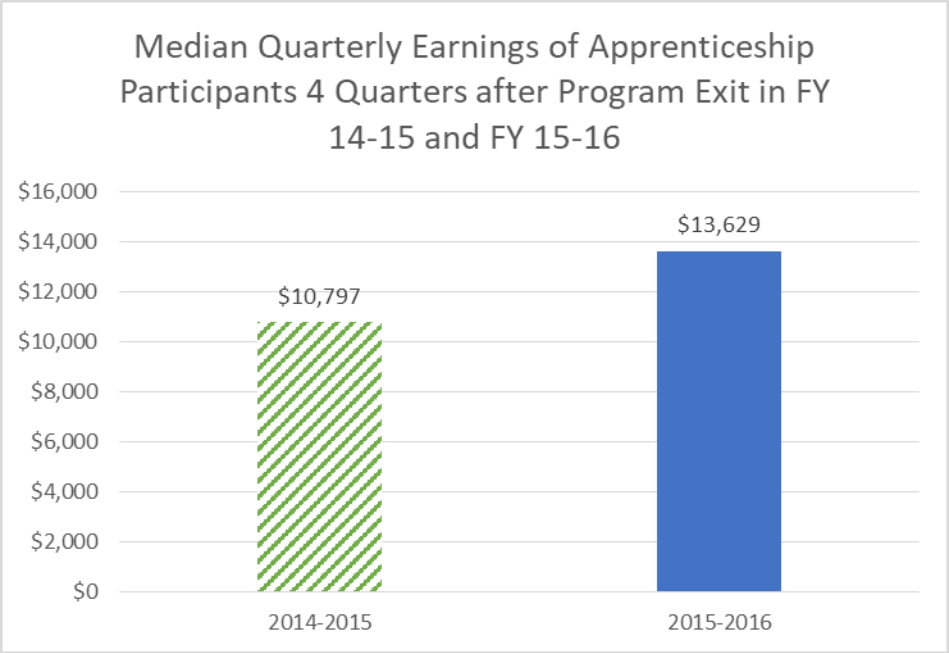


Second-quarter earnings [46] were higher among DAS participants who exited in FY 15-16 at $12,625, or +$ 2,542 higher than second-quarter earnings among participants to exit in FY 1-15 ($10,083).

[46] There is a discrepancy between second quarter earnings data presented in this report for participants exiting in FY 2014-2015 and the figures reported in last year's report which covered PY 2014-2015, which is likely to be in large part the result of measurement differences between this year's report and the previous year's. DIR-DAS participant outcomes presented in the first annual report were only reported for participants who had completed their apprenticeship program. V.2 outcomes include all participants who exited within the relevant fiscal year, including those who failed to complete or withdrew from the program for any reason. Those who exit without completing are unlikely to see full benefits of a training program. The appropriate earnings data for comparison with the first annual report can be found in Table Set 13.5.1.1, Training Completion Status. This table shows median 2nd-quarter post-exit earnings for those who completed training (averaged across all program participants) at $21,921 among participants exiting in FY 14-15 and $21,498 among those who exited in FY 15-16. These earnings levels, which are close to figures seen in the V.1. report, suggest that the lower median earnings seen in this report are an effect of this change in reporting. It is worth noting that the V.1 report also adhered to a different periodization of reporting: in that report, program years refer to the period during which the labor market outcomes in question were achieved, not the year program participation / exit occurred. (i.e. If the participant exited in PY 12/13, their labor market outcomes are reported in PY 13/14.). In the present report, the fiscal years reported relate to the year program participation / exit occurred. The labor market outcomes

This may be linked with inflation and/or the continued economic expansion.

13.9.1.9 Figure – 4th Quarter Median Earnings in FY 14-15 and FY 15-16



Fourth-quarter earnings of DAS participants were also higher among DAS participants who had exited in FY 15-16 compared with those who had exited in FY 14-15, with participants to exit in FY 15-16 earning $13,629, +$2,832 higher than median earnings of those to exit in FY 14-15 ($10,797).

associated with program participation may occur in the same fiscal year or the following fiscal year. (i.e. If a participant exited 7/3/14, their outcomes are reported on the FY 14/15 table. However, the participant's 2Q outcomes were achieved in FY 14/15 and their 4Q outcomes were achieved in FY 15/16.). This difference in reporting convention means that outcomes reported in V.1 occurred within the noted program years 2013-14 (10/1/12 – 9/30/13) and 2014-15 (10/1/13 – 9/30/14), while V.2 outcomes occurred 2 and 4 quarters following participant exit at any point during the noted fiscal year (FY 14-15 or FY 15-16), meaning that actual earnings and credential attainment outcomes occurred during a period ranging from the end of December, 2014 to the end of June, 2017.