

Employment Outcomes for South Carolina Post-Secondary Graduates

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Executive Summary

The rising cost of post-secondary education and the increasing levels of debt taken on by students and families in South Carolina has generated an increased interest in determining employment outcomes of recent college graduates.

This study utilized data on two cohorts of SC college graduates to determine the percentage of students found working in the state one and five years post-graduation; their annual, median earnings one and five years post-graduation; and their industry of employment one and five years post-graduation. If a student is not found in the wage records, it does not mean that they are less likely to be found in South Carolina's wage records.

While additional data analysis through a state longitudinal data system could provide more robust results and confirmation of trends, this study found:

- Approximately 64.9 percent of SC college graduates in FY2009-10 were found employed in the state's wage records one year post-graduation and 50.0 percent were found five years post-graduation.
- The likelihood of remaining in the state, and becoming employed varies dramatically based on personal characteristics, higher education institution type, degree level, and field of study.
 - Women, African-Americans, in-state students, and those pursuing less than a bachelor's degree are the most likely to be found in the wage records one and five years post-graduation.
 - Students graduating in a Science, Technology, Engineering, or Math (STEM) discipline were least likely to be found in the wage records one and five years post-graduation most likely indicating a high degree of mobility to jobs or additional education in other states. Students graduating in Education disciplines were the most likely to be found in the wage records in both periods.
 - Students native to South Carolina tend to have higher retention rates one year post-graduation (78.6 percent) than those originally from outside of the state (50.2 percent). That gap remains about the same five years post-graduation (63.6 percent vs. 35.5 percent).
- Median annual earnings tend to increase dramatically (6.3 percent per year) for individuals between their first and fifth year post-graduation for those meeting minimum wage thresholds across all degree levels.
 - Graduates in STEM fields had the fastest median annual wage growth (9.6 percent) one to five years post-graduation followed by Trades (8.2 percent) and Business and Communication (8.1 percent).

- Education majors were the most likely discipline to be found in the SC wage records five years post-graduation, but they experienced the lowest level of wage growth at 2.6 percent per year.
- With only a few exceptions, those majors with the lowest median annual wages tended to have the fastest wage growth between years one and five while those who had higher initial year earnings experienced slower wage growth.
 - Engineering and Mathematics and Statistics majors tended to have both high initial wages one year post-graduation and high wage growth through the fifth year.
 - Fields of study that had both low initial wages one year post-graduation and low wage growth through the fifth year included: Family and Consumer Sciences, Liberal Arts, Philosophy and Religions Studies, Theology and Religious Vocation, and Public Administration and Social Services.
- The college majors associated with South Carolina’s “sector strategies” initiative showed either above average wages (\$35,238) one year post-graduation or higher than average wage growth (6.3 percent per year) between the first and fifth year. Many of the fields of study funded through the Workforce Innovation and Opportunity Act (WIOA) will likely have similar wage outcomes. There are many of these fields that provide a living wage within one year of completion.
- Differences in median earnings by degree level are harder to interpret at the aggregate level. One approach is to compare individuals with the same college major at different degree levels. However, across all degree levels, it is apparent that there are fields of study that can lead to family-sustaining wages during one’s early career.
 - Typically those earning a graduate level degree experience the highest median earnings while those earning less than an associate’s degree have the lowest median earnings. However, earnings vary significantly based on the graduate’s field of study.
 - Comparing median earnings for those completing an associate’s degree versus a bachelor’s degree within the same majors, those graduating with a bachelor’s degree typically had higher median earnings in nine out of 12 majors one year post-graduation. The number increased to ten out of 12 majors five years post-graduation.
- Graduates of South Carolina’s colleges and universities in FY2009-10 are employed in every industrial sector in the state.
 - There is a higher concentration of employment among college graduates in sectors such as health care and social assistance (27.5 percent), education (17.7 percent), and professional, scientific, and technical services (7.5 percent) than the statewide distribution one year post-graduation.

- These graduates are less likely to be employed in industries such as accommodation and food service (4.0 percent), retail trade (8.2 percent), or manufacturing (8.6 percent) than the statewide distribution.
- When comparing median annual earnings one year post-graduation for those graduating in FY2009-10 to those graduating in FY2014-15, there are significant differences in outcomes depending on field of study and degree level.
 - Fields of study with the highest levels of wage growth between the two cohorts include architecture, engineering technologies, multi-interdisciplinary studies, precision production, and engineering.
 - Fields of study with declines in median wages between the two cohorts include: education, construction trades, liberal arts, library science, and English language and literature.

This study represents a first step in helping to inform policy makers, families, and students regarding returns on investment for post-secondary education. Additional research should be conducted with more cohorts of graduates to determine if the outcomes explored in this study are consistent across years and to allow for larger sample sizes of some smaller fields of study.

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Employment Outcomes for South Carolina Post-Secondary Graduates

Introduction

Given the rising cost of postsecondary education as well as the burden of student debt taken on by a large number of individuals, quantifying the benefits of postsecondary education is of increasing importance to educate students, parents, and other education and economic development stakeholders. According to The Institute for College Access & Success, 60 percent of students graduating in the class of 2015 from a South Carolina public four-year or private, four-year, non-profit institution had student debt at an average of \$30,564. This level of average debt ranked 9th in the nation. Even at two-year schools that tend to be less expensive than four-year colleges, students typically accumulate student debt of around \$10,000.¹

Understanding the difference in employment and wage rates across fields and degree types can help to inform higher education and economic development policy makers as the state strives to ensure an appropriate workforce talent pipeline.

This report uses college completion data from the South Carolina Commission on Higher Education (CHE) and matches it with Unemployment Insurance (UI) Wage Records collected by the South Carolina Department of Employment and Workforce (DEW) to examine several research questions:

1. What are the characteristics of students found in the DEW wage records compared to those who are not found? Are there certain types of students who are more likely to remain in the state and find employment one and five years post-graduation?
2. What are the median earnings for students one and five years post-graduation and how do those earnings vary based on degree level, college major, and other demographic characteristics? How have wages changed for FY2009-10 graduates one year and five years post-graduation? Which college majors appear to have the highest wage growth potential during an individual's early career?
3. In what industries are SC college graduates most likely to be employed? How does the industry composition vary based on the student's college major?
4. How have median wages changed one year post-graduation for those student who graduated in FY2009-10 (during the height of the Great Recession) vs. students who

¹Nationally: www.collegescholarships.org/loans/average-debt.htm

graduated in FY2014-15 (during more “normal” economic times)? Can these wage changes provide insight into majors in high or low demand in the workforce?

This report is organized as follows: section II describes the data sources and data limitations; section III reports the percentage of students found in the wage records across a number of demographic and degree-specific variables; section IV explores the median annual earnings of graduates across demographics, degree levels, and major; section V determines which industries employ SC graduates; section VI examines the change in median earnings between the two cohorts; section VII concludes.

Section II: Data and Limitations

With the support of the State Workforce Development Board (SWDB), two cohorts of college graduates at CHE were matched with wage records at DEW to determine employment and wage outcomes for students.

The program and graduation data used in this report were provided by colleges and universities to CHE. Records were limited to students who completed undergraduate or graduate programs at a public or independent institution in FY2009-10 or FY2014-15.² The employment and earnings data are derived from the UI wage records in South Carolina provided by DEW. They do not include students who work outside of the state, work as independent contractors, are self-employed, or work for the federal government or military.

Employment and earnings for each graduate were determined by examining the wage records for the four quarters following their graduation date. For example, students who graduated in the spring semester of 2010 (2010-2) were matched to earnings data for quarters 3 and 4 of the same calendar year and quarters 1 and 2 of the following year (2010-3, 2010-4, 2011-1, 2011-2).³ First-year earnings are the sum of all wages earned by the graduate in South Carolina. If an individual had less than four quarters of wages, the wages reported in the available quarters were annualized. For example, if the graduate had two quarters of wages, their total wages were divided by two and multiplied by four. The data provided for the cohorts include only graduates with valid Social Security Numbers, and the earnings represent graduates who met the wage threshold.⁴

It is important to note that graduates’ earnings are not the only measure of how well a program is performing. Individual students’ success reflects a variety of factors such as each student’s background, the local job market, and personal career goal preferences. Nevertheless, students

² See Appendix A for a full list of institutions.

³ See Appendix B for additional information on graduation dates and quarters used for each cohort.

⁴ Only students whose earnings equal or exceeded \$14,500 were included in the analysis. This represents the earnings of someone working 40 hours per week 50 weeks per year at minimum wage. This was done in an attempt to eliminate as many people working part-time hours as possible.

who enter the job market within one year of completing their education represent an important segment of the labor force, and the information presented here can assist students, families, and policy makers as they make decisions regarding higher education.

Section III: Graduates Employed in South Carolina

Background

A total of 41,195 unique students⁵ graduated from South Carolina institutions of higher education in FY2009-10. In order to accurately assess their wages and wage growth from the period 2010 to 2016, any student who re-enrolled in one of the state's colleges after their FY2009-10 completion was removed from analysis. Additionally, any student who had completed another degree at an in-state institution between FY2010-11 and FY2015-16 was removed.

This left a total of 28,146 students in the final data set to be matched with the Department of Employment and Workforce's Unemployment Insurance (UI) wage records. Similarly for the graduates in FY2014-15, there were 46,844 unique students in the original cohort. Any student who continued to be enrolled or completed another degree in South Carolina higher education in FY2015-16 was removed. This left 38,262 unique students to be matched with the wage records.⁶

It is important to reiterate that even if an individual is not found in the South Carolina wage records, it does not mean that they are not employed. They may have moved to another state to continue their higher education, taken a job in another state, become employed by the federal government or military, or may have employment that is not covered by the UI wage records such as self-employment or work as an independent contractor.

One Year Post-Graduation

For the graduates of FY2009-10, 64.9 percent were found with wages in at least one quarter in the first four quarters after their graduation date. Table 1 provides a more detailed demographic breakout of those found in the wage records one year post-graduation.⁷

⁵ If a student completed more than one degree during the year, the highest degree obtained was used in the analysis.

⁶ This number would likely be lower if analysis was replicated in future years since some of these students may ultimately re-enroll in higher education after completing their FY2014-15 degree. Only one year of "re-enrollees" has been removed in the second cohort of students compared to six years for the FY2009-10 graduates.

⁷ For detailed information on degree level, see Appendix C

Table 1: Percentage of Students Found in Wage Records One Year Post-Graduation, FY2009-10

	Students	In Wage Records	Percent in Wage Records
Total	28,146	18,258	64.9%
Female	16,561	11,209	67.7%
Male	11,585	7,049	60.8%
White	19,682	12,734	64.7%
African-American	5,281	3,852	72.9%
Hispanic	546	313	57.3%
Other Race ⁸	1,403	539	38.4%
Race Unknown	1,234	820	66.5%
In-State Student ⁹	14,552	11,438	78.6%
Out-of-State Student	13,594	6,820	50.2%
Certificate/Diploma	2,086	1,633	78.3%
Associate	4,361	3,583	82.2%
Bachelor	16,058	9,609	59.8%
Masters/Specialist	4,444	2,833	63.7%
Doctorate/First-Professional	1,197	600	50.1%
Research University	9,203	5,270	57.3%
Comprehensive Teaching	7,095	4,627	65.2%
Two-Year Regional Campus USC	77	51	66.2%
Technical College	6,240	5,087	81.5%
Independent Institutions	5,531	3,223	58.3%

In general female graduates are more likely to be found in the South Carolina wage records one year post-graduation compared to men. African-American graduates are the most likely racial group to be found in the state’s wage records followed by unknown race and white students. The “other races” includes foreign individuals studying in South Carolina, which accounts for the low percentage found in the wage records post-graduation.

Those students pursuing an associate’s degree are the most likely to be employed in SC one year post graduation. Students pursuing a doctorate or first professional degree are least likely to be found in the wage records. It is likely that these students are employed in another state. Data

⁸ Includes Asian, Native Hawaiian/Pacific Islander, Native American/Alaskan Native, Non-Resident Alien, and Two or More Races

⁹ See Appendix D for detailed information on retention by institution sector.

from the Census Bureau’s American Community Survey suggests that those with higher levels of educational attainment tend to be more geographically mobile than those with less schooling.

Similar to those findings, students graduating from the state’s research institutions are least likely to be found in the wage records while those completing at one of the state’s 16 technical colleges are most likely to be found.

These findings are similar when looking at the cohort of graduates from FY2014-15 although the percentage of students found in the wage records in this second time period is slightly higher than the first.¹⁰

Table 2: Percentage of Students Found in Wage Records One Year Post-Graduation, FY2014-15

	Students	In Wage Records	Percent in Wage Records
Total	38,262	25,304	66.1%
Female	22,575	15,526	68.8%
Male	15,687	9,778	62.3%
White	26,072	17,247	66.2%
African-American	7,242	5,532	76.4%
Hispanic	1,311	777	59.3%
Other Race	2,670	1,120	41.9%
Race Unknown	967	628	64.9%
In-State Student	19,074	15,083	79.1%
Out-of-State Student	19,188	10,221	53.3%
Certificate/Diploma	2,985	2,489	83.4%
Associate	6,767	5,555	82.1%
Bachelor	21,444	13,227	61.7%
Masters/Specialist	5,359	3,196	59.6%
Doctorate/First-Professional	1,707	837	49.0%
Research University	12,531	6,828	54.5%
Comprehensive Teaching	9,036	6,193	68.5%
Two-Year Regional Campus USC	128	99	77.3%
Technical College	9,392	7,825	83.3%
Independent Institutions	7,175	4,359	60.8%

¹⁰ It is important to note that these two cohorts may contain very different types of students. Since any student who re-enrolled in South Carolina for additional education is removed between FY2010-11 and FY2015-16, there may be some students in the FY2014-15 graduating cohort who may ultimately have been dropped from the analysis if this research were repeated in the future. Only one year of “re-enrollees” has been removed in the second cohort of students compared to six years for the FY2009-10 graduates.

While 64.9 percent of graduates in FY2009-10 were found in the state’s wage records one year post-graduation 66.1 percent of graduates in FY2014-15 were found. While rates were slightly higher in the second cohort, the demographic characteristics are fairly similar between the two periods. Women are more likely to be found in the wage records as are African-American graduates.

In terms of degree level, graduates in FY2014-15 with less than an associate’s degree (certificates of one or two years) had higher match rates than they did in FY2009-10 while most other degree levels were slightly less likely to be found in the wage records. Although there are many explanations that could account for these changes, one possible explanation is that the better economic landscape nationwide enticed graduates to move to other states for jobs or educational opportunities or more individuals could be employed in activities not reflected in the wage records (e.g., independent contractor, self-employed).

This pattern also holds for graduates of Research Institutions compared to all other types of schools. Their graduates were least likely to be found in the wage records in both periods but even fewer were matched in the FY2014-15 cohort.

It is also possible to examine which college majors tend to be found most often in the wage records one year post-graduation. For a full listing of wage matches by college major, see Appendix E. Table 3 provides information on the number of students completing by discipline¹¹ as well as the percentage that were found in the SC wage records.

Table 3: Percentage of Students Found in Wage Records One Year Post-Graduation, by Discipline

Discipline	FY2009-10		FY2014-15	
	Students	% in WR	Students	% in WR
Arts and Humanities	4,087	55.5%	5,654	64.6%
Business and Communication	7,221	63.1%	8,551	59.8%
Education	2,535	74.1%	2,987	81.4%
Health	4,533	78.3%	6,385	76.7%
Social and Behavioral	4,252	59.5%	5,624	62.3%
STEM	3,749	56.3%	6,440	56.5%
Trades	1,769	77.0%	2,621	79.2%
Grand Total	28,146	64.9%	38,262	66.1%

There is no consistent trend among the disciplines in terms of students found in and not found in the wage records one year post-graduation. For the FY2009-10 cohort, those graduating in

¹¹ See Appendix F for details on which majors are included in which discipline.

Health, Trades, and Education were most likely to be found in the wage records. For the FY2014-15 cohort it was the same three disciplines with the order changing slightly to Education, Trades, and Health. Those graduating in STEM fields were least likely to be found in the wage records which may indicate a large amount of out-of-state migration upon completion of their degrees.

Five Years Post-Graduation

While nearly two-thirds of students completing degrees in South Carolina are found in the state's wage records one year post-graduation, that percentage falls to 50.0 four years later. Only 14,077 FY2009-10 graduates were found in the wage records 17 to 20 quarters after graduation.

Table 4: Percentage of Students Found in Wage Records Five Years Post-Graduation, FY2009-10

	Students	In Wage Records	Percent in Wage Records
Total	28,146	14,077	50.0%
Female	16,561	8,612	52.0%
Male	11,585	5,465	47.2%
White	19,682	9,710	49.3%
African-American	5,281	3,231	61.2%
Hispanic	546	198	36.3%
Other Race	1,403	314	22.4%
Race Unknown	1,234	624	50.6%
In-State Student	14,552	9,253	63.6%
Out-of-State Student	13,594	4,824	35.5%
Certificate/Diploma	2,086	1,400	67.1%
Associate	4,361	3,140	72.0%
Bachelor	16,058	6,885	42.9%
Masters/Specialist	4,444	2,157	48.5%
Doctorate/First-Professional	1,197	495	41.4%
Research University	9,203	3,853	41.9%
Comprehensive Teaching	7,095	3,235	45.6%
Two-Year Regional Campus USC	77	44	57.1%
Technical College	6,240	4,430	71.0%
Independent Institutions	5,531	2,515	45.5%

The results five years post-graduation are similar to those one year post-graduation although at even lower rates. Women and African-American students continued as most likely to be in the

wage records five years post-graduation. The percentage of men found in the wage records drops below 50 percent after five years. terms of degree level, bachelor’s degree and higher graduates show less than 50 percent in the employment records five years post-graduation.

Slightly more than one third of out-of-state students remain in South Carolina and are employed five years after graduation. Only the two-year regional campuses of USC and the Technical Colleges have greater than 50 percent match rates five years post-graduation.

Table 5 provides a more detailed look at the disciplines of graduates and their outcomes five years after degree completion. A full description at the two-digit CIP code level is provided in Appendix E.

Table 5: Percentage of Students Found in Wage Records Five Years Post-Graduation, by Discipline

Discipline	FY2009-10	
	Students	% in WR
Arts and Humanities	4,087	37.8%
Business and Communication	7,221	47.6%
Education	2,535	60.0%
Health	4,533	65.7%
Social and Behavioral	4,252	43.2%
STEM	3,749	41.8%
Trades	1,769	67.6%
Grand Total	28,146	50.0%

Those graduating with credentials in the Trades disciplines saw the least change in the percentage of graduates in the wage records while students graduating in the Arts and Humanities disciplines experienced the largest decline, 17.7 percentage points. STEM majors, while already the least likely to be found in the wage records one year post-graduation continued to have the lowest percentage five years post.

Section IV: Graduates Median Earnings in South Carolina

This section explores the median earnings¹² for those individuals who are found to be employed in South Carolina one and five years post-graduation. In order to create valid wage comparisons over time, only individuals meeting the wage threshold¹³ are included in this analysis. This reduces the number of students from the numbers shown in the previous section. A sizeable

¹² All wages were inflation-adjusted to 2016 dollars using the Bureau of Labor Statistics’ Annual Average Consumer Price Index for All Items, US City Average, Non-Seasonally Adjusted

¹³ See footnote 3

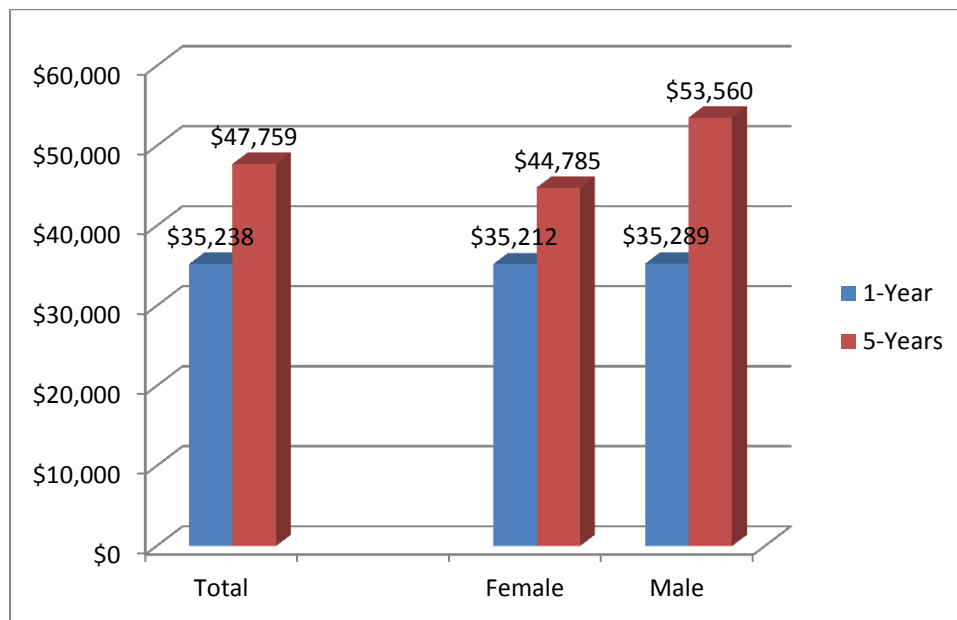
number of students appear to be working part-time during their first year after graduation since they were in the wage records but failed to meet the wage threshold of \$14,500 per year.

For the FY2009-10 cohort a total of 9,375 met the wage threshold in both the one and five year periods. This will be the group of students examined most closely in this section to determine median wages by demographics, degree level, and college major. Including a student who potentially worked part-time in one period and full-time in the other period would provide an inaccurate picture of the true wage progression associated with their degree and major.¹⁴

Demographics

The median earnings for all FY2009-10 graduates meeting the wage threshold was \$35,238 one year post-graduation and \$47,759 five years post-graduation, a 6.3 percent annualized growth rate. According to the Quarterly Census of Employment and Wages (QCEW), inflation-adjusted wages for private sector workers grew at an annualized rate of 0.7 percent between 2010 and 2015. The relatively high annualized wage growth of the FY09-10 graduates represents a combination of an improving economy and the rapid wage growth that typically occurs at the beginning of one's career.

Figure 1: Median Earnings by Gender, FY2009-10

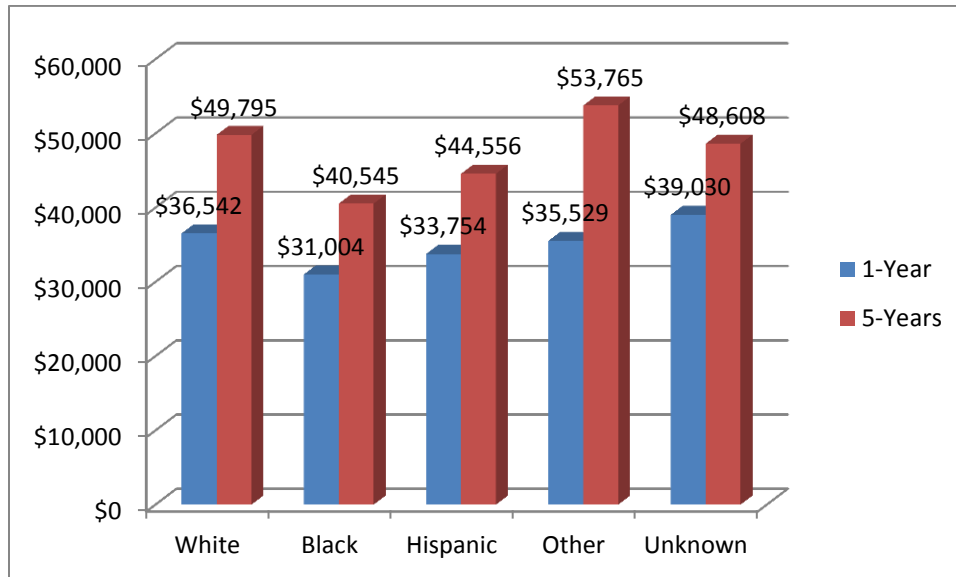


Male student's wages grew significantly faster than female graduate's wages during this time period. Although male and female median earnings were comparable the first year post graduation, female wages had slipped to about 84 percent of their male counterparts by the fifth

¹⁴ Note that this analysis looks at total wages of the individual. It is possible for the person to have multiple part-time jobs and meet the wage threshold. The UI wage records do not currently have information on the number of hours an individual worked. Collecting that information in the future would make more detailed analysis of full- vs. part-time employment feasible.

year. This result is similar to the finding of the Women’s Rights & Empowerment Network’s (WREN) report, “Solving the South Carolina Labor Shortage: The Economic Impact of Increasing Women’s Participation in the Workforce.” The WREN study found that the wage gap between men and women in South Carolina tended to increase as workers age.

Figure 2: Median Earnings by Race, FY2009-10



Between the first and fifth year those in the “other” racial category experienced the fastest wage growth while those with an unknown race had the slowest growth. The wage gap between white graduates and African-American graduates grew slightly between the first and fifth year.

Degree Level and Institution Type

While wages will vary dramatically based on the student’s field of study, it is also interesting to examine median wages based on degree level. Table 6 provides information on the median wages of students one and five years post-graduation based on their degree level for the FY2009-10 cohort. It also provides the average annual growth rate of wages over that time.

Table 6: Median Wages One and Five Years Post-Graduation, by Degree Level FY2009-10

Degree Level	Students	1-Year Median	5-Year Median	Annual Growth
Certificate/Diploma	865	\$28,238	\$37,202	5.7%
Associate	2,297	\$36,802	\$47,501	5.2%
Bachelor	4,028	\$30,133	\$44,986	8.3%
Masters/Specialist	1,808	\$46,992	\$55,864	3.5%
Doctorate/First-Professional	377	\$60,901	\$90,705	8.3%

For this cohort of students those graduating with their Doctorate/First Professional (+8.3%) and Bachelor’s (+8.3%) degrees saw the fastest rates of wage growth while those receiving their

Master's/Specialist (+3.5%) degrees experienced the slowest wage growth. Education majors accounted for over 40 percent of students graduating with a Master's or Specialist degree from this cohort which may help explain their relatively slow wage growth.

Table 6 indicates that Associate degree earners tend to have higher median earnings than Bachelor degree earners both one and five years post-graduation. One of the main difficulties comparing wages between degree levels is that students typically major in very different subjects depending on the degree. The next section will explore this finding in more detail.

Median wages and wage growth also differ based on the institution type attended. First and fifth year wages tend to be highest for those graduating from a research university due to the higher concentration of post-baccalaureate degrees earned. Again the differences in the fields of study at the different institution types tends to make aggregate comparisons less informative. A closer look at the fields of study and average wages by degree level and institution type will be presented in the following section.

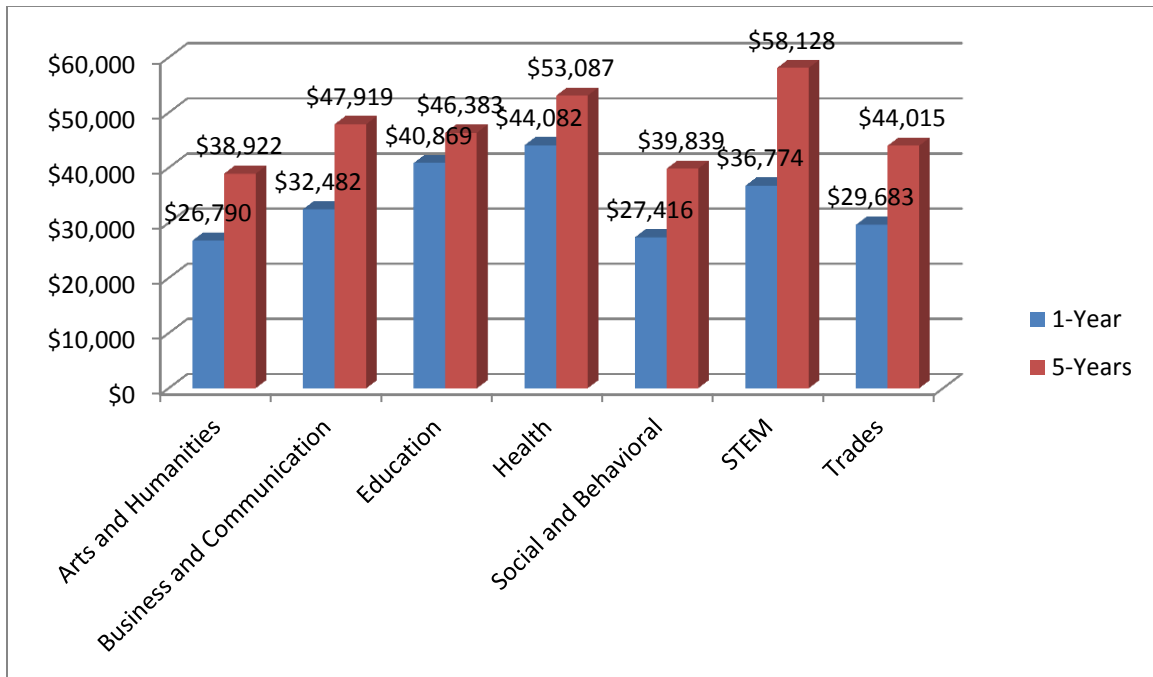
Table 7: Median Wages One and Five Years Post-Graduation, by Institution Type FY2009-10

Degree Level	Students	1-Year Median	5-Year Median	Annual Growth
PUBLIC				
Research University	2,648	\$40,704	\$59,299	7.8%
Comprehensive Teaching	2,010	\$31,829	\$45,167	7.3%
Two-Year Regional Campus USC	31	\$25,061	\$39,029	9.3%
Technical College	3,093	\$34,144	\$44,263	5.3%
INDEPENDENT				
Senior and Junior	1,593	\$35,788	\$44,931	4.7%

Discipline

Using the disciplines defined in Appendix F, median wages based on college major can be examined.

Figure 3: Median Wages One and Five Years Post-Graduation, by Discipline FY2009-10



Wage growth was highest for those graduating in STEM disciplines. Their wages typically grew 9.6 percent per year between the first and fifth year. Education majors experienced the slowest growth in their wages at 2.6 percent per year.

In the first year post-graduation, students completing a degree in Health had the highest median wages while five years post-graduation, students in STEM fields had the highest. Across both time periods students graduating in Arts and Humanities tended to have the lowest median wages.

Looking more closely at median wages by CIP code, the degrees with the highest annualized wage growth over the period included: Architecture (16.6%); Biology/Biological Sciences (13.1%); Natural Resources & Conservation (12.3%); Parks, Recreation, Leisure, and Fitness (10.9%); and Engineering Technologies (10.8%). Those majors with the slowest wage growth were Theology and Religious Vocations (4.5%); Health (3.8%); Philosophy and Religious Studies (3.2%); Library Science (3.2%); and Education (2.6%).

Table 8: Median Wages by CIP Code 1 and 5 Years Post-Graduation, FY2009-10

	Graduates	Wages 1 Year	Wages 5 Year	Annual Growth
Agriculture (1)	51	\$29,479	\$43,272	8.0%
Natural Resources & Conservation (3)	39	\$26,371	\$47,023	12.3%
Architecture (4)	27	\$25,012	\$53,859	16.6%

	Graduates	Wages 1 Year	Wages 5 Year	Annual Growth
Area, Ethnic, Cultural, Gender Studies (5)	N/D ¹⁵	N/D	N/D	N/D
Communication, Journalism (9)	196	\$25,440	\$42,020	10.6%
Communications Technologies (10)	N/D	N/D	N/D	N/D
Information Technology (11)	239	\$34,065	\$51,269	8.5%
Personal and Culinary Services (12)	51	\$20,501	\$32,127	9.4%
Education (13)	1,160	\$40,869	\$46,383	2.6%
Engineering (14)	291	\$48,607	\$74,806	9.0%
Engineering Technologies (15)	158	\$33,388	\$55,740	10.8%
Foreign Languages, Literatures, and Linguistics (16)	33	\$26,928	\$38,328	7.3%
Family and Consumer Sciences (19)	71	\$21,201	\$26,758	4.8%
Legal Professions and Studies (22)	147	\$32,398	\$50,445	9.3%
English Language and Literature (23)	84	\$26,409	\$41,838	9.6%
Liberal Arts (24)	234	\$28,766	\$37,178	5.3%
Library Science (25)	44	\$39,032	\$45,639	3.2%
Biology and Biomedical (26)	129	\$24,206	\$44,785	13.1%
Mathematics and Statistics (27)	33	\$36,622	\$59,360	10.1%
Military Technologies (29)				
Multi-Interdisciplinary Studies (30)	116	\$30,752	\$48,254	9.4%
Parks, Recreation, Leisure, and Fitness (31)	104	\$24,501	\$41,053	10.9%
Philosophy and Religious Studies (38)	16	\$28,999	\$33,957	3.2%
Theology and Religious Vocation (39)	30	\$31,027	\$38,705	4.5%
Physical Sciences (40)	48	\$36,907	\$49,269	5.9%
Science Technologies (41)	N/D	N/D	N/D	N/D
Psychology (42)	186	\$25,676	\$36,853	7.5%
Security and Protective Services (43)	228	\$28,615	\$39,792	6.8%
Public Administration and Social Service (44)	172	\$30,480	\$40,166	5.7%
Social Science (45)	237	\$26,068	\$41,349	9.7%
Construction Trades (46)	16	\$29,241	\$46,564	9.8%
Mechanic and Repair Technologies (47)	297	\$34,144	\$49,147	7.6%
Precision Production (48)	151	\$29,166	\$47,052	10.0%
Transportation and Material Moving (49)	53	\$30,463	\$45,369	8.3%
Visual and Performing Arts (50)	153	\$23,425	\$38,389	10.4%
Health (51)	2,419	\$44,082	\$53,087	3.8%
Business (52)	2,085	\$33,268	\$48,624	7.9%
History (54)	68	\$26,017	\$38,767	8.3%

¹⁵Not Disclosed: Cells with less than 10 observations were not disclosed to protect privacy.

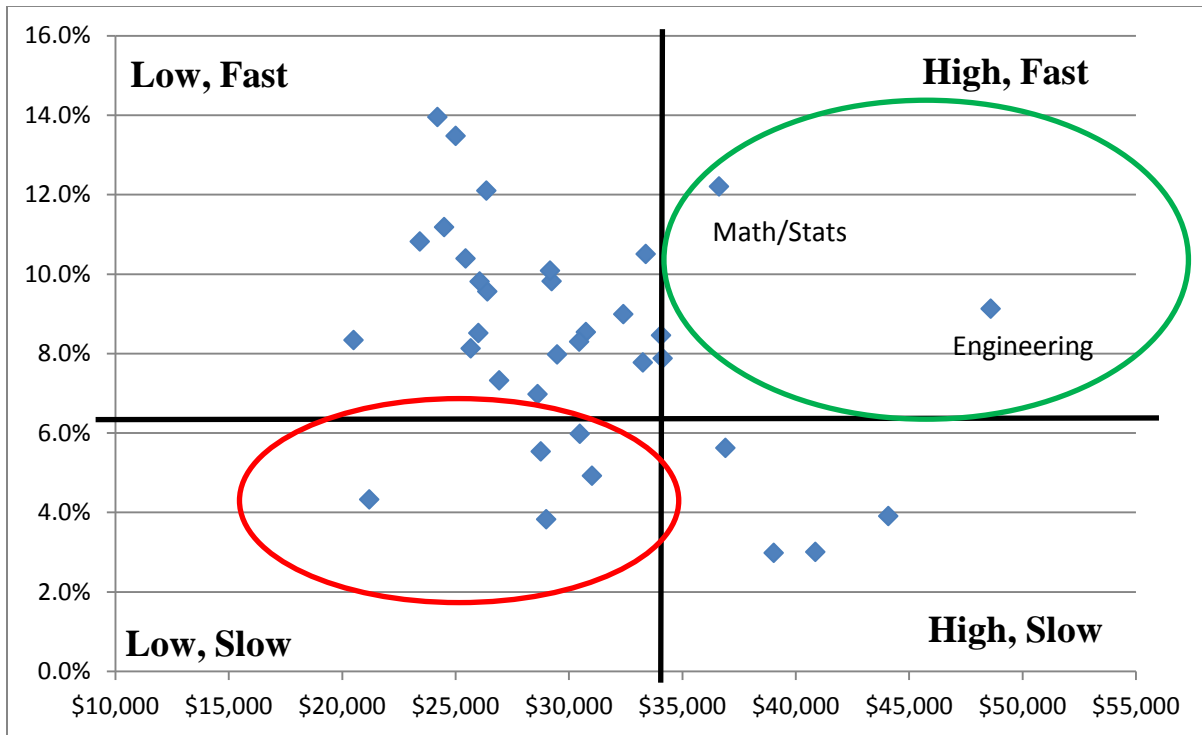
These findings of rapid wage growth early in an individual’s career align with findings from The Hamilton Project’s “Major Decisions: Graduates’ Earnings Growth and Debt Repayment,” which used data from the U.S. Census Bureau’s American Community Survey. Since nearly all graduates see steep earnings growth in the first five years after graduation, this may not be the best indicator of long-run earnings potential or provide much information on the relative demand for each type of graduate. The Hamilton Project study found that majors with the lowest initial earnings were more likely to see faster wage growth in their early-career years than those with higher initial earnings. The authors assert that this is likely the result of graduates achieving full-time employment and switching between jobs looking for better employment matches.

The finding that health majors tend to have lower wage growth rates also aligns with the findings in the Hamilton Project report. Nearly every college major fits this pattern. If the initial one year post-graduation wages were higher than the overall cohort median (\$35,238) then the growth rate in wages by the fifth year post-graduation tended to be lower than average (6.3 percent). Conversely, if the major had median wages less than the total median, then their wage growth rates tended to be higher than average. There were seven majors that did not follow this pattern. These are highlighted in both Table 9 and Figure 4.

Table 9: Median Wages and Growth Rates, FY2009-10

CIP Code	Median Wages 1-Year	Median Wages 5-Years	Annual Growth Rate
Low Initial Wages; Slow Growth Rate			
Family and Consumer Sciences (19)	\$21,201	\$26,758	4.8%
Liberal Arts (24)	\$28,766	\$37,178	5.3%
Philosophy and Religious Studies (38)	\$28,999	\$33,957	3.2%
Theology and Religious Vocation (39)	\$31,027	\$38,705	4.5%
Public Administration and Social Services (44)	\$30,480	\$40,166	5.7%
High Initial Wages; High Growth Rate			
Engineering (14)	\$48,607	\$74,806	9.0%
Mathematics and Statistics (27)	\$36,622	\$59,360	10.1%

Figure 4: Median Wages and Growth Rates by CIP, FY2009-10



The Engineering and Mathematics/Statistics majors stood out from all other majors as having both high initial wages and high wage growth in South Carolina between the first and fifth years post-graduation. This is an area of particular interest as a recent study by the South Carolina Commission on Higher Education has shown potential shortages of in-state engineering graduates compared to their projected employment demand.

Median Earnings and Sector Strategies

According to the South Carolina Talent Pipeline report, the state has begun implementing sector strategies—“regional, industry-focused approaches to building skilled workforces.” The statewide target sectors included in this initiative are: diversified manufacturing; business and information technology services; health care; transportation, logistics, and wholesale trade; and construction.

While each of these does not align perfectly with a single CIP code, in general it appears that the majors most closely associated with each of these sectors is either experiencing rapid wage growth one to five years post-graduation or has high first year wages.

Table 10: Target Sectors, Median Earnings, and Wage Growth, FY2009-10

Sector	CIP Code	Median Earnings 1-Year	Annual Wage Growth
Diversified Manufacturing	Precision Production (48)	\$29,166	10.1%
Business and Information Technology Service	Information Technology (11)	\$34,065	8.5%
	Business (52)	\$33,268	7.8%
Health	Health (51)	\$44,082	3.9%
Construction	Construction Trades (46)	\$29,241	9.8%
Transportation, Logistics, and Wholesale Trade	Transportation and Material Moving (49)	\$30,463	8.3%
	<i>All Majors</i>	\$35,238	6.3%

WIOA Program Comparison

The programs explored above that are being funded through Workforce Innovation and Opportunity Act (WIOA) training dollars are likely to yield a high return on investment. Many of the most popular WIOA training programs, including truck driving and health-related fields, fit within the currently identified sectors, provide relatively high initial earnings potential, and are in relatively high demand based on wage growth between FY2009-10 and FY2014-15. While there may be some differences in wage outcomes between WIOA participants and the graduates examined in this study, the wage outcomes would likely progress in similar directions.

Using the 20 most popular training programs completed by WIOA participants in program year (PY) 2014-15, wages for the college graduates in the same program areas were compared between FY2009-10 and FY2014-15. Table 12 shows the programs that had a sufficiently high number of observations to report median earnings.

Table 11: Popular WIOA Training Programs, 1st Year Median Earnings, and Wage Growth, FY2009-10 vs. FY2014-15

Program Title	FY09-10 1 st Year Wages	FY14-15 First Year Wages	Percent Change
Truck and Bus Driver/Commercial Vehicle Operation	\$30,463	\$33,212	9.0%
Welding Technology/Welder	\$26,824	\$28,543	6.4%
Medical/Clinical Assistant	\$22,014	\$22,094	0.4%
Nursing - Registered Nurse Training (RN, ASN, BSN, MSN)	\$45,854	\$46,344	1.1%
Dental Assisting/Assistant	\$24,578	\$23,420	-4.7%
Licensed Practical /Vocational Nurse Training (LPN, LVN, Cert, Dipl, AAS)	\$33,473	\$30,441	-9.1%
Business Administration and Management, General	\$33,999	\$34,019	0.1%

Program Title	FY09-10 1st Year Wages	FY14-15 First Year Wages	Percent Change
Pharmacy Technician/Assistant	\$29,324	\$25,998	-11.3%
Medical Administrative/Executive Assistant & Medical Secretary	\$20,686	\$25,351	22.6%

Table 11 shows that many of the WIOA programs are associated with CIP codes that have relatively high starting wages. There are a few programs that stand out that saw a decline in average starting wages between FY2009-10 and FY2014-15. These include dental assisting/assistant; licensed practical/vocational nurse training; and pharmacy technician/assistant. It may be necessary to evaluate the specific local area employment opportunities for these types of programs prior to continued significant investment. Conversely, there appears to be a continued high demand for individuals completing programs such as truck and bus driver/commercial vehicle operation; welding technology/welder; and medical administrative/executive assistant and medical secretary.

Bachelor's vs. Associate Degrees by Major

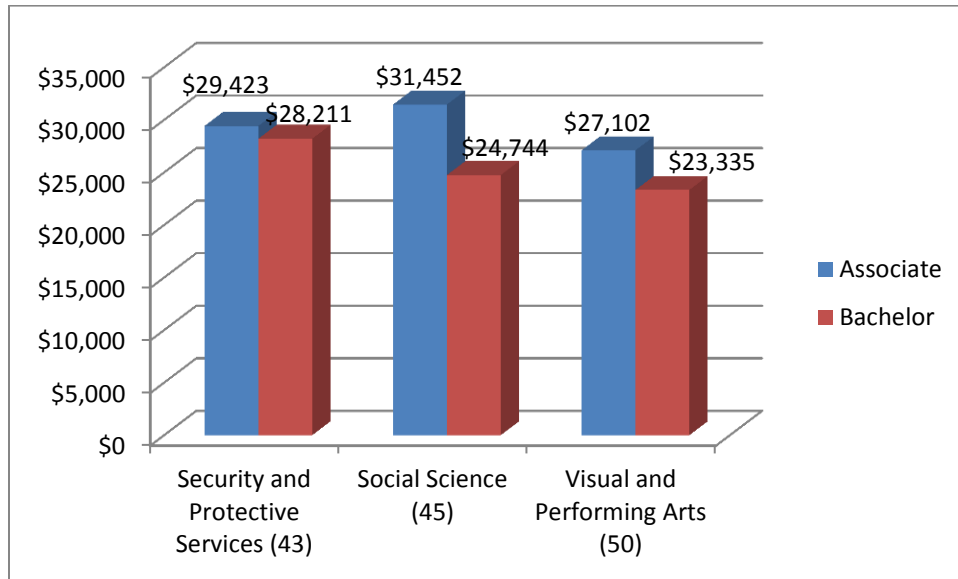
One interesting finding thus far is that, in aggregate, those students graduating with an associate's degree earned more than those graduating with a bachelor's degree both one and five years into the student's career. One of the main reasons for this finding is that 45.6 percent of all graduates with associate degrees in FY2009-10 majored in a health field (predominantly nursing), one of the initially highest paying fields. In contrast, those graduating with bachelor's degrees tended to be spread out over a variety of majors including business (31.6%), health (12.7%), education (9.5%), and social science (5.2%). When comparing associate and bachelor degree graduates there were only 12 majors where there were a sufficient number of students to make valid wage comparisons across fields and degree levels.

Table 12: Graduates by Major and Degree Level, FY2009-10

CIP Code	Associate's	Bachelor's
Agriculture (1)	10	30
Natural Resources & Conservation (3)	10	19
Information Technology (11)	108	97
Engineering Technologies (15)	95	35
Family and Consumer Sciences (19)	40	22
Liberal Arts (24)	149	74
Security and Protective Services (43)	76	142
Public Administration and Social Service (44)	22	55
Social Science (45)	12	210
Visual and Performing Arts (50)	12	129
Health (51)	1,048	511
Business (52)	326	1,271

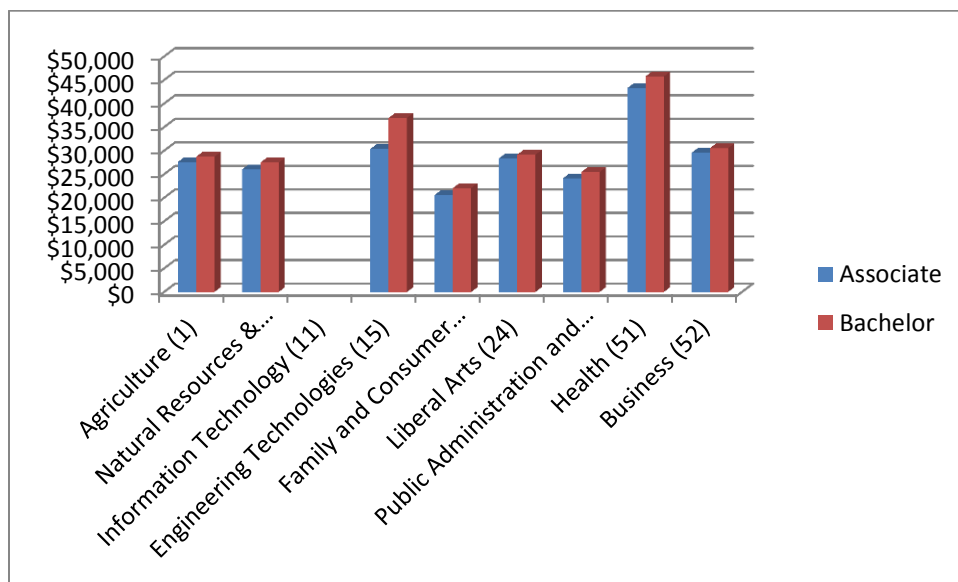
In three of these 12 majors associate's degree earners had median wages one year post-graduation higher than bachelor's degree earners. As shown in Figure 5, these included security and protective service, visual and performing arts, and social science.

Figure 5: Median Wages by Major and Degree Level One Year Post-Graduation, FY2009-10



In the remaining nine majors, bachelor's degree completers earned more than their associate degree counterparts. These majors included agriculture, natural resources & conservation, information technology, engineering technologies, public administration and social service, family and consumer sciences, liberal arts, health, and business.

Figure 6: Median Wages by Major and Degree Level One Year Post-Graduation, FY2009-10



This picture changes slightly when looking at wages five years post-graduation for the same 12 fields of study. Now, bachelor’s degree recipients typically earn more than their associate degree counterparts in ten of the 12 fields. Only in liberal arts and social sciences do associate degree recipients typically earn more than their bachelor degree counterparts five years post-graduation.

Table 13: Graduates by Major and Degree Level Five Years Post-Graduation, FY2009-10

CIP Code	1 Year		5 Years	
	Associate	Bachelor	Associate	Bachelor
Social Science (45)	\$31,452	\$24,744	\$51,020	\$39,054
Liberal Arts (24)	\$28,335	\$29,128	\$38,043	\$35,242
Security and Protective Services (43)	\$29,423	\$28,211	\$39,607	\$39,995
Visual and Performing Arts (50)	\$27,102	\$23,335	\$31,585	\$37,917
Agriculture (1)	\$27,601	\$28,718	\$43,634	\$43,860
Natural Resources & Conservation (3)	\$26,014	\$27,471	\$46,483	\$49,491
Information Technology (11)	\$31,680	\$41,483	\$47,017	\$63,823
Engineering Technologies (15)	\$30,376	\$36,959	\$54,107	\$66,986
Public Administration and Social Services (44)	\$24,141	\$25,479	\$29,081	\$34,750
Health (51)	\$43,268	\$45,779	\$52,064	\$57,461
Business (52)	\$29,540	\$30,516	\$38,335	\$46,688

This section makes clear that just getting a higher education degree is not sufficient to ensure higher wages. The field of study as well as the student’s own initiative and career goals make a clear difference in their employment outcomes and should be an important consideration when making decisions regarding paying and/or borrowing for post-secondary education.

Several quotes from the Georgetown University Center on Education and the Workforce’s “The Economic Value of College Majors” echo these findings:

Today, 35 percent of jobs require a Bachelor’s degree or higher. On average, these jobs pay \$33,000 annually at the entry level and \$61,000 at prime age. But averages are deceiving. The economic risks and returns to Bachelor’s degrees vary greatly among different majors.

Over a lifetime, the average difference between a high school and college graduate’s wages is \$1 million, but the difference between the lowest- and the highest-paying majors is \$3.4 million. The importance of major is so powerful that Bachelor’s degree holders in some majors earn more than many graduate degree holders.

These national findings seem to hold as well for graduates of South Carolina’s colleges and universities.

Section V: Employment by Industry

The majority of private, non-farm¹⁶ employment in South Carolina is concentrated in Retail Trade, Manufacturing, Health Care and Social Assistance, and Accommodation and Food Service according to the Bureau of Labor Statistics' Current Employment Statistics (CES) for 2010 and 2015. The distribution of where SC graduates are employed is largely similar with some notable exceptions.

Table 14: Distribution of Employment by Industry 1 and 5 Years Post-Graduation, FY2009-10

Industry	SC Annual Avg. 2010	1 Year Post-Graduation	SC Annual Avg. 2015	5-Years Post-Graduation
Mining and Logging	0.3%	0.1%	0.2%	0.0%
Utilities	0.8%	1.2%	0.8%	1.8%
Construction	5.5%	2.5%	5.3%	2.4%
Manufacturing	14.2%	8.6%	14.3%	11.2%
Wholesale Trade	4.4%	2.9%	4.3%	4.1%
Retail Trade	15.3%	8.2%	14.7%	6.5%
Transportation & Warehousing	3.2%	1.4%	3.7%	1.5%
Information	1.8%	1.5%	1.6%	1.5%
Finance	4.5%	4.9%	4.2%	5.2%
Real Estate	1.8%	1.4%	1.7%	1.3%
Professional, Scientific, Technical	5.1%	7.5%	5.4%	8.3%
Management	1.0%	0.3%	1.0%	0.5%
Administrative Support	8.7%	7.2%	9.6%	5.0%
Education	2.1%	17.7%	2.3%	18.3%
Health Care and Social Assistance	12.3%	27.5%	12.0%	27.5%
Arts, Entertainment, and Recreation	1.8%	0.9%	1.7%	0.7%
Accommodation and Food Service	12.5%	4.0%	12.7%	2.4%
Other Services	4.7%	2.0%	4.5%	1.7%

A significantly larger percentage of the higher education graduates are employed in the education and health care sectors compared to the state average. Fewer graduating individuals

¹⁶ Since federal and military wages were not available from the DEW wage records, the public administration sector is excluded from this analysis. The agriculture industry is also excluded as the CES data typically reports on non-farm employment and there were a limited number of graduates employed in agriculture.

were employed in the retail trade sector compared to the state average. Between the first and fifth year after graduation a larger percentage of the FY2009-10 completers moved into the manufacturing sector while fewer graduates remained in the retail trade, administrative support, and accommodation and food service sectors. This may indicate a movement of recent graduates from their starter jobs to their professional career path.

Looking more closely at the industries of employment by educational attainment reveals slightly different patterns.

Table 15: Distribution of Employment by Industry and Degree Level 1 Year Post-Graduation, FY2009-10

Industry	SC Annual Avg. 2010	Associate's Degree or Less	Bachelor's Degree	Graduate Degree
Mining and Logging	0.3%	0.1%	0.1%	0.0%
Utilities	0.8%	1.1%	1.3%	1.1%
Construction	5.5%	3.8%	2.5%	0.5%
Manufacturing	14.2%	12.0%	7.8%	5.1%
Wholesale Trade	4.4%	2.9%	3.7%	1.4%
Retail Trade	15.3%	7.8%	9.8%	5.9%
Transportation & Warehousing	3.2%	1.7%	1.7%	0.4%
Information	1.8%	0.8%	2.3%	1.0%
Finance	4.5%	3.0%	7.5%	3.0%
Real Estate	1.8%	0.9%	2.3%	0.6%
Professional, Scientific, Technical	5.1%	5.1%	9.5%	7.7%
Management	1.0%	0.2%	0.5%	0.1%
Administrative Support	8.7%	7.9%	9.1%	2.7%
Education	2.1%	3.3%	12.3%	49.1%
Health Care and Social Assistance	12.3%	43.7%	19.2%	19.2%
Arts, Entertainment, and Recreation	1.8%	0.4%	1.6%	0.5%
Accommodation and Food Service	12.5%	2.9%	6.7%	0.7%
Other Services	4.7%	2.5%	2.3%	0.9%

Those with an associate's degree or less are highly concentrated in the Health Care and Social Assistance industry, in keeping with the fields of study typically pursued. The second most common industry for these graduates is manufacturing, which is not unusual given the large number of individuals completing certificates, diplomas, and degrees in mechanic and repair technologies and precision production.

Individuals graduating with a bachelor's degree or post-baccalaureate certificate were most heavily contracted in health care and social assistance, education, retail trade, and professional, scientific, and technical services. Overall their industry distribution was less heavily

concentrated than those with an associate’s degree or less, which is in line with their more varied fields of study.

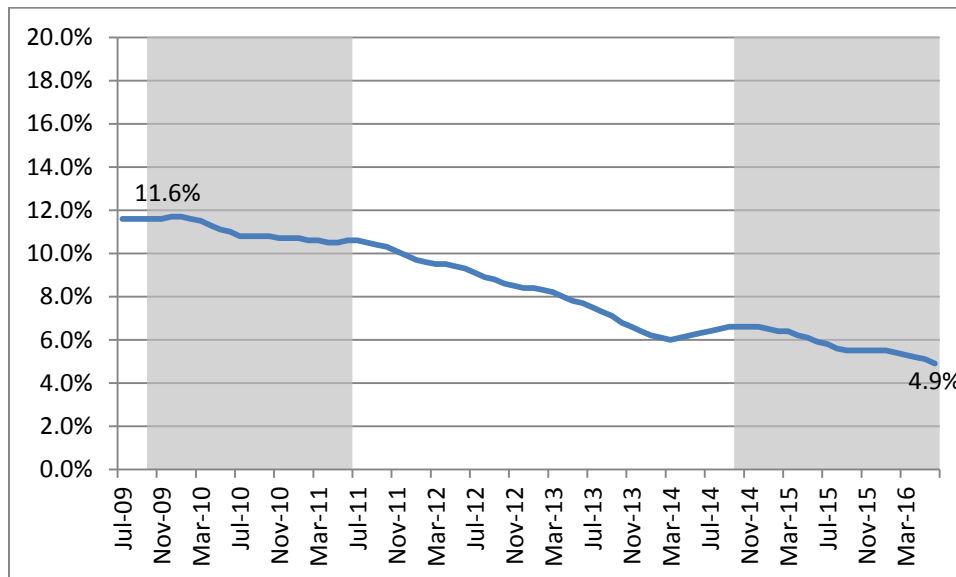
Students completing a graduate degree in FY2009-10 were most highly concentrated in the education industry followed by health care and social assistance. Again, this reflects their degree concentrations of education and health. The third most common field of study for this group was business which had employment across many sectors, the most common being professional, scientific, and technical services.

Section VI: Change in Median Earnings between Cohorts

Section IV closely examined the median wages for students graduating in the FY2009-10 cohort one and five years post-graduation. This section will explore differences in median earnings between the graduates of FY2009-10 and FY2014-15 to see if there are any significant changes between periods.

South Carolina experienced tremendous economic recovery between July 2009 and June 2016. The unemployment rate¹⁷ dropped by over half from 11.6 percent to 4.9 percent. The total number of people working increased from 1.90 million to 2.18 million over the same period. Figure 7 shows the decline in the unemployment rate for the state over this period. The shaded region represents the time period of looking at wages one year post-graduation for FY2009-10 and FY2014-15 graduates.

Figure 7: SC Unemployment Rate, Jul 2009-Jun 2016



¹⁷ Bureau of Labor Statistics, Local Area Unemployment Statistics, Seasonally-Adjusted

In order to provide a more accurate comparison between the two cohorts all unique students graduating in the FY2009-10 cohort who were either enrolled in FY2010-11 or had completed another degree in FY2010-11 were removed from the analysis. Similarly any student graduating in the FY2014-15 cohort who were either enrolled in FY2015-16 or had completed another degree in FY2015-16 were removed. For both cohorts only students meeting the wage threshold one year post-graduation were included in this section.

This left a total of 15,633 graduates in FY2009-10 compared to 19,278 students in FY2014-15. This means that a larger percentage of students met the one-year wage threshold from the FY2014-15 cohort compared to the FY2009-10 cohort. A larger percentage of students in the second cohort meeting the wage threshold may be an indication of the improvement in the economy between 2010 and 2015.

Figure 8: Percentage of Students Found in Wage Records and Meeting Wage Threshold FY2009-10

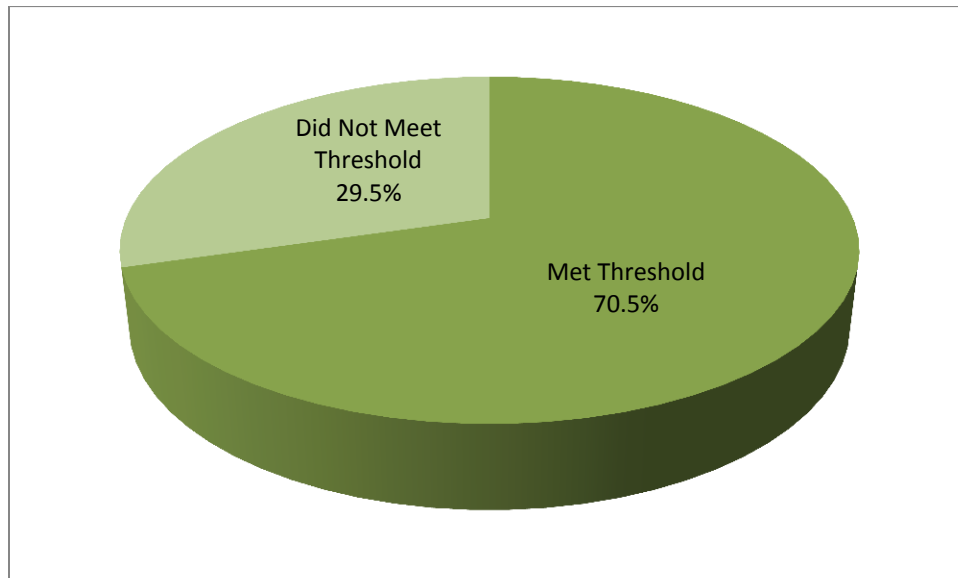
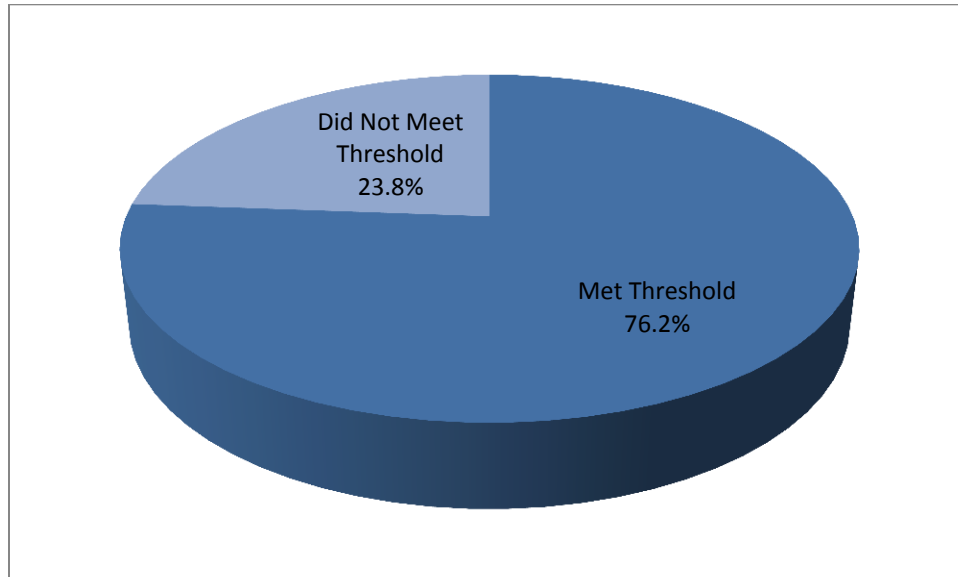
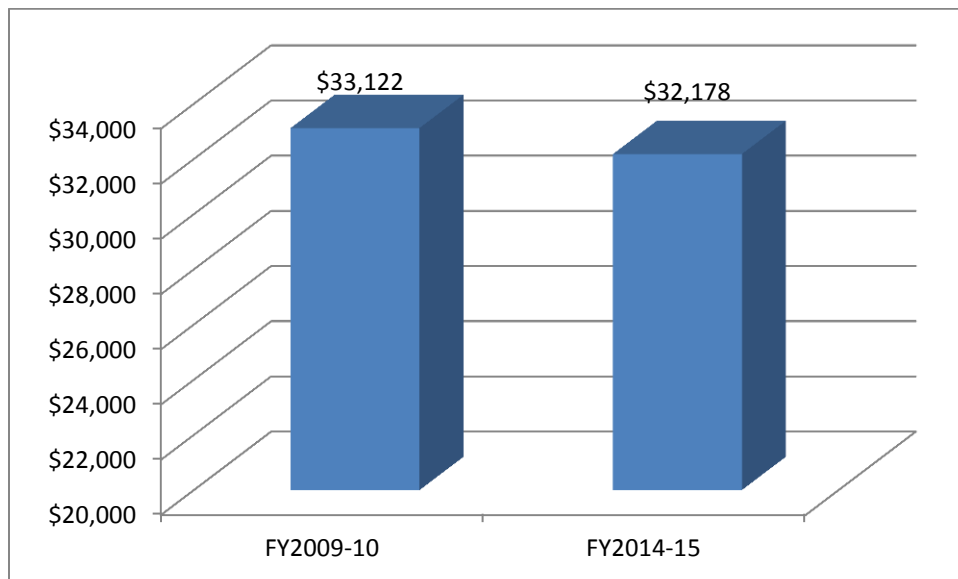


Figure 9: Percentage of Students Found in Wage Records and Meeting Wage Threshold FY2014-15



However, the median wages for those students found in the wage records who met the threshold declined, overall, between the two cohorts by about 2.8 percent in inflation-adjusted terms.

Figure 10: Median Wages One Year Post-Graduation, FY2009-10 & FY2014-15



These findings conform with some national evidence that wages for recent college graduates have stagnated, especially for some majors. The Chicago Tribune cites an unpublished analysis by the Georgetown University Center on Education and the Workforce showing that wages for college graduates across many majors have fallen since the 2007-2009 recession.

In their “Class of 2014” report, the Economic Policy Institute (EPI) found that the average hourly wages for young college graduates had fallen 6.9 percent for college graduates since 2007. This was a trend they cited going back as far as the early 2000s. Between 2000 and 2007 wages for all college graduates fell 0.9 percent. Future analysis should examine additional years of graduates to determine if this trend is continuing in the state. If so, this could be an indication of an oversupply of labor in particular areas.

Change in Median Wages by Degree Level

Between the FY2009-10 and FY2014-15 cohorts, wages declined for those receiving a certificate/diploma, an associate’s degree, and a master’s/specialist degree. Wages for bachelor’s degree recipients as well as doctorate/first-professionals improved.

Table 16: Median Wages by Degree Level One Year Post-Graduation, FY2009-10 vs.2014-15

Degree Level	FY2009-10	FY2014-15	Percent Change
Certificate/Diploma	\$27,560	\$27,264	-1.1%
Associate	\$35,877	\$33,094	-7.8%
Bachelor	\$28,865	\$29,282	1.4%
Masters/Specialist	\$44,729	\$43,620	-2.5%
Doctorate/First-Professional	\$53,650	\$56,689	5.7%

Again, looking only at aggregates provides an incomplete picture of the value of various degrees of higher education. For example, while overall Associate Degree holders may have experienced a 7.8 percent drop in their median wages between the cohorts, if you examine specific degrees, such as Dental Hygiene, median wages between the cohorts increased over 17 percent. The next section, as well as Appendix G, examines these trends in more detail.

Change in Median Wages by Major

Looking more closely at the change in median wages by major, there is no consistent pattern. Eleven CIP codes experienced declines in their median wages while 23 CIP codes had increases.

Table 17: Median Wages One Year Post-Graduation, FY2009-10 & FY2014-15

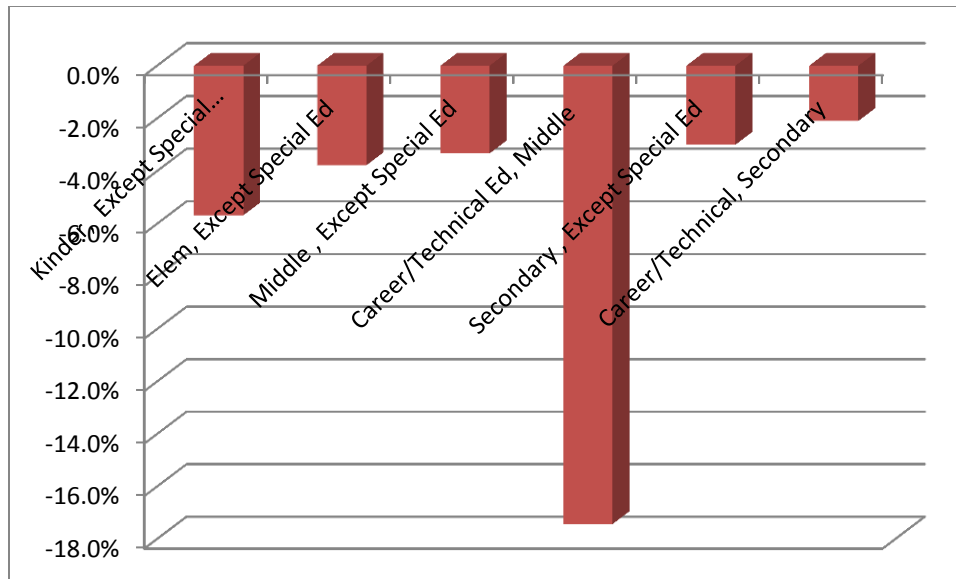
CIP Code	FY2009-10	FY2014-15	Percent Change
Education (13)	\$38,067	\$34,669	-8.9%
Construction Trades (46)	\$29,501	\$27,139	-8.0%
Liberal Arts (24)	\$25,907	\$24,328	-6.1%
Library Science (25)	\$38,136	\$36,222	-5.0%
English Language and Literature (23)	\$25,698	\$24,771	-3.6%
Public Administration and Social Service (44)	\$29,449	\$28,591	-2.9%
Physical Sciences (40)	\$32,121	\$31,252	-2.7%
Health (51)	\$42,832	\$41,713	-2.6%
Psychology (42)	\$24,364	\$23,939	-1.7%

CIP Code	FY2009-10	FY2014-15	Percent Change
Biology and Biomedical (26)	\$23,829	\$23,483	-1.5%
Philosophy and Religious Studies (38)	\$24,507	\$24,258	-1.0%
Visual and Performing Arts (50)	\$22,516	\$22,553	0.2%
Family and Consumer Sciences (19)	\$21,990	\$22,080	0.4%
Social Science (45)	\$25,144	\$25,268	0.5%
Mechanic and Repair Technologies (47)	\$32,714	\$32,898	0.6%
Business (52)	\$32,303	\$32,503	0.6%
Communication, journalism (9)	\$25,213	\$25,387	0.7%
Parks, Recreation, Leisure, and Fitness (31)	\$23,439	\$23,651	0.9%
Security and Protective Services (43)	\$27,467	\$27,731	1.0%
Legal Professions and Studies (22)	\$32,827	\$33,178	1.1%
History (54)	\$24,068	\$24,332	1.1%
Agriculture (1)	\$26,120	\$27,687	6.0%
Personal and Culinary Services (12)	\$20,679	\$21,953	6.2%
Foreign Languages, Literatures, and Linguistics (16)	\$25,432	\$27,425	7.8%
Natural Resources & Conservation (3)	\$26,371	\$28,444	7.9%
Information Technology (11)	\$33,876	\$37,389	10.4%
Transportation and Material Moving (49)	\$30,105	\$33,463	11.2%
Theology and Religious Vocation (39)	\$25,594	\$28,923	13.0%
Mathematics and Statistics (27)	\$31,457	\$35,934	14.2%
Engineering (14)	\$49,030	\$57,266	16.8%
Precision Production (48)	\$28,898	\$34,135	18.1%
Multi-Interdisciplinary Studies (30)	\$26,618	\$32,192	20.9%
Engineering Technologies (15)	\$31,361	\$42,444	35.3%
Architecture (4)	\$26,821	\$41,233	53.7%

Although some CIP codes experienced dramatic increases in their wage rates between the two periods, many of these had a small number of students insufficient to raise the overall median wage above its level for the FY2009-10 period. Majors with the largest number of graduates included health, education, and business which experienced declines.

The finding that education majors experienced the largest decline in their inflation-adjusted wages is supported in the state's Occupational Employment Statistics (OES) published by the Bureau of Labor Statistics. According to the OES and after adjusting for inflation, wages for teachers declined 2010 and 2015 between 1.7 and 17.4 percent depending on the specific occupation.

Figure 11: Annual Wage Change Selected Education Occupations, OES 2010 vs. 2015



Given the current challenges faced in recruiting and retaining qualified teachers in the state and the projected teacher shortages, declines in real wages of education majors is of significant concern.

Majors with the largest wage growth between the two periods were Engineering, Precision Production, Multi-Interdisciplinary Studies, Engineering Technologies, and Architecture.

Since wage changes vary dramatically based not only on field of study but also on degree level, Appendix G provides detailed comparisons at the CIP code and degree level.

Section VII: Conclusion

The information presented in this report should be a starting point for further exploring the benefits of linking education and workforce data. While these two cohorts can provide policy makers and families with snapshot information on the potential value of various programs and degrees, full transparency requires more years of data to explore trends and provide a sufficient sample size to ensure accuracy for smaller programs.

Despite the limited years of data examined, this study has revealed some potential areas of interest. In some cases the study confirms commonly held beliefs regarding the state of South Carolina's workforce while in others it may challenge the existing assumptions.

To varying extents, students graduating from South Carolina's colleges and universities are not found in the state's wage records five years post-graduation. While there are many potential reasons for this including federal or military employment, starting one's own business, or becoming an independent contractor, it is important to recognize that many graduates will choose

to leave the state to find employment. All studies attempting to match supplies of college graduates with future workforce demand must be cognizant of the mobility of this segment of the labor force.

Students graduating from the state's Technical College system tend to be the ones most likely to be found in the state's wage records possibly reflecting the fact that many of their programs are career/workforce-centered. Out-of-state students, particularly at the highest levels of education are the least likely to be found in the employment records across time.

In terms of wage outcomes for college graduates, the aggregate data can only reveal a partial picture. There are many college majors that have seen stagnant or even falling wages between the Great Recession and 2015. Given the rising cost of post-secondary education, ballooning student debt loads, and rapid changes in the economic landscape, it is important to arm students and families with this type of employment and wage information as they make decisions on whether to attend post-secondary education, how to finance that degree, and which majors provide the best wage growth potential.

Another important finding of the study is the degree to which wages for many in the teaching profession have fallen in recent years. While some teaching graduates may have higher than average first year earnings, their one to five year wage growth rates have been slow and their real wages have been falling. Given the current and projected future teacher shortage in the state, this is an area of particular concern for recruitment and retention of qualified teaching staff.

As other reports have suggested, there is a growing need for additional qualified STEM majors in the state. Graduates in these fields are the least likely to be found in the state's wage records, possibly indicating a high degree of mobility for additional years of schooling or other jobs. Many STEM-related majors have experienced the greatest wage growth between the two cohorts as well as growth over time between cohorts. In particular, there appears to be a significant need for additional graduates at the bachelor's level in fields such as architecture, computer and information science, and industrial, civil, and mechanical engineering.

In general, it appears that the state's focus on five particular fields as part of "Sector Strategies" is a wise investment. The areas of Diversified Manufacturing, Healthcare, Construction, Business and Information Technology Services, and Transportation, Logistics, and Wholesale Trade appear to have had strong wage growth over the five year period examined or to have higher than average entry-level wages.

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Appendix A

Table A.1: Unique Students Completing Degrees by Institution

Institution	FY2009-10 Graduates	FY2014-15 Graduates
Public Research Institutions		
Clemson	4,501	5,336
USC Columbia	6,486	7,851
MUSC	825	882
Public Comprehensive Teaching Institutions		
The Citadel	725	901
Coastal Carolina	1,373	1,868
College of Charleston	2,371	2,452
Francis Marion	605	666
Lander	475	486
SC State	739	630
USC Aiken	505	500
USC Beaufort	187	261
USC Upstate	1,019	1,104
Winthrop	1,245	1,237
Public Two-Year Regional Campuses of USC		
USC Lancaster	151	127
USC Salkehatchie	109	172
USC Sumter	58	87
USC Union	44	37
Public Technical Colleges		
Aiken	397	398
Central Carolina	626	588
Denmark	165	202
Florence-Darlington	721	772
Greenville	1,994	1,947
Horry-Georgetown	1,049	1,485
Midlands	1,553	1,617
Northeastern	223	162
Orangeburg-Calhoun	360	436
Piedmont	711	856
Spartanburg CC	607	744
TC of the Lowcountry	317	341
Tri-County	695	1,020

Institution	FY2009-10 Graduates	FY2014-15 Graduates
Trident	1,619	2,628
Williamsburg	129	150
York	761	735
Independent Senior and Junior Institutions		
Allen University	52	77
Anderson University	272	593
Benedict College	285	354
Bob Jones University	878	721
Charleston Southern University	598	576
Clafin University	310	348
Coker College	230	260
Columbia College	377	391
Columbia Int.'l University	257	340
Converse College	296	288
Erskine College	198	122
Furman University	667	704
Limestone College	745	633
Lutheran Theological Seminary	33	23
Morris College	129	126
Newberry College	139	211
North Greenville University	375	466
Presbyterian College	260	317
Sherman Coll. Of Straight Chiro.	75	56
South University*	168	382
Southern Wesleyan University	904	528
Voorhees College	110	73
Wofford College	318	388
Spartanburg Methodist College**	174	190

*For-profit, degree-granting institution

**Independent Junior Institution

Appendix B

Table B.1: Graduation Year and Semester with Corresponding Wage Year and Quarter

Graduation Year/Semester	Wages Yr/Quarter	Wages Yr/Quarter	Wages Yr/Quarter	Wages Yr/Quarter
2009-05 (Summer 2)	2009/4	2010/1	2010/2	2010/3
	2014/4	2015/1	2015/2	2015/3
2009-10 (Fall)	2010/1	2010/2	2010/3	2010/4
	2015/1	2015/2	2015/3	2015/4
2010-15 (Winter)	2010/2	2010/3	2010/4	2011/1
	2015/2	2015/3	2015/4	2016/1
2010-20 (Spring)	2010/3	2010/4	2011/1	2011/2
	2015/3	2015/4	2016/1	2016/2
2010-30 (Summer 1)	2010/3	2010/4	2011/1	2011/2
	2015/3	2015/4	2016/1	2016/2
2014-05 (Summer 2)	2014/4	2015/1	2015/2	2015/3
2014-10 (Fall)	2015/1	2015/2	2015/3	2015/4
2015-15 (Winter)	2015/2	2015/3	2015/4	2016/1
2015-20 (Spring)	2015/3	2015/4	2016/1	2016/2
2015-30 (Summer 1)	2015/3	2015/4	2016/1	2016/2

Appendix C

Table C.1: Percentage of Students Found in Wage Records One Year Post-Graduation by Detailed Degree Level, FY2009-10

	Students	In Wage Records	Percent in Wage Records
Certificate <1 Year	1,569	1,189	75.8%
One Yr but < 2 Yr Certificate	517	444	85.9%
Associate	4,361	3,583	82.2%
Bachelor	16,015	9,583	59.8%
Post Baccalaureate	43	26	60.5%
Doctor's Professional Practice	640	341	53.3%
Masters	4,358	2,769	63.5%
Post Master's Certificate	N/D	N/D	N/D
Specialist ¹⁸	79	62	78.5%
Doctor's: Research/Scholarship	557	259	46.5%

Table C.2: Percentage of Students Found in Wage Records One Year Post-Graduation by Detailed Degree Level, FY2014-15

	Students	In Wage Records	Percent in Wage Records
Certificate <1 Year	2,276	1,856	81.5%
One Yr but < 2 Yr Certificate	709	633	89.3%
Associate	6,767	5,555	82.1%
Bachelor	21,351	13,178	61.7%
Post Baccalaureate	93	49	52.7%
Doctor's Professional Practice	851	452	53.1%
Masters	5,193	3,062	59.0%
Post Master's Certificate	19	17	89.5%
Specialist	147	117	79.6%
Doctor's: Research/Scholarship	856	385	45.0%
Independent Institutions	2,276	1,856	81.5%

¹⁸ This degree is most typically used in the education field.

Table C.3: Percentage of Students Found in Wage Records Five Years Post-Graduation by Detailed Degree Level, FY2009-10

	Students	In Wage Records	Percent in Wage Records
Certificate <1 Year	1,569	1,034	65.9%
One Yr but < 2 Yr Certificate	517	366	70.8%
Associate	4,361	3,140	72.0%
Bachelor	16,015	6,867	42.9%
Post Baccalaureate	43	18	41.9%
Doctor's Professional Practice	640	322	50.3%
Masters	4,358	2,104	48.3%
Post Master's Certificate	N/D	N/D	N/D
Specialist	79	53	67.1%
Doctor's: Research/Scholarship	557	173	31.1%

Appendix D

Students remain in the state one and five years after graduation at different rates depending on their geographic origin and the type of school attended. In general, students at research universities tend to have the lowest percentage of students found in the state wage records while those at the technical colleges had the highest rates.

Out of state students do not typically have high match rates in the employment records except for the technical colleges.

Table D.1: Percentage of Students Found in Wage Records One and Five Years Post-Graduation by Sector and Geographic Origin, FY2009-10

Geographic Origin	Count	1-Year Count	1-Year Percentage	5-Year Count	5-Year Percentage
Research Institutions					
In-State	5,555	4,126	74.3%	3,249	58.5%
Out-of-State	3,648	1,144	31.4%	604	16.6%
Comprehensive Teaching Institutions					
In-State	4,418	3,495	79.1%	2,674	60.5%
Out-of-State	2,677	1,132	42.3%	561	21.0%
Two-Year Regional Campuses of USC					
In-State	58	44	75.9%	39	67.2%
Out-of-State	19	7	36.8%	5	26.3%
Technical Colleges					
In-State	3,726	3,109	83.4%	2,734	73.4%
Out-of-State	2,514	1,978	78.7%	1,696	67.5%
Independent Institutions***					
In-State***	795	664	83.5%	557	70.1%
Out-of-State***	4,736	2,559	54.0%	1,958	41.3%

*****Note:** State of origin information is missing for the majority of students from independent institutions. Any student with missing data was included in the out-of-state category.

Additionally, there are significant differences in the likelihood of being found in the wage records based on the student's college major or discipline and geographic origin. Those students in the Trades, Health, and Education tend to have the highest match rates for both in-state and out-of-state students.

Table D.2: Percentage of Students Found in Wage Records Five Years Post-Graduation by Discipline and Geographic Origin, FY2009-10

College Major (Discipline)	In-State Matches 5 Years Post-Graduation	Out-of-State Matches 5 Years Post-Graduation
Arts & Humanities	52.7%	25.9%
Business & Communication	62.0%	33.3%
Education	73.6%	44.5%

College Major (Discipline)	In-State Matches 5 Years Post-Graduation	Out-of-State Matches 5 Years Post-Graduation
Health	71.8%	54.9%
Social & Behavioral	59.4%	27.5%
STEM	56.7%	26.7%
Trades	74.4%	60.1%

Appendix E

The area or field of study code refers to the Classification of Instructional Program (CIP) codes that were developed and maintained by the US Department of Education's National Center for Education Statistics (NCES).

Table E.1 provides the percentage of students found in the state's wage records one year post-graduation for both cohorts of students.

Table E.1: Percentage of Students in Wage Records One Year Post-Graduation, by CIP

Classification of Instructional Program	FY2009-10		FY2014-15	
	Students	% in WR	Students	% in WR
Agriculture (1)	224	53.1%	344	61.9%
Natural Resources & Conservation (3)	114	64.9%	144	61.1%
Architecture (4)	110	48.2%	116	41.4%
Area, Ethnic, Cultural, Gender Studies (5)	23	34.8%	26	53.8%
Communication, journalism (9)	923	61.2%	1,199	56.6%
Communications Technologies (10)	22	81.8%	31	74.2%
Information Technology (11)	621	65.5%	1,084	67.2%
Personal and Culinary Services (12)	214	72.4%	343	80.8%
Education (13)	2,535	74.1%	2,987	81.4%
Engineering (14)	916	53.8%	1,539	46.7%
Engineering Technologies (15)	354	72.0%	526	76.8%
Foreign Languages, Literatures, and Linguistics (16)	247	49.0%	259	57.1%
Family and Consumer Sciences (19)	302	72.2%	434	72.6%
Legal Professions and Studies (22)	365	70.1%	365	77.0%
English Language and Literature (23)	563	54.0%	636	60.8%
Liberal Arts (24)	816	69.6%	1,770	73.0%
Library Science (25)	124	54.8%	92	66.3%
Biology and Biomedical (26)	903	52.0%	1,996	55.0%
Mathematics and Statistics (27)	172	45.9%	262	50.4%
Military Technologies (29)			17	58.8%
Multi-Interdisciplinary Studies (30)	336	70.8%	761	76.0%
Parks, Recreation, Leisure, and Fitness (31)	619	49.3%	968	56.3%
Philosophy and Religious Studies (38)	168	36.9%	148	54.7%
Theology and Religious Vocation (39)	438	35.8%	407	37.6%
Physical Sciences (40)	330	47.6%	406	47.5%
Science Technologies (41)	N/D	N/D	N/D	N/D
Psychology (42)	950	61.3%	1,388	65.6%
Security and Protective Services (43)	593	73.5%	971	73.3%
Public Administration and Social Service (44)	487	71.5%	792	68.1%
Social Science (45)	1,405	53.7%	1,585	53.6%
Construction Trades (46)	25	84.0%	112	59.8%
Mechanic and Repair Technologies (47)	526	79.1%	622	82.5%
Precision Production (48)	295	82.0%	395	89.4%
Transportation and Material Moving (49)	116	80.2%	178	86.0%

Classification of Instructional Program	FY2009-10		FY2014-15	
	Students	% in WR	Students	% in WR
Visual and Performing Arts (50)	1,017	56.3%	1,199	60.1%
Health (51)	4,533	78.3%	6,385	76.7%
Business (52)	6,276	63.3%	7,321	60.3%
History (54)	479	49.5%	448	61.8%
TOTAL	28,146	64.9%	38,262	66.1%

Table E.2 provides the percentage of students found in the state's wage records five years post-graduation for students graduating in FY2009-10.

Table E.2: Percentage of Students in Wage Records Five Years Post-Graduation, by CIP

Classification of Instructional Program	Students	One Year	Five Years
		% in WR	% in WR
Agriculture (1)	224	53.1%	42.4%
Natural Resources & Conservation (3)	114	64.9%	50.9%
Architecture (4)	110	48.2%	34.5%
Area, Ethnic, Cultural, Gender Studies (5)	23	34.8%	26.1%
Communication, journalism (9)	923	61.2%	41.3%
Communications Technologies (10)	22	81.8%	68.2%
Information Technology (11)	621	65.5%	55.6%
Personal and Culinary Services (12)	214	72.4%	51.4%
Education (13)	2,535	74.1%	60.0%
Engineering (14)	916	53.8%	40.5%
Engineering Technologies (15)	354	72.0%	65.8%
Foreign Languages, Literatures, and Linguistics (16)	247	49.0%	25.5%
Family and Consumer Sciences (19)	302	72.2%	56.0%
Legal Professions and Studies (22)	365	70.1%	57.0%
English Language and Literature (23)	563	54.0%	33.4%
Liberal Arts (24)	816	69.6%	51.6%
Library Science (25)	124	54.8%	41.1%
Biology and Biomedical (26)	903	52.0%	32.0%
Mathematics and Statistics (27)	172	45.9%	29.7%
Military Technologies (29)			
Multi-Interdisciplinary Studies (30)	336	70.8%	56.0%
Parks, Recreation, Leisure, and Fitness (31)	619	49.3%	37.8%
Philosophy and Religious Studies (38)	168	36.9%	22.6%
Theology and Religious Vocation (39)	438	35.8%	18.9%
Physical Sciences (40)	330	47.6%	25.2%
Science Technologies (41)	N/D	N/D	80.0%
Psychology (42)	950	61.3%	40.2%
Security and Protective Services (43)	593	73.5%	61.0%
Public Administration and Social Service (44)	487	71.5%	59.1%
Social Science (45)	1,405	53.7%	35.9%

		One Year	Five Years
Classification of Instructional Program	Students	% in WR	% in WR
Construction Trades (46)	25	84.0%	72.0%
Mechanic and Repair Technologies (47)	526	79.1%	74.1%
Precision Production (48)	295	82.0%	79.3%
Transportation and Material Moving (49)	116	80.2%	69.8%
Visual and Performing Arts (50)	1,017	56.3%	38.2%
Health (51)	4,533	78.3%	65.7%
Business (52)	6,276	63.3%	48.5%
History (54)	479	49.5%	35.5%
TOTAL	28,146	64.9%	50.0%

Appendix F

CIP codes were further aggregated into seven disciplines defined in a report from the State Higher Education Executive Officers (SHEEO) entitled “The Economic Benefit of Postsecondary Degrees.” The SHEEO disciplines are defined in Table D.1.

Table F.1: CIP Codes Included in SHEEO Disciplines

Discipline	CIP Code	CIP Description
Arts and Humanities	5	Area, ethnic, cultural, and gender studies
	16	Foreign languages, literatures, and linguistics
	23	English language, and literature/letters
	24	Liberal arts and sciences, general studies and humanities
	30	Multi-Interdisciplinary studies
	38	Philosophy and religious studies
	39	Theology and religious vocations
	50	Visual and performing arts
	54	History
Business and Communication	9	Communication, journalism, and related
	10	Communications technologies/technicians and support
	52	Business, management, marketing, and related support
Education	13	Education
Health	51	Health professions and related clinical sciences
Social and Behavioral Sciences and Human Services	19	Family and consumer sciences/human sciences
	22	Legal Professions
	25	Library science
	31	Parks, recreation, leisure, and fitness studies
	42	Psychology
	44	Public administration and social service professions
	45	Social sciences
Science, Technology, Engineering, and Math (STEM)	1	Agriculture, agriculture operations, and related
	3	Natural resources and conservation
	4	Architecture and related
	11	Computer and information sciences and support
	14	Engineering
	15	Engineering technologies/technicians
	26	Biological and biomedical sciences
	27	Mathematics and statistics
	28	Military science, leadership and operational art
	29	Military technologies and applied sciences
	40	Physical sciences
41	Science technologies/technicians	
Trades	12	Personal and culinary services
	43	Security and protective services
	46	Construction trades

Discipline	CIP Code	CIP Description
	47	Mechanic and repair technologies/technicians
	48	Precision production
	49	Transportation and material moving

Appendix G

This appendix provides the median wages by detailed CIP code and degree level for students one year post-graduation for the two cohorts. Only majors/degree levels with at least 10 students are reported.

Table G.1: Comparison of Median Wages by Major for Certificate or Diploma Graduates

Program	FY2009-10		FY2014-15		Percent Change
	Graduates	Wage	Graduates	Wage	
Machine Tool Technology/Machinist	23	\$28,755	27	\$44,832	55.9%
Medical Administrative/Executive Assistant and Medical Secretary	11	\$19,569	13	\$25,351	29.5%
Diesel Mechanics Technology	10	\$24,379	14	\$31,172	27.9%
Health Information/Medical Records Technology	29	\$23,503	26	\$27,328	16.3%
Accounting	34	\$24,751	27	\$28,411	14.8%
Truck and Bus Driver/Commercial Vehicle Operator and Instructor	69	\$30,105	126	\$33,212	10.3%
Cosmetology and Related Personal Grooming Services	34	\$19,574	54	\$21,510	9.9%
Child Care Provider/Assistant	41	\$20,531	21	\$22,180	8.0%
Welding Technology/Welder	126	\$26,671	160	\$28,543	7.0%
Automobile Mechanics Technology	33	\$24,641	32	\$25,052	1.7%
Commercial and Advertising Art	11	\$23,013	10	\$23,269	1.1%
Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology	103	\$30,099	92	\$30,313	0.7%
Legal Assistant/Paralegal	40	\$29,279	32	\$29,389	0.4%
Health Professions and Related Clinical Sciences, Other	18	\$22,526	16	\$21,895	-2.8%
Physical Therapy Assistant	37	\$23,814	38	\$23,067	-3.1%
Administrative Assistant and Secretarial Science, General	35	\$21,309	19	\$20,605	-3.3%
Medical/Clinical Assistant	67	\$22,276	85	\$21,438	-3.8%
Computer and Information Sciences and Support Services, Other	17	\$36,616	21	\$35,117	-4.1%
Lineworker	10	\$30,540	27	\$29,222	-4.3%
Pharmacy	62	\$27,340	69	\$25,998	-4.9%

Program	FY2009-10		FY2014-15		Percent Change
	Graduates	Wage	Graduates	Wage	
Technician/Assistant					
Registered Nurse	61	\$21,751	33	\$20,546	-5.5%
Licensed Practical/Vocational Nurse Training	203	\$32,360	200	\$30,441	-5.9%
Medical Radiologic Technology/Science-Radiation Therapist	24	\$43,169	31	\$40,371	-6.5%
Dental Assisting/Assistant	73	\$25,169	87	\$23,420	-6.9%
Electrical and Electronic Engineering Technologies, Other	20	\$32,469	10	\$29,710	-8.5%
Business/Commerce, General	16	\$26,442	14	\$22,691	-14.2%
Mechanical Drafting and Mechanical Drafting CAD/CADD	20	\$31,571	14	\$26,076	-17.4%
Airframe Mechanics and Aircraft Maintenance Technology	12	\$41,260	20	\$33,428	-19.0%
Industrial Mechanics and Maintenance Technology	39	\$63,130	25	\$41,701	-33.9%
Business Administration and Management, General	16	\$44,995	14	\$28,953	-35.7%

Table G.2: Comparison of Median Wages by Major for Associate Degree Graduates

Program	FY2009-10		FY2014-15		Percent Change
	Graduates	Wage	Graduates	Wage	
Civil Engineering Technology	26	\$26,452	11	\$32,987	24.7%
Computer and Information Sciences and Support Services, Other	25	\$28,215	44	\$33,711	19.5%
Machine Tool Technology/Machinist	36	\$35,267	79	\$41,890	18.8%
Sales, Distribution, and Marketing Operations, General	19	\$25,113	32	\$29,741	18.4%
Industrial Electronics Technology	66	\$36,041	87	\$42,627	18.3%
Dental Hygiene/Hygienist	68	\$30,802	70	\$36,061	17.1%
Health Information/Medical Records Technology	13	\$23,859	32	\$27,887	16.9%
Radiation Protection/Health Physics Technician	11	\$37,756	21	\$43,199	14.4%
Clinical/Medical Laboratory	48	\$31,443	45	\$35,647	13.4%

Program	FY2009-10		FY2014-15		Percent Change
	Graduates	Wage	Graduates	Wage	
Technician					
Multi/Interdisciplinary Studies	96	\$29,649	396	\$33,565	13.2%
Automobile Mechanics Technology	37	\$24,394	50	\$26,314	7.9%
Electrical, Electronic and Communications Engineering Technology	40	\$39,168	76	\$41,928	7.0%
Data Processing and Data Processing Technology	76	\$31,429	194	\$32,863	4.6%
Accounting	87	\$27,705	126	\$28,048	1.2%
Veterinary/Animal Health Technology Assistant	39	\$25,321	46	\$25,488	0.7%
Respiratory Care Therapist	68	\$40,992	63	\$41,071	0.2%
Medical Radiologic Technology/Science-Radiation Therapist	90	\$35,808	125	\$35,532	-0.8%
Registered Nurse	969	\$45,821	869	\$45,283	-1.2%
Culinary Arts and Related Services	34	\$22,735	75	\$22,466	-1.2%
Business/Commerce, General	100	\$29,235	124	\$28,652	-2.0%
Child Care and Support Services Management	41	\$20,027	82	\$19,439	-2.9%
Business Administration and Management, General	125	\$32,799	179	\$31,812	-3.0%
Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology	16	\$32,533	31	\$31,341	-3.7%
Criminal Justice/Safety Studies	104	\$27,907	156	\$26,627	-4.6%
Commercial and Advertising Art	11	\$24,327	25	\$23,055	-5.2%
Administrative Assistant and Secretarial Science, General	69	\$25,157	147	\$23,463	-6.7%
Liberal Arts and Sciences, General Studies, and Humanities	285	\$25,880	572	\$23,911	-7.6%
Legal Assistant/Paralegal	62	\$28,023	69	\$25,479	-9.1%
Industrial Mechanics and Maintenance Technology	22	\$45,314	41	\$40,577	-10.5%
Emergency Medical Technology (EMT)	12	\$50,025	42	\$44,503	-11.0%
Physical Therapy Assistant	71	\$41,871	89	\$36,612	-12.6%
Hotel/Motel Administration/Management	10	\$30,006	11	\$23,539	-21.6%
Occupational Therapist Assistant	33	\$43,815	27	\$33,286	-24.0%

Table G.3: Comparison of Median Wages by Major for *Bachelor's Degree Graduates*

Program	FY2009-10		FY2014-15		Percent Change
	Graduates	Wage	Graduates	Wage	
Architecture	13	\$19,279	13	\$33,090	71.6%
Computer and Information Sciences, General	66	\$32,983	106	\$49,161	49.0%
Music, General	22	\$19,951	36	\$28,354	42.1%
Forest Management/Forest Resources Management	19	\$25,581	10	\$34,360	34.3%
Broadcast Journalism	23	\$22,941	24	\$28,775	25.4%
Industrial Engineering	18	\$49,604	21	\$59,787	20.5%
Business/Managerial Economics	19	\$27,801	33	\$33,415	20.2%
Civil Engineering, General	92	\$42,315	112	\$50,130	18.5%
Organizational Behavior Studies	30	\$29,537	18	\$34,883	18.1%
Mechanical Engineering	119	\$51,076	134	\$59,719	16.9%
Agricultural Business and Management, General	13	\$18,038	17	\$20,780	15.2%
Mathematics, General	36	\$29,539	62	\$34,004	15.1%
Marketing/Marketing Management, General	178	\$26,693	192	\$30,707	15.0%
Bible/Biblical Studies	21	\$20,387	18	\$23,281	14.2%
Sport and Fitness Administration/Management	71	\$22,272	83	\$25,330	13.7%
Information Technology	17	\$30,289	69	\$34,038	12.4%
Business/Commerce, General	45	\$27,345	40	\$30,488	11.5%
Finance, General	152	\$30,637	145	\$33,770	10.2%
Early Childhood Education and Teaching	259	\$27,549	278	\$30,142	9.4%
Advertising	36	\$25,692	19	\$28,025	9.1%
Art Teacher Education	18	\$25,714	13	\$27,999	8.9%
Electrical and Electronics Engineering	47	\$54,197	83	\$58,962	8.8%
Computer Engineering, General	19	\$50,555	34	\$54,823	8.4%
Construction Management	21	\$43,457	30	\$46,907	7.9%
Sociology	143	\$23,002	214	\$24,676	7.3%
Criminal Justice/Safety Studies	17	\$27,427	33	\$29,402	7.2%
Parks, Recreation and Leisure Facilities Management, General	25	\$22,892	64	\$24,380	6.5%
Political Science and Government, General	163	\$24,399	160	\$25,983	6.5%
Business Administration and	987	\$29,084	988	\$30,895	6.2%

Program	FY2009-10		FY2014-15		Percent Change
	Graduates	Wage	Graduates	Wage	
Management, General					
Marine Biology and Biological Oceanography	16	\$20,635	38	\$21,876	6.0%
Elementary Education and Teaching	258	\$28,795	315	\$30,222	5.0%
Accounting	156	\$29,279	191	\$30,712	4.9%
Economics	57	\$28,053	60	\$29,291	4.4%
Speech Communication and Rhetoric	159	\$25,103	173	\$26,078	3.9%
Resort Management	10	\$25,203	18	\$26,148	3.7%
Art History, Criticism and Conservation	13	\$19,931	16	\$20,614	3.4%
Industrial and Product Design	21	\$25,435	24	\$26,288	3.4%
International Business/Trade/Commerce	38	\$31,070	44	\$32,064	3.2%
Social Sciences, General	25	\$23,997	37	\$24,513	2.1%
Public Health Education and Promotion	21	\$22,367	56	\$22,827	2.1%
Chemistry, General	62	\$29,242	59	\$29,807	1.9%
Registered Nurse	723	\$47,004	913	\$47,683	1.4%
Criminal Justice/Law Enforcement Administration	194	\$26,232	272	\$26,609	1.4%
Spanish Language and Literature	34	\$25,234	29	\$25,538	1.2%
Religion/Religious Studies	10	\$23,991	20	\$24,279	1.2%
History, General	127	\$24,049	153	\$24,309	1.1%
Kinesiology and Exercise Science	63	\$22,148	88	\$22,353	0.9%
Social Work	72	\$24,974	113	\$25,075	0.4%
Rhetoric and Composition	27	\$26,860	20	\$26,925	0.2%
Biology/Biological Sciences, General	240	\$22,384	400	\$22,437	0.2%
Music Teacher Education	30	\$30,757	28	\$30,755	0.0%
Business Administration, Management and Operations, Other	236	\$36,760	135	\$36,717	-0.1%
Philosophy	18	\$23,098	17	\$22,996	-0.4%
Hospitality Administration/Management, General	101	\$26,231	138	\$26,105	-0.5%
Physical Education Teaching and Coaching	98	\$27,078	73	\$26,912	-0.6%
Psychology, General	259	\$23,547	377	\$23,312	-1.0%
Junior High/Intermediate/Middle School Education and	60	\$30,772	72	\$30,374	-1.3%

Program	FY2009-10		FY2014-15		Percent Change
	Graduates	Wage	Graduates	Wage	
Teaching					
Mass Communication/Media Studies	24	\$22,149	55	\$21,780	-1.7%
Retailing and Retail Operations	45	\$25,810	61	\$25,346	-1.8%
Chemical Engineering	24	\$64,872	43	\$63,248	-2.5%
Secondary Education and Teaching	45	\$31,385	46	\$30,599	-2.5%
Information Science/Studies	24	\$38,800	37	\$37,814	-2.5%
Public Relations/Image Management	56	\$25,095	74	\$24,214	-3.5%
Art/Art Studies, General	44	\$23,277	30	\$22,294	-4.2%
Film/Video and Photographic Arts, Other	28	\$21,457	24	\$20,421	-4.8%
Fine and Studio Arts Management	18	\$25,227	25	\$23,996	-4.9%
Experimental Psychology	55	\$22,811	109	\$21,686	-4.9%
Special Education and Teaching, General	62	\$33,180	104	\$31,542	-4.9%
Family and Consumer Sciences/Human Sciences, General	22	\$22,994	23	\$21,642	-5.9%
English Language and Literature, General	133	\$24,762	160	\$23,147	-6.5%
Human Development and Family Studies, General	13	\$21,119	12	\$19,287	-8.7%
Mathematics Teacher Education	12	\$33,509	24	\$30,391	-9.3%
Drama and Dramatics/Theater Arts, General	15	\$21,263	23	\$18,958	-10.8%
Anthropology	16	\$25,342	11	\$22,468	-11.3%
Liberal Arts and Sciences, General Studies, and Humanities	103	\$28,148	201	\$24,558	-12.8%
Fine/Studio Arts, General	47	\$23,425	53	\$20,120	-14.1%
Digital Communication and Media/Multimedia	15	\$27,534	19	\$23,222	-15.7%
Computer and Information Systems Security/Information Assurance	16	\$47,798	12	\$40,035	-16.2%
Health/Health Care Administration/Management	12	\$34,248	20	\$28,430	-17.0%
Humanities/Humanistic Studies	19	\$24,694	24	\$20,282	-17.9%
Health Professions and Related Clinical Sciences, Other	48	\$35,708	23	\$24,924	-30.2%

Table G.4: Comparison of Median Wages by Major for *Master's/Specialist Degree Graduates*

Program	FY2009-10		FY2014-15		Percent Change
	Graduates	Wage	Graduates	Wage	
Divinity/Ministry	20	\$27,440	20	\$51,396	87.3%
Human Resources Management/Personnel Administration, General	24	\$39,781	40	\$54,108	36.0%
Maternal/Child Health and Neonatal Nurse/Nursing	22	\$58,921	14	\$76,380	29.6%
Biology/Biological Sciences, General	10	\$32,949	19	\$42,315	28.4%
Civil Engineering, General	18	\$49,158	20	\$60,228	22.5%
Counseling Psychology	13	\$22,552	17	\$25,492	13.0%
Reading Teacher Education	61	\$42,453	72	\$47,013	10.7%
Human Resources Development	64	\$46,611	17	\$51,359	10.2%
Audiology/Audiologist and Speech-Language Pathology	10	\$43,630	20	\$46,407	6.4%
Educational/Instructional Technology	14	\$41,489	13	\$44,116	6.3%
Education, General	17	\$41,499	119	\$43,979	6.0%
English Language and Literature, General	25	\$28,760	18	\$30,416	5.8%
Operations Management and Supervision	57	\$56,831	46	\$60,083	5.7%
College Student Counseling and Personnel Services	10	\$30,444	15	\$32,110	5.5%
Junior High/Intermediate/Middle School Education and Teaching	27	\$34,139	37	\$35,979	5.4%
Speech-Language Pathology/Pathologist	35	\$46,698	34	\$49,194	5.3%
Educational Administration and Supervision, Other	14	\$48,078	49	\$50,565	5.2%
Nursing Science	29	\$72,685	44	\$75,781	4.3%
Social Work	118	\$31,908	166	\$33,213	4.1%
Public Health/Community Nurse/Nursing	15	\$64,781	17	\$67,292	3.9%
Teacher Education, Multiple Levels	18	\$35,617	18	\$36,901	3.6%
Counselor Education/School Counseling and Guidance Services	83	\$34,987	94	\$36,173	3.4%
Health/Health Care Administration/Management	28	\$45,684	48	\$46,916	2.7%
Rehabilitation and Therapeutic Professions, Other	71	\$46,593	34	\$46,848	0.5%

Program	FY2009-10		FY2014-15		Percent Change
	Graduates	Wage	Graduates	Wage	
Public Administration	27	\$39,427	22	\$39,532	0.3%
Psychology, General	16	\$34,696	12	\$33,776	-2.7%
Business Administration and Management, General	385	\$59,312	382	\$57,707	-2.7%
Physician Assistant	45	\$78,572	37	\$76,002	-3.3%
Curriculum and Instruction	12	\$41,096	15	\$39,687	-3.4%
Applied Psychology	18	\$40,920	21	\$38,935	-4.9%
Library and Information Science	68	\$38,136	48	\$36,222	-5.0%
Secondary Education and Teaching	85	\$37,794	94	\$35,807	-5.3%
Elementary Education and Teaching	68	\$41,473	46	\$39,054	-5.8%
Educational Leadership and Administration, General	247	\$57,865	194	\$53,556	-7.4%
Teacher Education and Professional Development, Specific Subject Areas, Other	104	\$45,757	88	\$42,330	-7.5%
Teacher Education and Professional Development, Specific Levels and Methods, Other	256	\$45,576	38	\$42,104	-7.6%
Special Education and Teaching, Other	27	\$43,622	23	\$39,828	-8.7%
Marine Biology and Biological Oceanography	12	\$28,474	13	\$25,864	-9.2%
Accounting	81	\$54,744	83	\$49,708	-9.2%
Early Childhood Education and Teaching	73	\$38,420	24	\$34,378	-10.5%
Nurse Anesthetist	42	\$158,836	30	\$139,524	-12.2%
Mechanical Engineering	16	\$71,463	20	\$61,733	-13.6%
Education/Teaching of Individuals with Specific Learning Disabilities	24	\$46,305	11	\$39,069	-15.6%
Mental Health Counseling/Counselor	29	\$33,031	18	\$27,594	-16.5%
Special Education and Teaching, General	34	\$42,294	15	\$35,006	-17.2%

Table G.5: Comparison of Median Wages by Major for *Doctorate or First Professional Degree Graduates*

Program	FY2009-10		FY2014-15		Percent Change
	Graduates	Wage	Graduates	Wage	
Law	108	\$35,214	127	\$37,724	7.1%

Program	FY2009-10		FY2014-15		Percent Change
	Graduates	Wage	Graduates	Wage	
Physical Therapy/Therapist	44	\$58,526	44	\$61,501	5.1%
Medicine	80	\$49,463	79	\$51,183	3.5%
Curriculum and Instruction	14	\$62,036	17	\$64,150	3.4%
Chemistry, General	14	\$50,631	10	\$48,992	-3.2%
Educational Leadership and Administration, General	40	\$82,088	53	\$72,529	-11.6%
Pharmacy	113	\$114,181	172	\$98,999	-13.3%

At the less than associate's degree level (one or two year certificates/diplomas) there appears to be upward pressure on wages for majors in:

- Machine Tool Technology/Machinists
- Medical Administrative/Executive Assistant and Medical Secretary
- Diesel Mechanics Technology
- Health Information/Medical Records Technology and
- Accounting

At the associate's degree level, there may be an additional need for graduates in:

- Civil Engineering Technology
- Computer and Information Sciences and Support Services, Other
- Machine Tool Technology/Machinist
- Sales, Distribution, and Marketing Operations, General and
- Industrial Electronics Technology

At the bachelor's degree level, the state has seen high wage growth for:

- Architecture
- Computer and Information Sciences, General
- Music, General
- Forest Management/Forest Resources Management
- Broadcast Journalism

At the master's/specialist degree level, the majors with the largest change in wages have been:

- Divinity/Ministry
- Human Resources Management/Personnel Administration, General
- Maternal/Child Health and Neonatal Nurse/Nursing
- Biology/Biological Sciences, General
- Civil Engineering

For graduates with a doctorate or first professional degree, wage growth has been strongest for:

- Law
- Physical Therapy/Therapist
- Medicine
- Curriculum and Instruction