



COLORADO COMMUNITY
COLLEGE SYSTEM

Colorado Community College System

WAGE OUTCOMES FOR CCCS STUDENTS

MARCH 2010

Summary

From FY 2007-08 to FY 2009-10, Colorado Community College enrollment is estimated to increase 28 percent. Studies show that a community college education leads to positive economic gains, especially in health care fields. Gains from an associate's degree or certificate are especially pronounced for women. To determine the actual wage outcomes for CCCS students, the Research Office compared before and after wages of CCCS students who left community college and did not transfer to another institution. On average, students' wages increased 17 percent. The greatest increase, 55.5 percent, was experienced by students who earned as their highest degree an Associate of Applied Science (AAS). Most of these degrees were in the Health Sciences cluster (which had a 97 percent increase in earnings), including Nursing programs which had an increase of 108 percent. The greatest increase in wages was experienced by those who completed a Dental Hygiene/Hygienist program, up 230 percent.

Introduction

Recently, there has been a lot of interest regarding the economic opportunities of students earning postsecondary awards below the bachelor's degree (one- and two-year certificates and associate's degrees.) In March 2010, the National Center for Education Statistics (NCES) released a report showing a large increase in the total number of sub-baccalaureate awards.¹ The NCES study found that almost 40 percent of undergraduate credentials conferred in U.S. postsecondary institutions were below the bachelor's degree, up 28 percent from 1997. According to projections from the Bureau of Labor Statistics, the demand for employees with sub-baccalaureate credentials is growing as well, constituting six of the top 10 fastest growing occupations. Five out of the six are in the health care industry. Not surprisingly, health care is the most common field of study accounting for 31 percent of all awards nationally in 2007. In Colorado, the ratio is higher, with 40 percent of degrees awarded in the Colorado Community College System being in the health care field.

Additionally, women earned a majority of sub-baccalaureate awards, 62 percent in 2007. This is not surprising given a study prepared for the National Assessment of Vocational Education, U.S. Department of Education titled, *The Return to a Sub-Baccalaureate Education*.² This report looked at outcomes for students between 1994 and 2000 and found that women have a much higher return from earning a certificate or associate's degree than men. Women completing a certificate increase their earnings by up to 16 percent over women with only a high school education, while men did not experience any significant benefit. Additionally, women who enrolled in occupational programs and earned an associate's degree earned 39 percent more than women with no postsecondary education while the return for men was 16 percent.

Another study by the Federal Reserve Bank of St. Louis reported similar findings.³ Women with associate degrees have 29 to 30 percent higher wages when compared with high school graduates regardless of race. The return on an associate's degree for men is

¹ (Horn & Li, 2010)

² (Bailey, Kienzl, & Marcotte, 2010)

³ (Kolesnikova, 2010)

not as high and differs by race. White men have 18 percent higher wages while black men and Hispanic men experience a much higher wage increase of 25 percent and 27 percent respectively if they attain an associate's degree. Additionally, the study found the economic return on an associate's degree differs across cities. 20 of the largest cities across the United States were analyzed (Denver was not included.) The return to an associate's degree for a white male in Seattle is only 4 percent, while the return for a white male in Miami is 30%. Possible explanations may be labor market conditions and industrial composition.

A much cited report by Dēmos, a non-partisan public policy research and advocacy organization, found that one- and two-year credentials, particularly in fields like health care and engineering, can lead to higher salaries than four-year degrees.⁴ Dēmos reported that 31 percent of associate's degree holders earn more than someone holding a bachelor's degree and 43 percent of certificate holders make more than those with an associate's degree. Students awarded certificates earn median annual salaries that are 27 percent greater than those who leave school with no postsecondary credential.

⁴ (Orozco & Wheary, 2010)

Analysis

Based on previous work done by the Washington State Board for Community and Technical Colleges (WSBCTC), the Colorado Community College System Research Office analyzed the wage outcomes of students who leave CCCS to determine wage increases and the type of education required in order to earn the average or higher wage for Colorado. The average hourly wage in Colorado is \$9.74 which equates to a quarterly wage of \$5,064.80 if a worker is employed 40 hours per week. As done in the WSBCTC study, a comparison was made between the wages of adult students, age 25 years and older before beginning their education at CCCS colleges and after leaving to determine the impact of a CCCS education on wages. Leavers were defined as students who attended CCCS in academic year 2006-07 (they may have attended before academic year 2006-07 as well) but were not found in records from summer 2007 through fall 2008 – meaning they were not attending any institution of higher education during that time. The maximum time between entering college and leaving was 6.25 years with the median equal to three years. **The study showed that a Colorado Community College System education leads to increased earnings.**

Overall, CCCS leavers experienced a 17 percent increase in wages (Table 1.) Students earning AAS degrees had the greatest increase in wages, at 55.5 percent. This makes sense since these degrees are generally career-oriented terminal degrees that specifically prepare students for a job rather than generally preparing them for transfer like most associate of arts (AA), associate of science (AS), and associate of general studies (AGS) degrees. (Students who transferred were excluded from this analysis.) Interestingly, on average, these students did not earn the lowest wages before entering college but did experience the largest increase in wages and earned the highest wages on average after leaving community colleges. The smallest increase, 0.7 percent, was experienced by those students who left college having earned less than 15 credit hours and no certificate or degree. On average, these students earned relatively high wages before entering college and had very little increase after leaving college. From this information, we can surmise that these students may be taking only a few credit hours in order to enhance their job skills. Two-year certificates were much more lucrative than one-year

certificates with a wage increase of 29.6 percent compared to 1.8 percent. Again, many students earning a one-year certificate may be looking to enhance their job skills. For example, many different types of employees can gain promotions to higher levels through earning an Emergency Medical Technician (EMT) certification. Students who earned greater than or equal to 30 credit hours had an average increase in wages of 17.8 percent. When a certificate was added, the average wage increase was 21.3 percent. For students earning between 15 and 29 credits, there was a wage increase of 11.9 percent which resulted in an above average ending wage. These students may have been seeking to advance their job skills and with 15 to 29 credits were exceedingly successful.

In the WSBCTC “Tipping Point” study, a year’s worth of education and a certificate resulted in significant wage gains for students.⁵ Although the CCCS study found that a year’s worth of education (30 credit hours) plus a certificate resulted in a 21.3 percent wage gain, the combination did not result in students earning greater than or equal to the average wage in Colorado (Table 1.) Students needed a two-year certificate or an Associate of Applied Science (AAS) degree in order to reach the average wage or higher. Interestingly, associate’s degrees resulted in a large increase in earnings but may not get students to the average wage. This is logical as most AA/AS degrees are meant as transfer degrees. Even though some AAS degrees and certificates have higher earnings than some bachelor’s degrees,⁶ in general, higher levels of education are associated with more stable and economically sustaining employment outcomes.⁷ These students who had not yet transferred, may have stopped out for any number of reasons and have the credentials to transfer into a four-year program to increase their earnings later on.

⁵ (Washington State Board for Community and Technical Colleges, 2005)

⁶ (Orozco & Wheary, 2010)

⁷ (Bailey, Kienzl, & Marcotte, 2010)

Table 1. Wages before entering and after leaving college. State average salary in 2008 was \$9.74 per hour. On a quarterly basis the average wage equals \$5,064.80. (There are 13 weeks in a quarter (52/4), 40hrs/wk X 13 weeks = 520 hours, 520 X \$9.74/hr = \$5,064.80)

Change in Wages by Credential Type

	Average Beginning Salary per Quarter	Average Ending Salary per Quarter	Percent Change	Count	Exceed State Average Salary?
All	\$4,771	\$5,584	17.0%	17,810	yes
Any Credential	\$4,244	\$5,583	31.5%	2,642	yes
AA, AS degrees	\$3,412	\$4,254	24.7%	213	no
AGS degrees	\$3,516	\$5,016	42.7%	91	no
AAS degrees	\$4,379	\$6,808	55.5%	1,103	yes
2 yr cert	\$3,956	\$5,127	29.6%	404	yes
1 yr cert	\$4,499	\$4,581	1.8%	831	no
≥ 30 + certificate	\$3,716	\$4,507	21.3%	595	no
No Credential	\$5,679	\$5,821	2.5%	15,168	N/A
< 15 credit hours	\$6,336	\$6,379	0.7%	7,493	N/A
15-29 credit hours	\$4,578	\$5,122	11.9%	2,067	yes
≥ 30 credit hours	\$3,695	\$4,354	17.8%	1,850	no

Additionally, wage increases were analyzed by the Colorado Career and Technical Education Career Clusters. In accord with previous studies, the Health Science cluster was the most prevalent, 1,246 students, with the largest average wage gains, a 97 percent increase (Table 2.) Importantly, these students earned higher than average wage.

Table 2. Wages before entering and after leaving college. State average salary in 2008 was \$9.74 per hour. On a quarterly basis the average wage equals \$5,064.80. (There are 13 weeks in a quarter (52/4), 40hrs/wk X 13 weeks = 520 hours, 520 X \$9.74/hr = \$5,064.80)

Wage Gains by Cluster

Cluster	Average Beginning Salary per Quarter	Average Ending Salary per Quarter	Count	Percent Change	Exceed State Average Salary?
Health Science Cluster	\$3,922	\$7,732	1,246	97%	yes
Management and Administration Cluster	\$5,696	\$6,179	377	8%	yes
Finance Cluster	\$4,548	\$4,563	210	0%	no
Law, Public Safety, Corrections, & Security	\$8,150	\$8,968	183	10%	yes
Information Technology Cluster	\$5,542	\$7,702	123	39%	yes
Agriculture and Natural Resources Cluster	\$2,929	\$3,655	117	25%	no
Transportation, Distribution, and Logistics Cluster	\$4,653	\$4,088	116	-12%	no
Arts, A/V Technology and Communication Cluster	\$5,162	\$4,762	108	-8%	no
Human Service Cluster	\$4,150	\$3,476	87	-16%	no
Architecture and Construction Cluster	\$4,519	\$4,376	85	-3%	no
Government and Public Administration Cluster	\$3,626	\$3,991	72	10%	no
Manufacturing Cluster	\$3,951	\$7,263	59	84%	yes
Hospitality and Tourism Cluster	\$1,993	\$1,795	29	-10%	no
Education & Training Cluster	\$4,009	\$2,495	18	-38%	no
Marketing Cluster	\$0	\$6,111	18	n/a	yes
STEM Cluster	\$4,363	\$5,134	13	18%	yes

Table 3 provides wage gain information by AAS program. The greatest wage increase was experienced by students completing a Dental Hygiene/Hygienist program. The greatest number of students completed a Nursing program. Of the top 10 programs, eight earned higher than average wages: Nursing; Radiologic Technology/Science Radiographer; Fire Protection and Safety Technology/Technician; Criminal Justice/Law Enforcement Administration; Dental Hygiene/Hygienist; Management Information System, General; Interior Design; Business Administration and Management, General.

Table 3. Wages before entering and after leaving college. State average salary in 2008 was \$9.74 per hour. On a quarterly basis the average wage equals \$5,064.80. (There are 13 weeks in a quarter (52/4), 40hrs/wk X 13 weeks = 520 hours, 520 X \$9.74/hr = \$5,064.80)

Wage Gains by Top Ten AAS Programs

Program	Average Beginning Salary per Quarter	Average Ending Salary per Quarter	Count	Percent Change	Exceed State Average Salary?	Cluster
NURSING - REGISTERED NURSE TRAINING	\$3,989.51	\$8,298	446	108.0%	yes	Health Science Cluster
RADIOLOGIC TECHNOLOGY/SCIENCE – RADIOGRAPHER	\$4,322.02	\$6,991	43	61.7%	yes	Health Science Cluster
FIRE PROTECTION AND SAFETY TECHNOLOGY/TECHNICIAN	\$9,068.27	\$10,687	41	17.8%	yes	Law, Public Safety, Corrections, & Security
CRIMINAL JUSTICE/LAW ENFORCEMENT ADMINISTRATION	\$6,124.34	\$8,283	38	35.3%	yes	Law, Public Safety, Corrections, & Security
DENTAL HYGIENE/HYGIENIST	\$3,015.90	\$9,953	35	230.0%	yes	Health Science Cluster
MANAGEMENT INFORMATION SYSTEMS, GENERAL	\$6,333.51	\$5,643	31	-10.9%	yes	Information Technology Cluster
ACCOUNTING TECHNOLOGY/TECHNICIAN AND BOOKKEEPING	\$4,548.26	\$4,563	30	0.3%	no	Finance Cluster
INTERIOR DESIGN	\$5,004.65	\$5,925	27	18.4%	yes	Arts, A/V Technology and Communication Cluster
BUSINESS ADMINISTRATION AND MANAGEMENT, GENERAL	\$6,031.05	\$6,558	26	8.7%	yes	Management and Administration Cluster
LEGAL ASSISTANT/PARALEGAL	\$3,626.20	\$3,991	24	10.0%	no	Government and Public Administration Cluster

Works Cited

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