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Labor market results of workforce education students

Understanding labor market outcomes for degrees and certificates is an important issue for students seeking workforce training and for colleges designing programs along career paths. The State Board for Community and Technical Colleges (SBCTC) has been measuring student employment and earnings for workforce education graduates and leavers since 1996.

We describe earnings for 90,000 community and technical college students leaving training between 2009 and 2013. Two-thirds of the students are graduates who were awarded degrees or certificates. The others left college without any award and less than 10 credits earned. Earnings are captured in three different time periods. First, earnings are measured in the 3rd quarter after college (six to nine months after exit). Second, the pre to post change in their earnings from the 3rd quarter before enrollment in their last college to the 3rd quarter after exit are captured. Finally, the longer term earnings trajectories (21 quarters or about 5 years post college) are measured in this report as well.

Outcomes of 190 workforce programs are included. Based upon the hourly wage earnings for graduates, we have divided the programs into top, middle, and bottom tiers.

Workforce programs serve students from a wide variety of backgrounds. Throughout the report we analyze outcomes for students disaggregating by race/ethnicity, gender, socio-economic status and prior education.

Our overarching questions for this paper are:

1. What are the program selection and completion outcomes for students?
2. What are the near-term earnings for graduates and non-graduates who leave with little to no college credits earned?
3. What are the longer term earnings and the projection of earnings growth for students with no prior college attainment (high school only)?

Finally, we discuss the implications for how workforce education is increasing educational attainment.

Summary of key findings

- **Program selection and the level of training completed have significant influence on employment results and earnings.**
 - Two-thirds of students were employed in the 3rd quarter following training, including 76 percent who earned a degree¹, 72 percent of those earning a long-term certificate, and 67 percent of those earning a short certificate. Fifty-six percent of those exiting with no award were employed.
 - For students in programs in the bottom wage tier, 28 percent earned a short-term certificate as their highest award. Twenty-two percent graduated with a degree. Forty-four percent left with no award (and typically had

¹ Note: See Appendix A for a definition of degrees, long-term and short-term certificates.

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- the lowest post training earnings). In comparison, 62 percent of students in top wage tier programs earned a degree; 10 percent earned a short-term certificate and 18 percent left with no award.
 - Students who earned degrees in top wage tier programs earned \$12,500 in the 3rd quarter after training. In comparison degree graduates from middle and bottom wage tier programs earned \$6,900 and \$5,400 respectively.
 - Students earning short-term certificates in a top wage tier program earned \$11,200 in the 3rd quarter. Students exiting bottom wage tier programs with short certificate's earned \$4,000.
- **Level of prior education appears to be a significant influence on program selection and award level.**
 - Nearly 11,200 students already had bachelor's degrees when they returned to college for workforce education. Another 6,200 had prior associate degrees. The largest group, 39,700 students, had high school diplomas. Students with previous degrees were 3 to 4 times as likely to enroll in top wage tier training as students with high school only.
 - Forty-seven percent of students who had a prior associate degree subsequently earned another associate degree. In comparison, 32 percent of students who started with high school only earned a degree.
 - Thirty-one percent of Asian students had a prior associate or bachelor's degree before training. This compared to 10 percent of African American and 11 percent of Hispanic students.
 - African American, Native American and Hispanic students were about half as likely as white and Asian students to participate in a top wage tier program.
 - Students in the highest SES quintile were more than three times as likely to have prior degrees (34 percent had a prior associate or bachelor's degree) compared to students in the lowest SES quintile (10 percent).
 - Students from the highest SES quintile are more than three times as likely to participate in higher wage program fields compared to students in the lowest SES quintile.
- **Degrees have the biggest lasting effect on earnings for students who start college with high school education or less. Degrees also produce a greater share of future earnings from increased wages as opposed to working more hours and less wage growth.**
 - If a student started training with high school only, the difference five years after college in quarterly earnings between earning a degree and leaving with no award was \$4,500. In comparison, a student starting with high school only and who left with a short certificate earned \$400 per quarter more than a student with the same prior education who left after no award.
 - For students earning degrees, 80 percent of the increase in their earnings was from wage growth and 20 percent was due to working longer hours. However, this shifts for students who only earned short-term certificates to 64 percent due to wage growth and 36 percent from working longer hours.
- **Most students who were awarded short-term certificates along with degrees are in the top wage tier fields, even though the majority of students who earn short-term certificates and seemingly could benefit from a stackable pathway are in bottom wage tier programs. However, we found that few students are stacking short-term certificates all the way to a degree in any program.**
 - Between 2008-09 and 2012-13, colleges awarded some 24,000 students short-term certificates as their highest attainment. Nearly half were awarded in the bottom wage tier programs. One in ten was awarded in top wage tier programs. This compares to a nearly opposite distribution for degrees. Forty percent of degrees are awarded in top wage tier programs (with much of the weighting driven by students who have bachelor's degrees). Eleven percent is in bottom wage tier programs.
 - About one in every six (16 percent) students who exited with a workforce degree had earned at least one short-term certificate, suggesting there are stackable pathways open to these students. Forty-five percent of students who stacked short-term certificates along the way to a degree were in programs in the top third wage tier. Just 18 percent were from the bottom third wage tier.
 - The majority of students earned short-term certificate(s) without stopping out of college and in the year directly leading to the degree. These certificates seemed to be milestones marking their progress to their degree. Just 4 percent stopped out for 1-2 years and then returned to earn a degree.

Discussion

The findings in this report reinforce the importance of community and technical colleges' workforce programs for students from varied backgrounds and at different stages in their career development.

About half (some 44,000) the students in the group had at least some college prior to starting training. Over one-third of this group (17,400) had a prior associate or bachelor's degree. Many focused on career fields in the top tier of earnings and many earned degrees. For example, about one-third of students graduating as dental hygienists had a prior associate degree. Another, 15 percent had their bachelor's degree.

In computer fields, students with prior bachelor's degrees returned to earn associate degrees and certificates in networking, programming, digital media, and other computer fields. In data warehouse and database administration over half of the students had a prior bachelor's degree. The preponderance of awards was certificates for these students.

The accomplishments of these students illustrates the important role community and technical colleges have in supporting lifelong learning and assuring Washingtonians have current skills, or in other cases can embark in new directions. However, the findings also suggest that the propensity to return for further education is most evident among students that already have reached a significant level of college success as shown by the high percentage that already had a two or four-year college degree.

The most diverse students typically participate in workforce education as first-time college students. They are much more heavily concentrated in lower wage programs and more likely to leave with a short-term certificate or no award at all.

The largest short-term certificate program is nursing assistant. This award is terminal, i.e. is not on any degree path. Other short-term certificates are awarded in fields that also offer degrees. The cumulative evidence in this paper suggests that these short-term certificates may only moderately encourage students to stack toward degrees although their exact influence is unclear without further study. Finally, the outcomes for students who leave college with a short-term certificate as their highest attainment and subsequently return later for further education suggests it is difficult to re-join a pathway, and happens infrequently at best.

Implicit from all of the findings is the need to put first-time students (in particular those from under-represented race/ethnic groups and low SES backgrounds) on a stronger path to higher earnings. This can be done by broadening their awareness of the occupational and earnings outcomes for workforce programs, encouraging more participation in middle and top tier wage programs and by focusing on degree completion for all training. Furthermore, to truly reach higher wages, more bottom and middle tier wage paths that are popular with many first-time students may need to be extended to bachelor's degrees as is currently possible in early childhood education.

Colleges also need to re-think the purpose and underlying notions of short-term certificates in ways that make it more likely first-time students will stack them to degrees. This is a particular void in nursing assistant certificates and suggests that if they are re-designed to connect to further education that they need to include curricula from those fields to also expose students to subject matter, information and credits that count for those degrees.

Finally, we need to consider policies around college math and English. Neither is typically required in certificates less than 45 college credits and we should re-think this for ways to early-on integrate instruction into them, with the notion that these initial skills are not only about preparing the student for immediate employment, but also are building toward further education inherent in a degree.

Acknowledgements

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Completion status for students leaving training 2009-2013

This section presents two tables to describe and compare the characteristics from five exiting cohorts of 91,152² students who left college between 2008-09 and 2012-13 after participating in workforce education. Students are categorized by the highest workforce award earned (degree, long-term certificate, or short-term certificate) in the year they exited. For comparison, students who exited early (earning less than 10 credits earned, no award) are also included. Overall two-thirds (66 percent) exited workforce education and training with an award.

Thirty-five percent of the students exited with a workforce degree as their highest award. Nine percent exited with a long certificate for programs of at least 45 college credits and 21 percent exited with a short certificate (44 or less credits) as their highest attainment. Disaggregating by race and ethnicity, black/African American, Native American and Hispanic students had the highest percentages of students who left early compared to Asian/Pacific Islander and white students. Black/African American students also had the lowest proportion earning degrees.

Depending upon their levels of educational attainment before starting their program, workforce education helps students to raise their attainment and possibly to start on new paths. The largest share of these students (39,700) had twelve years of education (high school or the equivalent) when they started in college. Thirty-two percent of this group exited college with a two-year workforce degree. Nine percent earned a long certificate. Twenty-one percent earned a short certificate. Thirty-eight percent left with no award.

Of the 6,189 students who had associate degrees prior to starting their program, 47 percent exited with a workforce degree. Eleven percent earned a long certificate and 21 percent earned a short certificate. Only 20 percent exited without any award.

Overall, students from the lowest SES quintile had a slightly higher likelihood than students in the highest quintile of exiting with no award (39 percent compared to 34 percent). The difference is primarily due to the higher short certificate attainment of students in the highest SES (36 percent compared to 32 percent).

We have arranged 190 workforce programs into three tiers based, for this report, on median hourly wage of all award graduates.

- The top tier has a median hourly wage of \$17.56 or higher. The largest program is registered nursing. The highest hourly wage is \$41.61/hour, for dental hygienist.
- The middle tier hourly wages are between \$14.00 and \$17.55. The largest program by graduates is airframe mechanic. The highest hourly wage is \$17.52, for electric/electrical engineering tech.
- The bottom tier's wages are less than \$14.00/hour. The largest program by graduates is nursing assistant certified. The highest hourly wage is \$13.89 for crop production. (See Appendix for the complete listing with median hourly wage and median earnings).

Degree attainment as a share was largest (62 percent) in programs in the top wage tier. This declines to 22 percent in programs in the bottom tier. Conversely, certificates were a greater share of the bottom tier programs at 28 percent, but made up only 10 percent of the top tier. The change in share of students exiting with no award was most striking, as it went from 44 percent in bottom wage tier programs to just 18 percent in top tier programs.

² Only students who reported their prior education are included. Over half the students reported (49,000) as other, unknown, or left blank are excluded. An analysis of these student shows they are 3% more males, 3% more under-represented racially and ethnically, and on average about a year older. Their median earnings were comparable to those with reported education except for early leavers with median 3rd quarterly after training earnings \$200 (4%) higher than early leavers with prior education reported.

Table I

Completion Status for Students Leaving College 2008-09 to 2011-13					
Category	Total	Degree	Long-term Certificate	Short-term Certificate	Exit, No Credential, Earned Less than 10 Credits
N	91,152	35%	9%	21%	34%
Female	51,981	36%	11%	21%	32%
Male	38,819	34%	7%	23%	37%
Total Reporting Gender	90,800	35%	9%	21%	34%
Black/African American	6,993	19%	10%	25%	46%
Asian/Pacific Islander	7,603	32%	13%	28%	27%
Native American	2,603	28%	6%	19%	47%
Hispanic (any race)	7,233	28%	8%	26%	38%
Other	1,299	34%	11%	21%	34%
White	63,168	39%	9%	20%	33%
Total Reporting Race Alone or in Combination	88,899	35%	9%	21%	34%
Bachelor's Degree or Above	11,196	30%	11%	25%	34%
Associate Degree	6,189	47%	11%	21%	20%
Certificate (Less Than Two Years)	5,710	37%	10%	24%	29%
Some Post High School, No Degree or Certificate	21,236	41%	9%	18%	32%
High School or Equivalent	39,700	32%	9%	21%	38%
Less than High School Graduation	7,121	30%	9%	26%	34%
Total Reporting Prior Education	91,152	35%	9%	21%	34%
Highest SES Quintile	10,402	20%	9%	36%	34%
Lowest SES Quintile	14,799	20%	9%	32%	39%
Total Reporting SES	69,775	20%	9%	36%	35%
Total	91,152	35%	9%	21%	34%
Top Wage Tier	22,523	62%	10%	10%	18%
Middle Wage Tier	41,135	29%	11%	23%	36%
Bottom Wage Tier	27,494	22%	6%	28%	44%

Table 2 on the next page compares the likelihood of completing top versus bottom tier programs by demographic breakdown. A ratio of 1.0 indicates that students who exited workforce programs between 2008-09 and 2011-13 are equally likely to have left from a program in top wage tier versus a bottom wage tier. A ratio less than 1.0 means more of the exits for the given characteristic were from bottom versus top tier wage programs. A ratio greater than 1.0 means these students were more likely to exit programs from top wage tier programs.

This table shows:

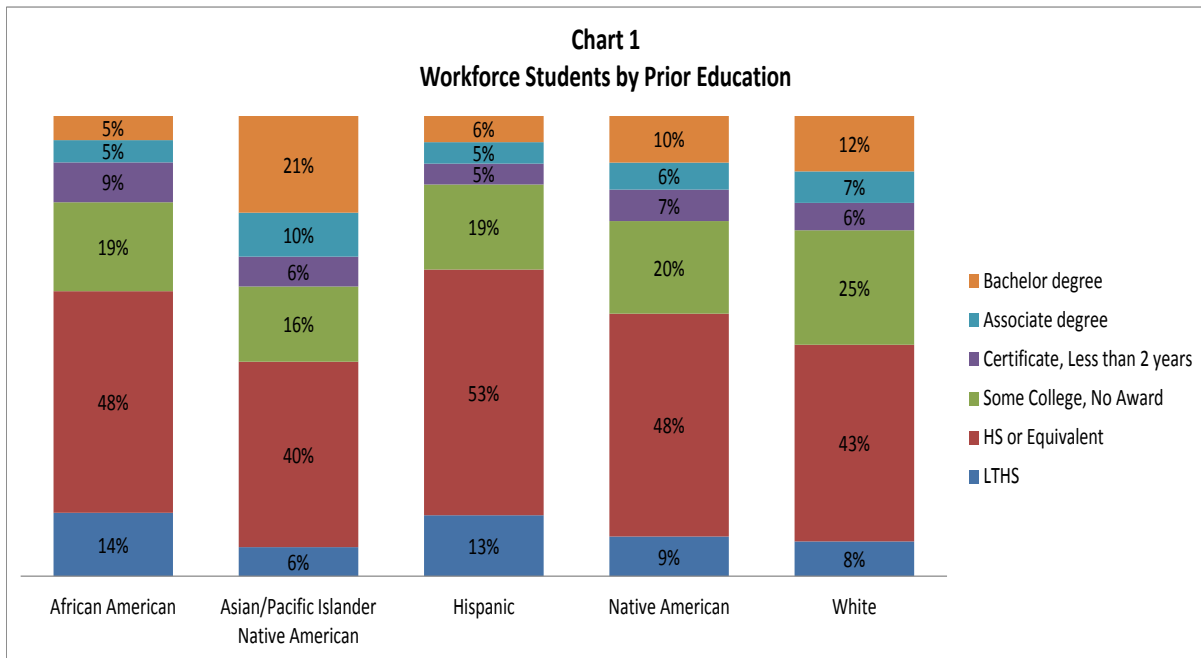
- The majority of students, regardless of demographics, are more likely to complete programs in the lower wage tier than the upper wage tier.
- Females exited from programs substantially more likely to be in the bottom wage tier than males.

- Black/African American, Native American and Hispanic students were more likely to complete bottom wage tier programs.
- Asian/Pacific Islander and white students had near equal likelihood of students exiting from the top versus the bottom tier wage programs.
- Students starting with higher educational attainment (for example, already had a bachelor’s degree) are more likely than students starting from lower attainment (for example, started with 12 years of education or less) to have been in top wage tier programs.
- Students in the highest SES quintile are substantially more likely than students in the lowest quintile to have been in top wage tier programs.
- Students exit higher wage tier programs with higher awards (more degrees than short-term certificates) than bottom tier programs.

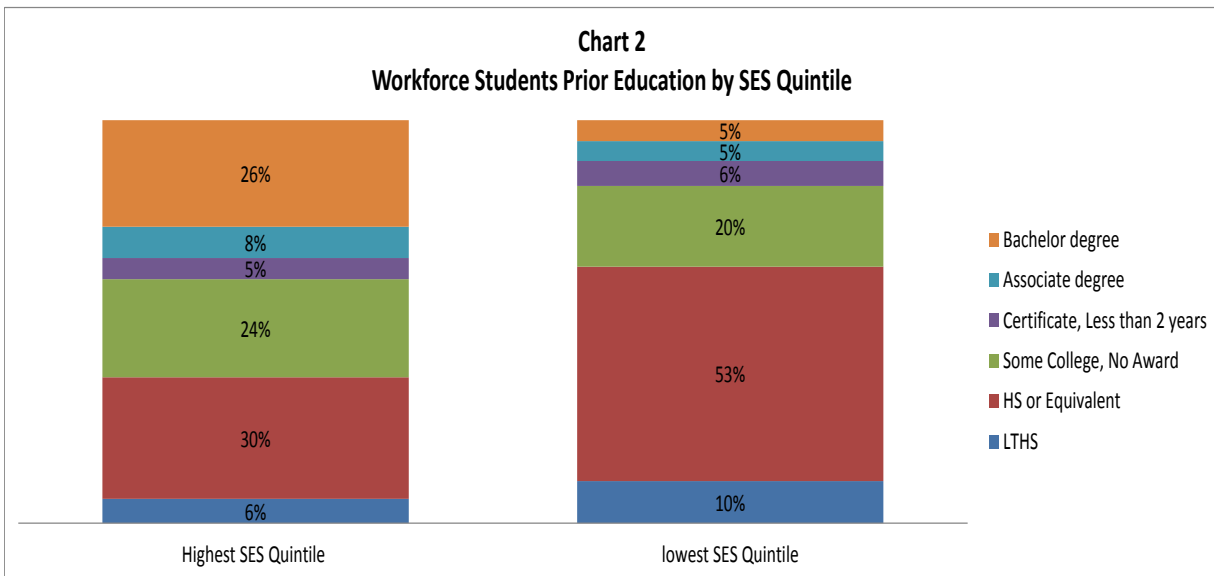
Table 2

Ratio for: % Top Tier Hourly Wage/ % Bottom Tier Hourly Wage			
	All	Female	Male
All	0.74	0.59	1.03
Black/African American			
Black/African American	0.41	0.30	0.62
Asian/Pacific Islander			
Asian/Pacific Islander	0.92	0.84	1.06
Alaskan/Native American			
Alaskan/Native American	0.37	0.31	0.49
Hispanic (any race)			
Hispanic (any race)	0.42	0.32	0.61
Other			
Other	0.78	0.64	1.06
White			
White	0.81	0.64	1.17
total Reporting Race	0.72	0.57	1.01
Less than HS			
Less than HS	0.40	0.71	1.12
HS or GED			
HS or GED	0.50	0.36	0.67
Some College , No degree			
Some College , No degree	1.10	0.89	1.96
Certificate			
Certificate	1.10	0.51	0.58
Associate degree			
Associate degree	1.92	0.88	1.63
Bachelor’s degree or higher			
Bachelor’s degree or higher	1.67	1.62	2.82
Highest SES Quintile			
Highest SES Quintile	1.07	0.96	2.63
Lowest SES Quintile			
Lowest SES Quintile	0.48	0.36	0.76
Total Reporting SES	0.76	0.60	1.06
Degree			
Degree	2.30	2.41	2.09
Long-term Certificate			
Long-term Certificate	1.47	1.21	2.15
Short-term Certificate			
Short-term Certificate	0.29	0.13	0.69
Early Leaver, Less than 10 Cr			
Early Leaver, Less than 10 Cr	0.43	0.28	0.73

The next two charts crosstab student race and ethnicity and socioeconomic status by prior education to start training. Asian students have the highest percentage of students enrolling with at least some college, including 21% that already have a bachelor’s degree and another 10 percent that have a prior associate degree. African American and Hispanic students have less prior post-secondary attainment than other students and substantially greater percentage of these students arrive with less than high school.



Students from the highest socioeconomic quintile are substantially more likely than students from the lowest quintile to have prior college experience and attainment at the start of their training.



Labor market results for workforce awards

Post-training (3rd Quarter after College) earnings

Since 1996, SBCTC has measured employment outcomes for all award-seeking students who exit workforce programs. SBCTC has access to large exiting cohorts in which they can study student enrollment patterns. An exit is defined as not enrolling in a college any time in the following year; therefore, reported results have a one-year lag. Students are classified as “prepared for work” if they: received an award. An award is a degree, long-term certificate (45 or more credits), or short-term certificate (less than 45 credits), completes an individualized plan or accumulates at least 45 vocational credits (without earning a certificate). A student is classified as an early leaver if he/she exits college with no

award or earns less than 10 college credits. This study only analyzes students who earned awards, and comparisons are made to early leavers. The third quarter after exit was chosen as the employment and earnings measure after an analysis of earnings and hours worked adequately represented that the student had enough time to transition to work.

The five-years of exiting cohorts included 91,000 students. Nearly sixty-one thousand (60,938) students had wage-recorded earnings in the 3rd quarter after college, providing an employment match rate of 67 percent. Students exiting with degrees and long-term certificates were the most likely to be employed (72-76 percent). Sixty-seven (67) percent of students earning short-term certificates were employed. The rate for early leavers was the least likely to be employed (56 percent). Employment rates were highest for students leaving top wage tier programs.

Table 3

Category	Total	Total Employed 3 rd Qtr After	% Employed 3 rd Qtr After
N	91,152	60,938	67%
Female	51,981	34,776	67%
Male	38,819	25,951	67%
Total Reporting Gender			
Black/African American	6,993	4,171	60%
Asian/Pacific Islander	7,603	5,306	70%
Native American	2,603	1,499	58%
Hispanic (any race)	7,233	5,006	69%
Other	1,299	835	64%
White	63,168	42,650	68%
Associate Degree	32,158	24,478	76%
Long-term Certificate	8,477	6,088	72%
Short-term Certificate	19,518	13,165	67%
Early leaver, No Award	30,999	17,207	56%
Highest SES Quintile	10,402	7,123	68%
Lowest SES Quintile	14,799	9,537	64%
Total Reporting SES			
Top Wage Tier	22,523	16,378	73%
Middle Wage Tier	41,135	26,876	65%
Bottom Wage Tier	27,494	17,684	64%

Throughout this report all earnings are provided in rounded, 2014 inflation adjusted dollars.

Table 4 shows graduates' earnings in the third quarter after training. Earnings are displayed by the students' highest award received and their pre-training education level. Overall the table shows a direct relationship between student's prior education level, most recent award (or no award) and post-training earnings.

Table 4

Before Training Education Level

Highest Workforce Award	Associate Degree or Higher	Cert/Some College-No Degree	Less than High School	Less than High School
Degree	\$10,800	\$9,300	\$7,500	\$7,400
Long-term Certificate	\$7,500	\$7,200	\$6,300	\$5,500
Short-term Certificate	\$7,900	\$6,600	\$5,800	\$5,200
Early Leaver, Less than 10 Credits	\$8,900	\$5,900	\$4,700	\$3,800

Table 5 (below) presents students' earnings in the third quarter, with results divided into the three program tiers based upon the hourly wages of graduates. The type of award had a direct impact on earnings for programs in the bottom wage tier. Students graduating from these programs with degrees earned \$5,400 for the quarter. Earnings increased as students earned longer awards. The middle tier followed a similar pattern, except that students exiting with short-term certificates had the highest earnings. This was due to students earning short certificates such as airframe mechanics, just below our cut-off for top tier programs. The pattern is strong also in top tier programs, except that again students leaving with short-term certificates earn more than students who earned long-term certificates. In this case, the difference is due to the high percentage of students who have bachelor's degrees and enroll in short-term certificate programs perhaps to upgrade or add a specific skill set. Unsurprisingly, many of these short-term certificates were awarded in computer and technical fields.

Table 5

Highest Workforce Award	Tier for Program Based on Graduates' Hourly Wage in 3rd Quarter		
	Top Third	Middle Third	Bottom Third
Degree	\$12,500	\$6,900	\$5,400
Long-term Certificate	\$8,800	\$6,600	\$5,200
Short-term Certificate	\$11,200	\$7,200	\$4,800
Early Leaver, Less than 10 Credits	\$7,400	\$5,600	\$4,600

Table 2 previously showed that black/African American, Native American and Hispanic students were substantially more likely to participate in training programs in the bottom wage tier than other race/ethnic groups. Their ratios of highest to lowest wage tier training were also very similar to the ratios for students with lower prior education to start. Table 6 (below) provides earnings based on student demographics. It shows that these same groups have lower post program earnings. Overall, students in the lowest SES quintile have lower earnings than students in the highest SES quintile. Women have lower earnings than men, except for when both genders graduate with degrees. Table 2 also showed that degree graduates were the only level where women and men were about equally as likely to have participated in a higher wage program.

Table 6

Award	Gender		Race/Ethnicity Reported Alone or in Combination					Socioeconomic Status	
	Female	Male	Afr. American/ Black	Asian/ Pac Islander	Hispanic (Any Race)	Native American	White	Highest SES	Lowest SES
Degree	\$8,600	\$8,600	\$7,800	\$9,700	\$7,900	\$7,400	\$8,600	\$9,400	\$7,700
Long Certificate	\$6,500	\$7,400	\$6,500	\$6,800	\$6,400	\$6,100	\$6,700	\$6,700	\$6,300
Short Certificate	\$5,500	\$7,600	\$5,500	\$6,900	\$5,600	\$5,800	\$6,400	\$6,800	\$5,400
Early Leaver, No Award	\$4,900	\$5,800	\$4,800	\$6,100	\$4,800	\$5,000	\$5,300	\$6,200	\$4,600

Pre- and post-earnings comparisons

In the next section, the analyses focused on the changes between earnings in the 3rd quarter before training and earnings in the 3rd quarter after training. The results are again described based upon students' highest training award and their prior education; program wage tier and highest training award; and student characteristics.

Table 7 presents students' pre- and post-training earnings in 2014 adjusted dollars as well as the percent changed. Twenty-seven thousand (27,000) students in the five-year exit group had both pre- and post-earnings. Results are arranged by students' highest award and pre-training education levels. Percent changes were greatest for students earning degrees.

Students who already had degrees had higher pre-earnings than students with just some prior college education. Students with some college had higher pre-earnings than students with high school diploma or equivalent. Students with a high school level completion had higher pre-earnings than students with less. Students with higher pre-training earnings also have higher post-training earnings for the same award level, likely due in part to their prior education and work history.

Overall, higher awards produced larger percent and absolute changes in earnings for all students. Early leavers in general had the smallest changes in their earnings.

Table 7

Attainment at Start of Training	Post Training Award Type	Earnings in 3rd Quarter Before	Earnings in 3rd Quarter After	Change	% Change
Associate Degree or Higher	Degree	\$6,200	\$11,400	\$5,200	46%
Associate Degree or Higher	Long Certificate	\$6,800	\$8,100	\$1,300	16%
Associate Degree or Higher	Short Certificate	\$7,600	\$8,500	\$900	11%
Associate Degree or Higher	Early Leaver, Less than 10 Credits	\$9,400	\$9,900	\$500	5%
Cert/Some College-No degree	Degree	\$6,100	\$10,300	\$4,200	41%
Cert/Some College-No degree	Long Certificate	\$5,100	\$7,200	\$2,100	29%
Cert/Some College-No degree	Short Certificate	\$5,600	\$7,100	\$1,500	21%
Cert/Some College-No degree	Early Leaver, Less than 10 Credits	\$6,300	\$6,800	\$400	6%
High School or Equivalent	Degree	\$4,800	\$8,100	\$3,200	40%
High School or Equivalent	Long Certificate	\$4,100	\$6,400	\$2,300	36%
High School or Equivalent	Short Certificate	\$4,800	\$6,300	\$1,500	24%
High School or Equivalent	Early Leaver, Less than 10 Credits	\$4,500	\$5,200	\$700	13%
Less than High School	Degree	\$4,100	\$8,600	\$4,600	53%
Less than High School	Long Certificate	\$3,100	\$5,700	\$2,700	47%
Less than High School	Short Certificate	\$4,400	\$5,900	\$1,400	24%
Less than High School	Early Leaver, Less than 10 Credits	\$3,700	\$4,500	\$800	18%

Table 8 describes pre-post earnings and changes by program wage tier level and highest award. Changes in earnings were greatest for students who were awarded degrees (52 percent, or \$6,800 increase) in programs in the top tier of hourly wages. These changes were impressive as these students also had a larger pre-training earnings base.

Table 8

Tier for Program Based on Graduates' Hourly Wage in 3 rd Quarter	Highest Training Award	Earnings 3 rd Qtr Before	Earnings 3 rd Qtr After	Change in Earnings	% Change
Top Third	Degree	\$6,200	\$13,000	\$6,800	52%
Top Third	Long Certificate	\$6,200	\$9,500	\$3,300	35%
Top Third	Short Certificate	\$8,600	\$11,200	\$2,600	23%
Top Third	Early Leaver, Less than 10 Credits	\$7,500	\$8,600	\$1,100	13%
Middle Third	Degree	\$5,100	\$7,000	\$1,900	27%
Middle Third	Long Certificate	\$4,400	\$6,700	\$2,300	34%
Middle Third	Short Certificate	\$5,800	\$7,500	\$1,700	23%
Middle Third	Early Leaver, Less than 10 Credits	\$5,800	\$6,500	\$700	11%
Bottom Third	Degree	\$4,100	\$5,800	\$1,700	29%
Bottom Third	Long Certificate	\$4,400	\$5,400	\$1,000	19%
Bottom Third	Short Certificate	\$4,300	\$5,200	\$900	17%
Bottom Third	Early Leaver, Less than 10 Credits	\$4,700	\$5,100	\$400	8%

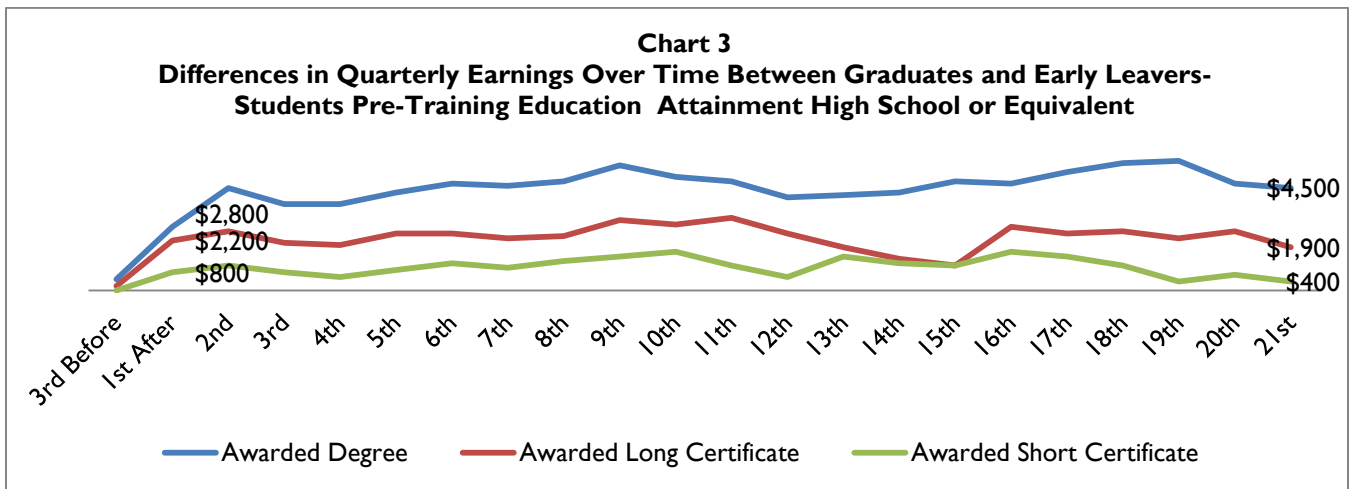
The final table in this section (Table 9) describes earnings changes based on student demographics. Absolute and percent changes were greatest for students who earn degrees. Females earned both greater absolute and percent changes from long-term certificates compared to short-term certificates. The absolute and percent changes from short-term and long-term certificates were about the same for males. Overall, students earning awards have higher absolute and percent changes compared to students leaving with no award.

Table 9

		Female	Male	African American/ Black	Asian/ Pacific Islander	Hispanic (any race)	Native American	White	High SES	Low SES
Awarded Degree	Pre-Post Change	\$4,600	\$3,100	\$2,400	\$5,200	\$3,800	\$3,700	\$4,000	\$4,800	\$4,100
	% Change	47%	32%	24%	48%	40%	42%	43%	45%	46%
Awarded Long Certificate	Pre-Post Change	\$2,000	\$1,900	\$2,100	\$3,100	\$2,500	\$900	\$2,000	\$1,800	\$2,100
	% Change	31%	24%	30%	63%	35%	14%	29%	26%	33%
Awarded Short Certificate	Pre-Post Change	\$1,000	\$2,000	\$1,100	\$2,000	\$1,200	\$800	\$1,600	\$1,300	\$1,200
	% Change	17%	24%	18%	26%	20%	13%	23%	17%	20%
No award, Early Leaver	Pre-Post Change	\$800	\$300	\$200	\$300	\$300	\$300	\$400	\$700	\$500
	% Change	12%	5%	4%	4%	6%	5%	6%	10%	9%

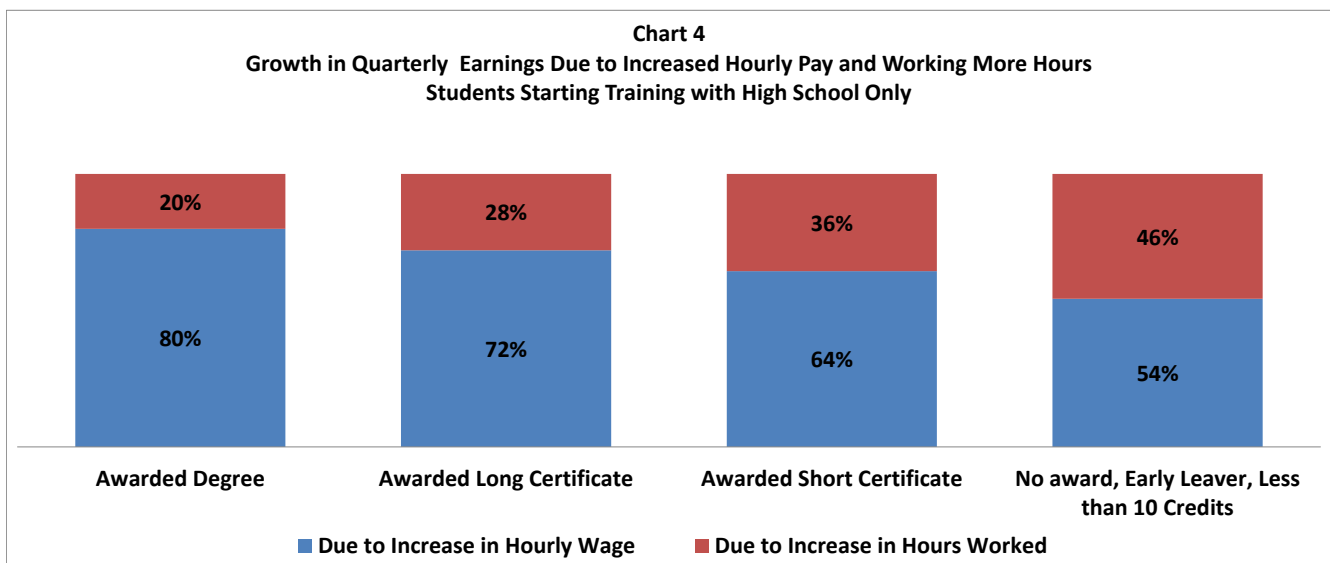
Earnings changes over time

Chart 3 presents differences in quarterly earnings over time between students who earned awards and students who left early. All of the students represented in the chart began training with only prior high school education. The earnings difference between graduates and early leavers were greatest for degree graduates. In the first quarter after training, the difference in earnings between these students and early leavers was \$2,800 per quarter (\$11,200 annualized). The difference in their earnings over time increased to \$4,500 per quarter (\$18,000 annualized). The earnings difference between students earning long-term certificates and early leavers started out at \$2,200. However, by the 21st quarter it declined to \$1,900. The earnings difference between students earning short-term certificates and early leavers was \$800 (\$3,200 annualized), but by the 21st quarter after training was just \$200 (\$800 annualized).



Growth in earnings due to increases in hourly wages and hours worked

Chart 4 describes the portion of increased earnings due to an increase in hourly wages and the portion due to an increase in hours worked. The chart shows the relative importance of wages and hours to the increase in earnings from the 3rd quarter after training to the 21st quarter. Students in the chart began training with only prior high school education.

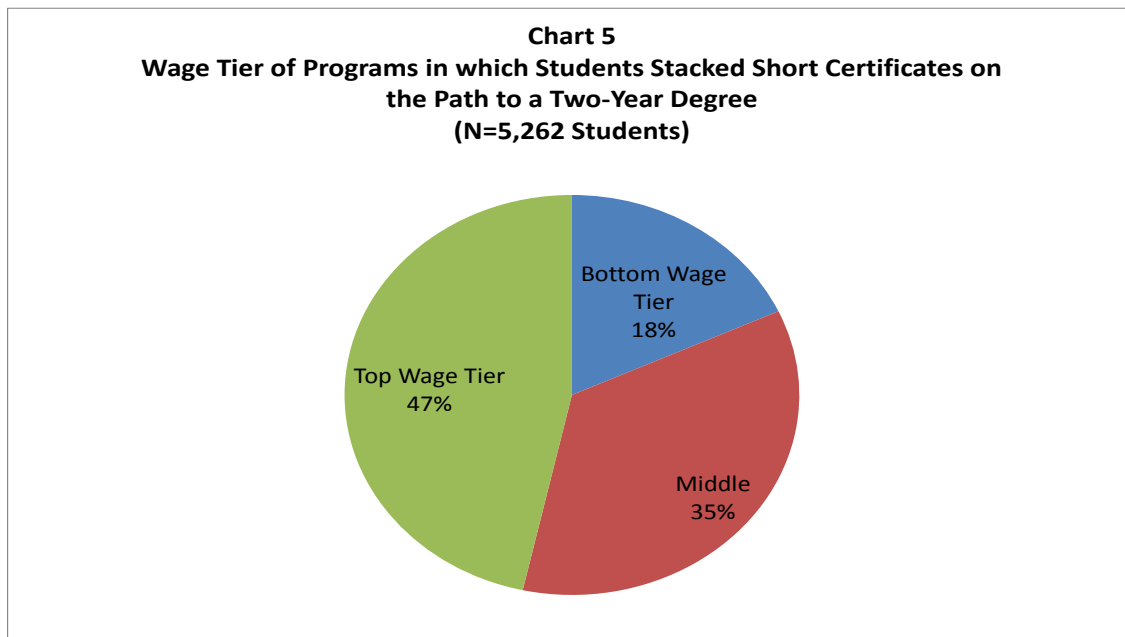


Short-term certificates as building blocks to degrees

Students who earn degrees have the highest earnings. Furthermore, as shown for students who start with high school, the earnings difference between students who earn awards and those who leave with no award is greatest for students who earn degrees. Finally, earnings growth over time that is due to increasing hourly wages rather than more hours worked is also greatest for students who earn degrees. All of this supports the notion that higher attainment and in particular degrees matter.

Awarding short-term certificates is a strategy to build higher student attainment by stacking credentials. Stacking is intended to help students who need immediate employment gain skills, exit into the workforce and return later to carry on their education where they left off. The certificates are to serve as building blocks that can be stacked on the pathway to a long certificate or degree. The notion that a short-term certificate contains credits countable and in at least part required by the degree is intrinsic to defining stacking.

From 2008-09 to 2012-13, colleges awarded short-term certificates to some 24,000 students as their highest attainment. Nearly half were awarded in bottom wage tier programs. Another 40 percent were in middle tier programs. One in ten was awarded in top wage tier programs. This compares to a nearly opposite distribution for degrees. Forty percent of degrees are awarded in top wage tier programs (with much of the weighting driven by students who have bachelor's degrees- see Table 2). Forty-one percent are in middle tier wage programs and 11 percent are in bottom tier wage programs. About one in every six (16 percent) students who exited with a workforce degree had earned at least one short-term certificate, suggesting a stackable pathway that is open to students. Chart 5 disaggregates into program wage tiers students who earned short-term certificates on their way to degrees. Forty-seven percent of students who earned a short-term certificate on the way to their degree were enrolled in top wage tier programs; 35 percent were in middle wage tier and just 18 percent were in bottom wage tier programs.



The next table lists the programs with at least 50 degree graduates cumulative in the five-year period. Programs are selected because at least 15 percent of graduates appear to have stacked one or more short-term certificates to reach their degree. The majority of students earned their short-term certificate(s) without stopping out of college and in the year(s) directly leading to the degree, so it is unclear that students were actually stacking the certificates intentionally. It could be that short-term certificates were milestones marking their progress to their degree adding motivation to their completion. However, it could be that accumulating them was a byproduct of the way the college applies its coding. Just 4 percent stopped out for 1-2 years and then returned to build further attainment. The program with the highest use of short-term certificates is Industrial Technology. This program is actually attached to an apprenticeship that occurs in the

workplace and as such, is unique. The students must return to the classroom as part of the apprenticeship. The table suggests that short-term certificates may moderately enable students to stack to degrees, but this is unclear without further study. A stackable pathway to degrees is weakest for students enrolled in bottom wage tier programs, the majority of programs for which short-term certificates are awarded to students as their highest attainment.

Table 10

Hourly Wage Tier	Program CIP	Program CIP	Exited with Degree	% Earned Short Certificate(s) on Path to Degree	% of Degree Earners with Short Certificate, Stopped Out and Returned for Degree
Top third	110201	COMPUTER PROGRAMMING	240	18%	1%
Top third	111003	COMP & INFO SYS SECURITY	223	44%	7%
Top third	150000	ENGINEERING TECH, GENL	70	17%	10%
Top third	150305	TELECOMM TECH	74	30%	7%
Top third	150612	INDUSTRIAL TECH	885	87%	43%
Top third	151301	DRAFT & DESIGN TECH, GENL	250	48%	4%
Top third	151304	CIVIL DRAFT/ENGR CAD	58	19%	0%
Top third	470105	IND ELECTRONICS TECH	54	39%	9%
Top third	470687	AIRCRAFT/FRAME/PWRPLANT ME	152	22%	1%
Top third	521001	HUMAN RES MGMT/PERSONNEL	52	54%	12%
Middle	010605	LANDSCAPING & GROUNDSKEEP	70	27%	14%
Middle	110301	INFORMATION PROCESSING	233	32%	3%
Middle	110601	MICROCOMPUTER APPS, GENL	122	30%	3%
Middle	110801	DIGITAL MEDIA: WEB/MULTI	363	27%	3%
Middle	110901	COMP SYS NETWORK/TELECOMM	1,034	21%	2%
Middle	111002	SYSTEM/NETWORK & LAN/WAN	63	27%	0%
Middle	150303	ELECT/ELECTR & COMM TECH	195	30%	4%
Middle	480501	MACHINE TOOL TECH	210	18%	2%
Middle	480508	WELDING TECH	566	44%	7%
Middle	490105	AIR TRAFFIC CONTROL	213	98%	4%
Middle	510713	MED INSURANCE CODING SPEC	119	34%	5%
Middle	511593	HUMAN SERVICES TRNG	344	44%	8%
Middle	520201	BUSINESS ADMIN & MGMT	847	32%	3%
Middle	520302	ACCOUNTING TECH & BOOKKPG	1,562	39%	6%
Middle	521401	MARKETING MGMT	324	28%	3%
Bottom	131210	EARLY CHILDHOOD EDUC & TCH	712	28%	9%
Bottom	131501	TEACHER ASSISTING	101	31%	9%
Bottom	430103	CRIM JUSTICE/LAW ENFORCE	454	30%	3%
Bottom	470603	AUTOBODY/COLLISION & REPR	146	21%	1%
Bottom	470604	AUTO MECHANICS	692	25%	4%
Bottom	500998	MUSIC INSTRUMNT DIGITAL IN	74	19%	4%
Bottom	510716	MED ADMIN ASST/SECTY	490	30%	4%
Bottom	520204	OFFICE MGMT & SUPERVISION	437	31%	6%
Bottom	520401	ADMIN ASST & SECR SCI	179	25%	2%
Bottom	520402	EXECUTIVE ASST/SECRETARY	55	40%	4%
Bottom	520408	OFFICE OCCS & CLERICAL	73	27%	11%

Top Short-term Certificates Awarded to Students Starting with High School Education

Table II presents top short-term certificates based upon 100 or more graduates between 2009 and 2012. The highest number of short-term certificates is awarded in nursing assistant, a bottom-wage-tier terminal program with no clear attachment to any degree. Although a number of career pathways have been developed for it, they do not appear to be serving to help the students reach the next level on the pathway.

Table II

	Hourly Wage Tier	Earned Short Certificate as Highest Award
NURSING ASST/AIDE	Bottom	1805
AIRFRAME MECH & AIRCRAFT	Middle	674
PHLEBOTOMY	Middle	581
TRUCK & BUS DRIVER	Middle	532
WELDING TECH	Middle	299
EARLY CHILDHOOD EDUC & TCH	Bottom	293
OFFICE OCCS & CLERICAL	Bottom	272
INDUSTRIAL TECH	Top third	241
EMT (AMBULANCE)	Middle	235
AUTO MECHANICS	Bottom	192
ACCOUNTING TECH & BOOKKPG	Middle	156
JOB SKILLS FOR CONST TRADE	Bottom	155
HOSPITAL CENTRAL SRV TECH	Middle	135
MED INSURANCE CODING SPEC	Middle	123
MEDICAL RECEPTIONIST	Bottom	107
HEALTH UNIT COORD/WARD CLK	Middle	106

Professional-technical (workforce) program degree and certificate definitions³

- 1) An **associate degree** program conventionally entails approximately two academic years of study, i.e., 90 credits, or two years of 45 credits each. WAC 250-61-050 defines “associate degree” as a lower division undergraduate degree that requires no fewer than 60 semester hours or 90 quarter hours. Some highly technical programs may require more than this.
- 2) An **associate in applied science–transfer (AAS-T)** degree is built upon the technical courses required for job preparation but also includes a college-level general education component, common in structure for all such degrees. Further, the general education courses for the degree are drawn from the same list as those taken by students completing the Direct Transfer Agreement (DTA) associate degree or the associate in Science-Transfer (AS-T) degree

The general education component of the transferable technical degree is to be comprised of not less than 20 credits of courses generally accepted in transfer. These 20 credits must include as a **minimum**.

5 credits in Communication	English Composition
5 credits in Quantitative Skills	Any course from the generally accepted in transfer list with Intermediate Algebra as a prerequisite
10 credits in Science, Social Science, or Humanities	Courses selected from the generally accepted in transfer list including a course meeting the human relations requirement.

- 3) A **certificate** is an award which may be made for completion of the competencies and requirements for an occupational program. Certificates less than 45 credit hours in length do not necessarily include related instruction. Certificates 45 credit hours or longer must include related instruction as a component. *Short-term certificates are those less than 44 credits.*⁴
- 4) **Programs of Less than 20 Credits.** No formal approval is required, but short-term certificates must be registered with the State Board office. Colleges will submit to the State Board staff, at a minimum, the program title, CIP and EPC codes, program description or learning outcomes, course listing, and number of credits.
- 5) **Programs 20 Credits or Greater.** After the State Board staff endorses the “Professional-Technical Program Approval Request” (from PAR) for a new primary program, the college will submit any additional documentation required for final approval within six months. The State Board staff will notify the college within two weeks of receipt of the documentation as to any additional *documentation* that will be required before final approval is **granted. Once final approval is granted, the program will be recorded on the college’s inventory of approved vocational programs.**

From the SBCTC Professional-Technical Program Approval Process:
<http://www.sbctc.edu/colleges-staff/programs-services/professional-technical/default.aspx>

⁴ (Note: the terms short-term and long-term certificates are not from the approval process).

Inflation Adjusted Hourly Wages and Annualized Earnings				
Certificate and Degree Graduates				
2008-09 to 2012-13				
Program	Hourly Wage	Annualized Earnings	Graduates	Hourly Wage Tier
DENTAL HYGIENIST	\$41.62	\$50,500	703	Top Third
RADIATION & IMAGING	\$38.80	\$77,200	25	
FIRE SCIENCE/ADMIN	\$38.63	\$104,300	86	
CARDIAC INVASIVE TECH	\$36.20	\$59,200	57	
RADIATION THERAPY TECH	\$34.73	\$69,400	42	
DIAG MED SONOGRAPHY/ULTRA	\$33.67	\$59,300	242	
ECHOCARDIOGRAPHIC TECH	\$31.37	\$57,300	33	
LOGISTICS & MATERIALS MGMT	\$28.91	\$50,500	71	
REGISTERED NURSING	\$28.70	\$53,800	6883	
RESPIRATORY THERAPY TECH	\$27.63	\$46,500	250	
POLYSOMNOGRAPHY	\$26.15	\$36,600	29	
MED RAD TECH (RAD THERAPY)	\$25.96	\$42,400	365	
OCCUPATIONAL THERAPY ASST	\$25.64	\$45,200	181	
CONSTRUCTION MGMT	\$25.62	\$50,200	81	
DATA WAREHOUSE & DB ADMIN	\$24.78	\$45,400	143	
INSTRUMENTATION TECH	\$24.51	\$48,600	109	
PHYSICAL THERAPY ASSISTANT	\$23.66	\$41,900	442	
ELECTROENCEPHALOGRAPH TECH	\$23.64	\$48,500	27	
MERCHANT MARINE OFFICER	\$23.53	\$37,300	36	
WATER QUALITY/WASTEWTR MGT	\$23.34	\$43,200	31	
TOOL & DIE TECH	\$23.16	\$48,000	94	
ZERO ENERGY BLDG PRACTICES	\$23.01	\$38,600	96	
HUMAN RES MGMT/PERSONNEL	\$23.01	\$44,100	159	
RADIOLOGIC TECH	\$22.83	\$37,500	310	
HEARING INSTRUMENT SPEC	\$22.48	\$39,800	76	
IND ELECTRONICS TECH	\$22.41	\$45,100	58	
HISTOLOGIC TECH	\$22.14	\$42,700	37	
BIOMEDICAL TECH	\$22.13	\$44,600	136	
ANESTHEOLOGIST ASST	\$21.54	\$43,200	29	
ORGANIZATIONAL LEADERSHIP	\$21.46	\$49,000	31	
INDUSTRIAL TECH	\$21.43	\$53,300	1382	
COMP & INFO SYS SECURITY	\$21.42	\$41,400	325	
OPERATIONS MGMT & SUPV	\$21.19	\$41,500	65	
CORRECTIONS	\$21.16	\$42,600	36	
ENVIRONMENTAL TECHNOLOGY	\$21.01	\$36,100	40	
ENGINEERING TECH, GENL	\$20.84	\$44,900	138	
SURGICAL TECH	\$20.69	\$37,300	426	
LICENSED PRACTICAL NURSING	\$20.47	\$36,800	1656	
ENERGY AUDIT, RESIDENTIAL	\$20.06	\$36,500	30	
DRAFT & DESIGN TECH, GENL	\$20.05	\$47,600	465	
STATIONARY ENGINEER	\$20.04	\$41,600	251	
PROCESS MACH MAINT & REPR	\$19.40	\$39,200	121	
ENERGY CONSERV TECH	\$19.38	\$34,500	81	
COMPUTER PROGRAM, PRODUCT	\$19.27	\$35,800	46	
TELECOMM TECH	\$19.20	\$39,100	88	
COMPUTER PROGRAMMING	\$18.95	\$30,900	302	

CLIN/MED LAB TECH (CERT)	\$18.91	\$37,200	261	
BUILDING/CONSTRUCTION MGMT	\$18.79	\$33,300	137	
ELECTRO-MECH TECH	\$18.67	\$41,000	60	
CAD DRAFT/DESIGN TECH	\$18.61	\$52,400	209	
ELECTRIC/POWER TRANSM INST	\$18.40	\$31,100	186	
COML & ADVERTISING ART	\$18.34	\$25,700	98	
SIGN LANG INTERP & TRANS	\$18.27	\$22,200	54	
AIRCRAFT/FRAME/PWRPLANT ME	\$18.20	\$34,400	347	
INDUST MECHANICS & MAINT	\$18.15	\$38,400	75	
CIVIL DRAFT/ENGR CAD	\$17.90	\$29,600	55	
EMT (PARAMEDIC)	\$17.89	\$36,500	405	
SURVEYING TECH	\$17.84	\$24,200	67	
MARINE CARP/BOAT BUILDING	\$17.78	\$24,100	31	
HEAT/AC/VENT/REFRIG MAINT	\$17.60	\$34,200	348	
MASSAGE THERAPY	\$17.58	\$17,600	285	
OPTICIANRY/OPHTHALMIC DISP	\$17.56	\$28,400	60	
ELECT/ELECTR & COMM TECH	\$17.52	\$35,800	242	Middle third
MULTI-SKILLED HEALTH CARE	\$17.52	\$36,300	84	
HYDRAULICS & FLUID POWER	\$17.47	\$31,900	29	
MECHANICAL TECH	\$17.46	\$32,300	76	
AIRFRAME MECH & AIRCRAFT	\$17.23	\$34,100	1256	
CIVIL ENGINEERING TECH	\$17.19	\$27,800	164	
GIS & CARTOGRAPHY	\$17.19	\$29,000	30	
SYSTEM/NETWORK & LAN/WAN	\$16.98	\$30,100	64	
DIESEL MECHANICS TECH	\$16.97	\$33,600	456	
AIRCRAFT ELECT FAB & INSTL	\$16.95	\$33,800	107	
MACHINE TOOL TECH	\$16.95	\$33,800	423	
INDUSTRIAL PLANT SERVICES	\$16.94	\$41,000	73	
COMP SYS NETWORK/TELECOMM	\$16.74	\$30,400	1030	
HOSPITAL CENTRAL SRV TECH	\$16.57	\$31,900	275	
LEGAL ASST/PARALEGAL	\$16.55	\$31,000	882	
HEALTH INFO/MEDICAL RECORD	\$16.51	\$30,500	397	
OPTOMETRIC ASST	\$16.40	\$28,500	81	
INFORMATION PROCESSING	\$16.39	\$30,700	241	
HEMODIALYSIS TECH	\$16.36	\$33,400	80	
FIRE FIGHTING	\$16.31	\$30,200	453	
BUSINESS ADMIN & MGMT	\$16.30	\$29,200	1006	
TRUCK & BUS DRIVER	\$16.25	\$29,200	823	
WEB/MULTIMEDIA MGMT/WEBMST	\$16.24	\$29,200	91	
APPLIANCE REPAIR	\$16.23	\$33,300	42	
COMPUTER SUPPORT SPEC	\$16.20	\$25,500	158	
WATER, WETLANDS & MARINE	\$16.20	\$22,300	47	
SYSTEM ADMINISTRATION	\$16.16	\$28,000	31	
QUALITY CONTROL	\$16.06	\$31,600	59	
SPEECH/HEARING THERAPY AID	\$16.05	\$21,800	96	
WELDING TECH	\$16.00	\$26,800	1173	
COMMUNICATIONS ELECTRONIC	\$15.88	\$31,500	27	
LANDSCAPING & GROUNDSKEEP	\$15.86	\$18,200	50	
FASHION/APPAREL DESIGN	\$15.84	\$26,800	77	
ARCHIT DRAFT & ARCHIT CAD	\$15.83	\$28,400	44	
MANUFACTURING TECH	\$15.74	\$29,300	101	
ELECTRICIAN	\$15.49	\$28,600	212	
MARKETING MGMT	\$15.49	\$28,200	347	
AGRI MECHANICS & OPERATION	\$15.31	\$30,500	89	

SPORTS & FITNESS MGMT	\$15.20	\$16,500	163	
ARCHITECT ENGINEER TECH	\$15.13	\$24,100	39	
AIR TRAFFIC CONTROL	\$15.08	\$24,800	187	
SUBSTANCE ABUSE/ADDICTION	\$15.05	\$28,600	533	
ACCOUNTING TECH & BOOKKPG	\$15.04	\$26,800	2125	
MICROCOMPUTER APPS, GENL	\$15.03	\$21,600	334	
ENVIRONMENTAL ENGR TECH	\$14.99	\$17,700	43	
EMT (AMBULANCE)	\$14.98	\$25,500	702	
BIOLOGICAL LAB TECH	\$14.90	\$27,300	36	
HEALTH UNIT COORD/WARD CLK	\$14.89	\$23,300	318	
MEDICAL/CLINICAL ASST	\$14.87	\$27,100	1971	
CABINET MKG & MILLWORK	\$14.87	\$22,900	36	
VISUAL COMMUNICATIONS	\$14.87	\$19,300	107	
DENTAL ASSISTANT	\$14.83	\$24,000	1003	
ENTREPRENEURSHIP	\$14.82	\$18,800	57	
DIGITAL MEDIA: WEB/MULTI	\$14.78	\$21,200	373	
PLASTICS ENGINEER TECH	\$14.70	\$25,600	68	
PHARMACY TECHNICIAN/ASST	\$14.68	\$25,500	664	
MED INSURANCE SPEC	\$14.66	\$29,700	81	
COMPUTER GRAPHICS	\$14.64	\$20,100	197	
NATURAL RESOURCES/CONSERV	\$14.61	\$22,900	52	
AVIATION/AIRWAY MGMT & OPS	\$14.60	\$26,400	38	
VITICULTURE & ENOLOGY	\$14.57	\$33,100	167	
EARLY CHILD/SPECIAL EDUC	\$14.56	\$25,700	39	
PHLEBOTOMY	\$14.51	\$24,000	1467	
MED/HEALTH MGMT & CLIN AST	\$14.48	\$25,100	75	
HUMAN SERVICES TRNG	\$14.46	\$26,300	438	
MENTAL HEALTH SRV TECH	\$14.26	\$23,000	50	
INTERIOR DESIGN	\$14.21	\$23,500	197	
CONSTRUCTION ENGR TECH	\$14.15	\$16,100	40	
HORTICULTURE OPS, GENL	\$14.09	\$24,600	152	
MED INSURANCE CODING SPEC	\$14.02	\$25,100	644	
ESTHETICIAN & SKIN CARE	\$14.00	\$17,400	139	
CROP PRODUCTION	\$13.89	\$29,100	37	Bottom third
FOREST TECH	\$13.80	\$15,000	31	
CRIM JUSTICE/LAW ENFORCE	\$13.73	\$24,800	594	
MEDICAL OFFICE MGMT	\$13.67	\$21,800	47	
VETERINARY ASST/TECH	\$13.66	\$24,100	230	
OFFICE MGMT & SUPERVISION	\$13.52	\$22,300	505	
HOSPITALITY/TRAVEL SVC OPS	\$13.27	\$21,400	31	
FISHING & FISHERIES	\$13.26	\$25,200	41	
EXECUTIVE ASST/SECRETARY	\$13.25	\$22,800	52	
MED ADMIN ASST/SECTY	\$13.24	\$23,800	689	
ORCHARD WORKER	\$13.23	\$42,400	42	
COMMERCIAL PHOTOGRAPHY	\$13.22	\$13,100	86	
MEDICAL TRANSCRIPTION	\$13.21	\$19,000	73	
ELECTROCARDIOGRAPH TECH	\$13.20	\$21,900	41	
AUTO MECHANICS	\$13.19	\$24,800	1106	
JOB SKILLS FOR CONST TRADE	\$13.18	\$19,600	192	
LEGAL ADMIN ASST/SECRETARY	\$13.17	\$24,500	189	
AIRLINE/COML/PROF PILOT	\$13.14	\$20,900	105	
AUTOBODY/COLLISION & REPR	\$13.13	\$23,100	222	
FLAGGING & TRAFFIC CONTROL	\$13.12	\$17,900	130	
MOTORCYCLE MAINT & REPAIR	\$13.11	\$23,800	32	

MUSIC INSTRUMNT DIGITAL IN	\$13.10	\$16,800	97
CRIMINAL JUSTICE/POLICE SC	\$12.90	\$22,800	233
ADMIN ASST & SECR SCI	\$12.90	\$21,300	283
EARLY CHILDHOOD EDUC & TCH	\$12.87	\$20,800	1209
CARPENTRY	\$12.72	\$18,800	145
MACHINE SHOP TECH/ASST	\$12.72	\$23,300	31
OFFICE AUTO/DATA ENTRY	\$12.70	\$20,100	34
MEDICAL RECEPTIONIST	\$12.67	\$20,500	231
HOTEL/MOTEL MGMT	\$12.67	\$17,100	37
RADIO & TV BROADCAST TECH	\$12.66	\$17,500	39
TEACHER ASSISTING	\$12.59	\$17,400	151
CHILD CARE PROVIDER/ASST	\$12.45	\$20,600	63
SOCIAL/HUMAN SVCS CASEWK	\$12.45	\$18,900	182
CULINARY ARTS/CHEF TRAIN	\$12.44	\$19,700	645
MEDICAL OFFICE ASST	\$12.39	\$16,900	109
LIBRARY ASSISTING	\$12.33	\$14,100	59
NATL RES LAW ENFORCE	\$12.30	\$19,500	28
TURF & TURFGRASS MGMT	\$12.29	\$17,300	37
OFFICE OCCS & CLERICAL	\$12.28	\$15,600	418
PREPRESS/DESKTOP PUBL	\$12.16	\$16,900	115
MUSICAL INSTR FAB & REPR	\$12.14	\$22,100	34
BAKING & PASTRY ARTS	\$12.06	\$19,000	292
CONSTR/HEAVY EQUIP OPER	\$11.98	\$18,400	98
SMALL BUSINESS MGMT	\$11.97	\$19,500	32
CUSTODIAL/BLDG SERVICES	\$11.72	\$11,200	31
PARTS/WAREHS/INVENT MGMT	\$11.53	\$17,400	53
NURSING ASST/AIDE	\$11.45	\$14,600	4156
COSMETOLOGY	\$11.40	\$16,200	309
ANIM/INTERACTIVE/VIDEO GR	\$11.38	\$17,100	87
FORENSIC TECH	\$11.37	\$17,700	25
RECORDING ARTS TECH	\$10.93	\$16,200	73
RECEPTIONIST	\$9.95	\$12,200	49

Attachments 3 and 4

See excel workbook