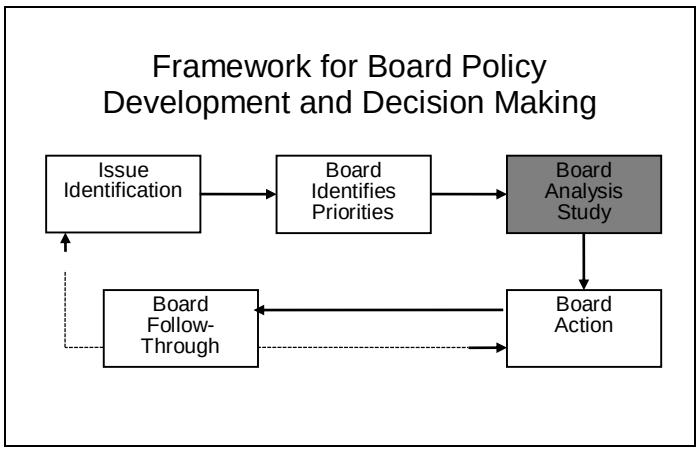
Iowa State Board of Education

Executive Summary

September 18, 2014



Agenda Item: Community College Program Outcomes Report

Iowa Goal: Individuals will pursue postsecondary education in order to drive economic success.

State Board Role/Authority: This report is presented for information only as the State Board provides leadership and advocacy for the education system in Iowa.

Presenters: Jeremy Varner, Administrator
Division of Community Colleges

Attachments: 1

Recommendation: It is recommended that the State Board hear and discuss this information.

Background: This is a new report providing the outcomes of students enrolled in community college certificate, diploma, and associate degree programs during fiscal years 2010 through 2012. Developed through linkages between state and national educational and employment administrative records, the report provides information about community college awards, time-to-degree, retention, migration, transfers to other postsecondary institutions, employment and wages, career clusters, and career pathways.

Education Outcomes

Certificate, Diploma, and Associate Degree Programs

Iowa Community Colleges

FY 2010 to FY 2012

September 2014

Community Colleges

Iowa Workforce Development

This report was prepared through a partnership between the Iowa Department of Education Division of Community Colleges and Iowa Workforce Development Division of Communications and Labor Market Information.

Iowa Department of Education
Division of Community Colleges
Grimes State Office Building
400 E. 14th Street
Des Moines, IA, 50139-0146

Phone: 515-281-8260
Fax: 515-242-5988
www.educateiowa.gov

Jeremy Varner
Administrator
515-281-8260
jeremy.varner@iowa.gov

Kent Farver
Bureau Chief
515-281-0319
kent.farver@iowa.gov

Vladimir Bassis
Consultant
515-281-3671
vladimir.bassis@iowa.gov

Paula Nissen
Consultant
515-281-3550
paula.nissen2@iowa.gov

Iowa Workforce Development
Division of Communications and Labor Market Information
1000 E. Grand Avenue
Des Moines, IA 50319

Phone: 515-281-9646
Fax: 515-281-4698
www.iowaworkforce.org

Kerry Koonce
Division Administrator
515-281-9646
Kerry.Koonce@iwd.iowa.gov

Ryan Murphy
Bureau Chief
515-281-7505
Ryan.Murphy@iwd.iowa.gov

Kiyo Matsuyama
Research Economist
515-281-8118
Kiyokazu.Matsuyama@iwd.iowa.gov

Jason Crowley
Research Economist
515-281-7124
Jason.Crowley@iwd.iowa.gov

It is the policy of the Iowa Department of Education not to discriminate on the basis of race, creed, color, sexual orientation, gender identity, national origin, sex, disability, religion, age, political party affiliation, or actual or potential parental, family or marital status in its programs, activities, or employment practices as required by the Iowa Code sections 216.9 and 256.10(2), Titles VI and VII of the Civil Rights Act of 1964 (42 U.S.C. § 2000d and 2000e), the Equal Pay Act of 1973 (29 U.S.C. § 206, et seq.), Title IX (Educational Amendments, 20 U.S.C.§§ 1681 – 1688), Section 504 (Rehabilitation Act of 1973, 29 U.S.C. § 794), and the Americans with Disabilities Act (42 U.S.C. § 12101, et seq.). If you have questions or complaints related to compliance with this policy by the Iowa Department of Education, please contact the legal counsel for the Iowa Department of Education, Grimes State Office Building, 400 E. 14th Street, Des Moines, IA 50319-0146, telephone number: 515-281-5295, or the Director of the Office for Civil Rights, U.S. Department of Education, Citigroup Center, 500 W. Madison Street, Suite 1475, Chicago, IL 60661-4544, telephone number: 312-730-1560, FAX number: 312-730-1576, TDD number: 877-521-2172, email: OCR.Chicago@ed.gov.

Preface

Iowa faces challenges and opportunities in ensuring the competitiveness of its workforce. Community colleges are the state's largest postsecondary education sector and centrally positioned to close the state's skill gaps through preparation of Iowans for the workforce and further education.

The global economy is increasingly driven by knowledge and innovation and, in the aggregate, the jobs being created today require a much higher skill level than in the past. Technological change and globalization have eliminated many traditional pathways to the middle class for diligent low-skill Iowans, while the demand for credentialed middle skill workers is expected to grow and outstrip supply.

Iowa's community colleges offer a plethora of programs designed to meet state and regional economic needs. The Iowa Department of Education has partnered with Iowa Workforce Development to link state and national data sets to track the outcomes of students enrolling in these programs.

This report provides information about community college awards, time-to-degree, retention, migration, transfer to four year institutions, employment and wages, career clusters, and career pathways. Three cohorts were established for this report which will be tracked longitudinally for five years to capture wage growth of students completing educational programs.

This page intentionally left blank

Table of Contents

Iowa Community College Education Outcomes 6
Process & Methodology 7
Statewide Total Awards 8
Awards by Classification of Instructional Program (CIP) 9
- Associate Degree by CIP FY2010 to FY2012 10
- Associate Degree by CIP FY2010 11
- Associate Degree by CIP FY2011 12
- Associate Degree by CIP FY2012 13
- Diploma by CIP 14
- Certificate by CIP 15

Time to Degree 16
Cohort Groups Defined 17
Retention & Migration 18
Pursuing Further Education Cohort 19
Workforce Cohort 20
Employment & Wages by State 21
Employment & Wages by Award Type 22
Employment & Wages by Award Type & State 23
Employment & Wages by Industry & State 24
Employment & Wages by Award Type, Industry & State 25
Employment & Wages by CIP 27
Career Clusters 28
- Awards by Career Cluster 29
- Employment by Career Cluster 30
- Transition into Workforce 31
- Cluster to Industry

Career Pathways to Occupations 34
- Agriculture, Food, & Natural Resources 35
- Architecture & Construction 36
- Arts, Audio/Video Technology, & Communications 37
- Business, Management, & Administration 38
- Education & Training 39
- Finance 40
- Government & Public Administration 41
- Health Science 42
- Hospitality & Tourism 43
- Human Services 44
- Information Technology 45
- Law, Public Safety, Corrections & Security 46
- Manufacturing 47
- Marketing, Sales & Service 48
- Science, Technology, Engineering, & Mathematics (STEM) 49
- Transportation, Distribution, & Logistics 50

Employment & Wage Record Methodology 51
References 51
Appendix A Contents 52

Iowa Community College Education Outcomes: *Diploma, Certificate & Associate Degree Programs*

The *Iowa Community Colleges Education Outcomes: Diploma, Certificate and Associate Degree Programs Report*, expected to be published annually, is an attempt to answer some of the elusive questions about the outcomes of students completing community college programs. This report and other products provided to institutions are expected to inform policymakers and community college administrators, providing data for planning and program improvement purposes.

Throughout this report, employment and earnings are analyzed to illustrate the important role that education and training have on employment opportunities and wages. Program and award levels are analyzed separately in order to address the benefits of each. Though there are outcomes for all programs, research parameters were set to include programs consisting of 22 credit-hour or more. This number of credit hours excludes short -term programs and ensures a uniform approach to the research for the purposes of this report.

Coinciding with the programs, three annualized student cohorts of students that received awards were studied regarding their employment and wages (state fiscal years FY 2010, FY 2011, and FY 2012). These same cohorts will be studied longitudinally for a period of five years after graduation once enough data is available. The research will be limited to five years because previous program outcomes research for a two-year college education has shown that wages plateau within a five-year period.

Unit record tracking of student data is a preferred way of reporting education outcomes by program. However, the inability to access and link individual student records to employment and wages has been a challenge for most researchers due to regulations and confidentiality laws restricting the use of the data.

The Iowa Department of Education (DE) and Iowa Workforce Development (IWD) have overcome this hurdle by forming a partnership dedicated to researching and reporting education outcomes for community college programs as they relate to diploma, certificate, and associate degree awards.

In Iowa, as in many states throughout the nation, education records and employer records are held in two different agencies of state government, the DE and IWD, respectively. This often causes obstacles which must be addressed prior to conducting research.

To overcome this complication, data sharing agreements were created which adhere to all Unemployment Insurance (UI) and Family Educational Rights and Privacy Act (FERPA) regulations and rules. Research objectives are clearly stated and limited staff have access to the data and have signed confidentiality agreements pertaining to the records.

Process & Methodology

In order to properly execute the research for this report, data criteria was established based on a 22 credit-hour minimum for associate, diploma, and certificate awards. The 22 credit-hour threshold is the threshold between full-time and short-term programs within the Community College Management Information System (MIS) at the Iowa Department of Education (DE). Based on this determined criteria, all data were extracted from the MIS and grouped by state fiscal year (July 1 through June 30). Those students who received awards in FY 2010, FY 2011, or FY 2012 are analyzed in this report.

Once the data was extracted from the MIS, it was sent by annual cohort to the National Student Clearinghouse (NSC) in order to identify transfer students. These individuals may have transferred from one community college to another, continued their education at their current location, or transferred to a four-year institution. Transfer students were analyzed by college type (two-year or four-year and private or public) and by transfer location, allowing for the study of graduate out-migration.

The data set was then sent via secure file transfer to Iowa Workforce Development (IWD) in order to match the education records to the Unemployment Insurance (UI) wage records* which provided employment, wage, and industry data by fiscal year for each award type and cohort.

Due to the confidentiality of the wage record data, IWD processed the records based on the research objectives and sent back aggregate data for DE analysts to interpret and use in this report.

The data from DE and IWD were thoroughly scrutinized in order to maintain confidentiality and abide by all rules, regulations and restrictions for each of the data sources. Additionally, data sharing agreements have gone through rigorous legal review.

**The UI wage records do not cover those employers exempt from paying UI tax such as: federal employees, members of the armed forces, the self-employed, proprietors, unpaid family workers, church employees and railroad workers covered by the railroad unemployment insurance system, as well as students employed in a college or university as a part of a financial aid package.*

Statewide Total Awards

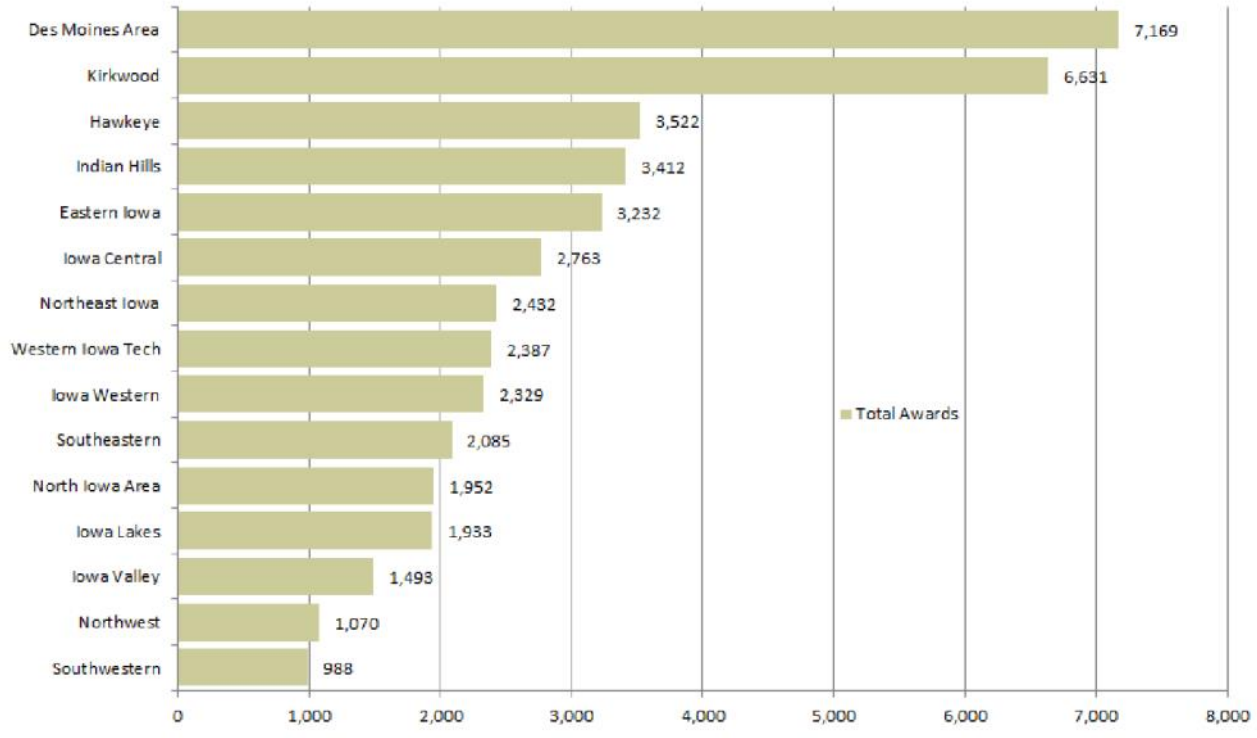
For this report an aggregate analysis of the 43,398 awards received by Iowa community college students for FY 2010 through FY 2012 was conducted using those student who received an award based on 22 or more credits needed for completion. The full report of the findings can be found at https://www.educateiowa.gov/community-colleges.

Though each college yielded a different number of total awards, in aggregate there were 32,931 Associate Degrees, 9,437 Diplomas, and 1,030 Certificates awarded to graduates by the 15 Iowa community colleges during FY 2010, FY 2011, and FY 2012 (see Figure 1).

In this report, transfers (further education), employment, wages, and time-to-degree are analyzed by award type. This information can be used to study the impact of each of the different award types and their correlation to the workforce and further education.

Individual reports specific to each community college will be distributed to the respective community colleges for use in program development and strategic planning. These reports are not included in this statewide report.

Figure 1. FY 2010 to FY 2012 Total Awards by Iowa Community College



Awards by Classification of Instructional Program (CIP)

The purpose of the CIP is to provide a taxonomic scheme that will support the tracking, assessment, and reporting of fields of study and program completion activity. The CIP system was originally developed by the U.S. Department of Education's National Center for Education Statistics (NCES) in 1980 with subsequent revisions.

For portions of this report six-digit CIPs were initially used then rolled up to the two-digit CIP level in order to abide by confidentiality rules and restrictions. However, Appendix A contains detailed information for six-digit program level data. Figure 2 lists the two-digit CIPs referenced in this report, the classification, description of the program, and the total awards for the years FY 2010 to FY 2012 earned by Iowa's community college students.

The majority of awards earned were in the liberal arts and sciences, health professions, business management, marketing, mechanics and repairers, and general programs. It is important to note that not all community colleges offer the same programs; offerings vary based on regional needs. The following pages separate the diploma, certificate, and associate degrees awarded for the three-year study period.

Figure 2. FY 2010 to FY 2012 Statewide Awards by Two-Digit CIP

2-Digit CIP Code	Description	FY2010	FY2011	FY2012	Total
24	Liberal Arts & Sciences, General Studies	5,120	5701	5,887	16,708
51	Health Professions & Related	3,546	3835	4,047	11,428
52	Business Management, Marketing & Related	1,095	1234	1,272	3,601
47	Mechanics & Repairers, General	600	902	819	2,321
15	Engineering Technologies & Engineering Related	343	491	483	1,317
01	Agriculture	376	457	482	1,315
48	Precision Production Trades	346	399	418	1,163
11	Computer & Information Sciences & Support Services	281	351	430	1,062
46	Construction Trades	298	293	265	856
43	Homeland Security, Law Enforcement, Firefighting & Related Protective Services	230	264	245	739
12	Personal & Culinary Services	159	179	216	554
19	Family & Consumer Sciences/Human Sciences	130	193	191	514
10	Communications Technologies/Technicians & Support Services	118	152	132	402
50	Visual & Performing Arts	112	125	157	394
44	Human Services	69	79	103	251
22	Legal Professions & Studies	50	79	60	189
03	Natural Resources & Conservation	47	54	62	163
30	Multi/Interdisciplinary Studies	35	59	54	148
16	Foreign Languages, Literature & Linguistics	16	17	28	61
49	Transportation & Materials Moving	18	19	16	53
14	Engineering	16	15	19	50
31	Parks, Recreation, Leisure & Fitness Studies	5	12	11	28
26	Biological & Biomedical Sciences	5	18	3	26
09	Communication, Journalism & Related Programs	8	4	2	14
41	Science Technologies/Technicians	4	7	2	13
34	Health Related Knowledge & Skills	4	2	5	11
13	Education	1	5	3	9
45	Social Sciences	-	5	3	8
Total		**13,032**	**14,951**	**15,415**	**43,398**

Associate Degrees by CIP, FY 2010 to FY 2012 Totals

There were six types of associate degrees awarded to students by Iowa community colleges. They are analyzed separately on the following pages. These award types are:

Associate of Arts (AA)
Associate of Applied Arts (AAA)
Associate of General Studies (AGS)
Associate of Science (AS)
Associate of Applied Science (AAS)
Associate of Science/Career Option (ASCO)

Figure 3 reflects an aggregation of all associate degrees awarded in FY 2010, FY 2011, and FY 2012. Liberal arts and sciences, general studies, make up over 50 percent of all associate degrees awarded (51.8 percent in FY 2010, 50.3 percent in FY 2011 and 50.3 percent in FY 2012).

Figure 3. FY 2010 to FY 2012 Associate Degrees by Two-Digit CIP

2-Digit CIP Code	Description	FY2010	FY2011	FY2012	Total Associate Degrees
24	Liberal Arts & Sciences, General Studies	5,120	5701	5,887	16,708
51	Health Professions & Related	1,763	1978	2,080	5,821
52	Business Management, Marketing & Related	758	857	895	2,510
47	Mechanics & Repairers, General	368	575	578	1,521
01	Agriculture	323	386	405	1,114
15	Engineering Technologies & Engineering Related	299	347	362	1,008
11	Computer & Information Sciences & Support Services	226	295	337	858
43	Homeland Security, Law Enforcement, Firefighting & Related Protective Services	221	251	235	707
12	Personal & Culinary Services	115	127	143	385
10	Communications Technologies/Technicians & Support Services	109	139	106	354
50	Visual & Performing Arts	97	105	110	312
48	Precision Production Trades	102	111	91	304
19	Family & Consumer Sciences/Human Sciences	72	94	110	276
46	Construction Trades	93	84	80	257
44	Human Services	66	74	96	236
30	Multi/Interdisciplinary Studies	33	50	48	131
03	Natural Resources & Conservation	37	42	44	123
22	Legal Professions & Studies	31	50	37	118
14	Engineering	16	15	19	50
16	Foreign Languages, Literature & Linguistics	8	12	25	45
26	Biological & Biomedical Sciences	5	18	3	26
31	Parks, Recreation, Leisure & Fitness Studies	5	7	11	23
41	Science Technologies/Technicians	4	7	2	13
49	Transportation & Materials Moving	4	6	2	12
09	Communication, Journalism & Related Programs	7	2	-	9
45	Social Sciences	-	5	3	8
34	Health Related Knowledge & Skills	-	2	-	2
Total		**9,882**	**11,340**	**11,709**	**32,931**

Associates Degrees by CIP—FY 2010

Figure 5 below illustrates the number of associate degrees by award type for FY 2010 listed in descending order of total awards. Associate of Arts (AA) and Associate of Applied Science (AAS) degrees made up 87.1 percent of associate degrees earned in Iowa's community colleges in FY 2010 as shown in Figure 4 to the right.

The AAS and Associate of Science/Career Option (ASCO) degrees are comprised of a wide variety of career- oriented programs, whereas the Associate of Science (AS), Associate of Arts (AA), and Associate of General Studies (AGS) degrees are designed for students who intend to continue their education upon transfer.

Figure 4. Percent of Associate Degrees, FY 2010

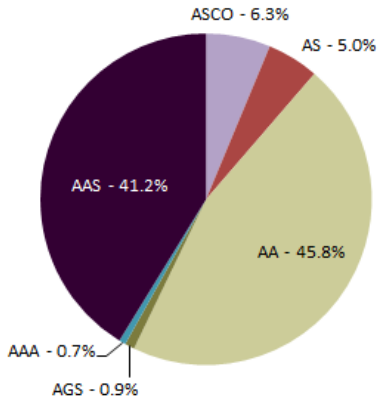


Figure 5. FY 2010 Associate Degrees by Two-Digit CIP

2-Digit CIP Code Description	ASCO	AS	AA	AGS	AAA	AAS	Total
Liberal Arts & Sciences, General Studies	-	499	4,528	93	-	-	5,120
Health Professions & Related	13	-	-	-	-	1,750	1,763
Business Management, Marketing & Related	284	-	-	-	-	474	758
Mechanics & Repairers, General	-	-	-	-	-	368	368
Agriculture	12	-	-	-	-	311	323
Engineering Technologies & Engineering Related	1	-	-	-	-	298	299
Computer & Information Sciences & Support Services	33	-	-	-	-	193	226
Homeland Security, Law Enforcement, Firefighting & Related Protective Services	110	-	-	-	-	111	221
Personal & Culinary Services	1	-	-	-	-	114	115
Communications Technologies/Technicians & Support Services	8	-	-	-	16	85	109
Precision Production Trades	-	-	-	-	-	102	102
Visual & Performing Arts	4	-	-	-	49	44	97
Construction Trades	-	-	-	-	-	93	93
Family & Consumer Sciences/Human Sciences	29	-	-	-	-	43	72
Human Services	59	-	-	-	-	7	66
Natural Resources & Conservation	15	-	-	-	-	22	37
Multi/Interdisciplinary Studies	-	-	-	-	-	33	33
Legal Professions & Studies	30	-	-	-	-	1	31
Engineering	-	-	-	-	-	16	16
Foreign Languages, Literature & Linguistics	3	-	-	-	-	5	8
Communication, Journalism & Related Programs	7	-	-	-	-	-	7
Biological & Biomedical Sciences	2	-	-	-	-	3	5
Parks, Recreation, Leisure & Fitness Studies	5	-	-	-	-	-	5
Science Technologies/Technicians	4	-	-	-	-	-	4
Transportation & Materials Moving	2	-	-	-	-	2	4
Education	-	-	-	-	-	-	-
Health Related Knowledge & Skills	-	-	-	-	-	-	-
Social Sciences	-	-	-	-	-	-	-
Total	**622**	**499**	**4,528**	**93**	**65**	**4,075**	**9,882**

Associates Degrees by CIP—FY 2011

FY 2011, had a similar programmatic distribution to FY 2010, noting an increase of 1,458 associate degrees overall. The largest percentage change was in the Associate of General Studies (AGS) degree, with a 65.6 percent increase in one year.

Notably, all of the degree types experienced an increase with the exception of Associate of Applied Arts (AAA), which remained virtually the same as the previous year (see Figures 6 & 7).

Figure 6. Percent of Associate Degrees, FY 2011

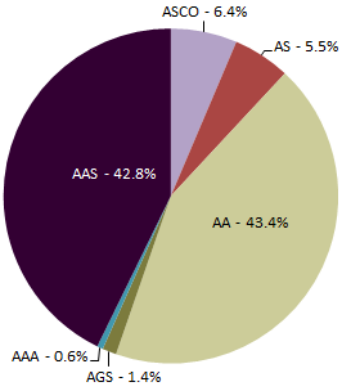


Figure 7. FY 2011 Associate Degrees by Two-Digit CIP

2-Digit CIP Code Description	ASCO	AS	AA	AGS	AAA	AAS	Total
Liberal Arts & Sciences, General Studies	-	627	4,920	154	-	-	5,701
Health Professions & Related	22	-	-	-	-	1,956	1,978
Business Management, Marketing & Related	336	-	-	-	-	521	857
Mechanics & Repairers, General	-	-	-	-	-	575	575
Agriculture	10	-	-	-	-	376	386
Engineering Technologies & Engineering Related	-	-	-	-	-	347	347
Computer & Information Sciences & Support Services	35	-	-	-	-	260	295
Homeland Security, Law Enforcement, Firefighting & Related Protective Services	115	-	-	-	-	136	251
Communications Technologies/Technicians & Support Services	14	-	-	-	21	104	139
Personal & Culinary Services	-	-	-	-	-	127	127
Precision Production Trades	-	-	-	-	-	111	111
Visual & Performing Arts	8	-	-	-	44	53	105
Family & Consumer Sciences/Human Sciences	32	-	-	-	-	62	94
Construction Trades	-	-	-	-	-	84	84
Human Services	66	-	-	-	-	8	74
Legal Professions & Studies	39	-	-	-	-	11	50
Multi/Interdisciplinary Studies	-	-	-	-	-	50	50
Natural Resources & Conservation	17	-	-	-	-	25	42
Biological & Biomedical Sciences	12	-	-	-	-	6	18
Engineering	-	-	-	-	-	15	15
Foreign Languages, Literature & Linguistics	2	-	-	-	-	10	12
Parks, Recreation, Leisure & Fitness Studies	7	-	-	-	-	-	7
Science Technologies/Technicians	5	-	-	-	-	2	7
Transportation & Materials Moving	4	-	-	-	-	2	6
Social Sciences	-	-	-	-	-	5	5
Communication, Journalism & Related Programs	2	-	-	-	-	-	2
Health Related Knowledge & Skills	-	-	-	-	-	2	2
Total	**726**	**627**	**4,920**	**154**	**65**	**4,848**	**11,340**

Associate Degrees by CIP—FY 2012

Associate degrees awarded by Iowa's community colleges remained relatively steady in FY 2012, totaling 11,709 as compared to 11,340 in FY 2011. The largest percent increase from FY 2011 was in the Associate of General Studies (AGS) at 9.1 percent, followed by the Associate of Science (AS) at 8.6 percent (see Figures 8 & 9).

Figure 8. Percent of Associate Degrees, FY 2012

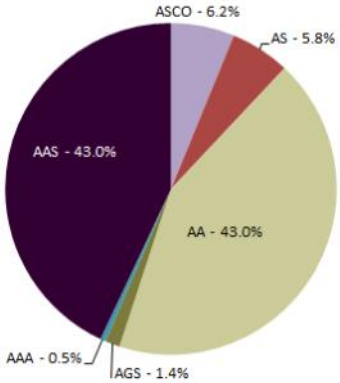


Figure 9. FY 2012 Associate Degrees by Two-Digit CIP

2-Digit CIP Code Description	ASCO	AS	AA	AGS	AAA	AAS	Total
Liberal Arts & Sciences, General Studies	-	681	5,038	168	-	-	5,887
Health Professions & Related	30	-	-	-	-	2,050	2,080
Business Management, Marketing & Related	309	-	-	-	-	586	895
Mechanics & Repairers, General	-	-	-	-	-	578	578
Agriculture	11	-	-	-	-	394	405
Engineering Technologies & Engineering Related	1	-	-	-	-	361	362
Computer & Information Sciences & Support Services	48	-	-	-	-	289	337
Homeland Security, Law Enforcement, Firefighting & Related Protective Services	109	-	-	-	-	126	235
Personal & Culinary Services	-	-	-	-	-	143	143
Family & Consumer Sciences/Human Sciences	44	-	-	-	-	66	110
Visual & Performing Arts	11	-	-	-	41	58	110
Communications Technologies/Technicians & Support Services	14	-	-	-	20	72	106
Human Services	89	-	-	-	-	7	96
Precision Production Trades	-	-	-	-	-	91	91
Construction Trades	-	-	-	-	-	80	80
Multi/Interdisciplinary Studies	-	-	-	-	-	48	48
Natural Resources & Conservation	16	-	-	-	-	28	44
Legal Professions & Studies	29	-	-	-	-	8	37
Foreign Languages, Literature & Linguistics	3	-	-	-	-	22	25
Engineering	-	-	-	-	-	19	19
Parks, Recreation, Leisure & Fitness Studies	11	-	-	-	-	-	11
Biological & Biomedical Sciences	1	-	-	-	-	2	3
Social Sciences	-	-	-	-	-	3	3
Science Technologies/Technicians	-	-	-	-	-	2	2
Transportation & Materials Moving	-	-	-	-	-	2	2
Communication, Journalism & Related Programs	-	-	-	-	-	-	-
Health Related Knowledge & Skills	-	-	-	-	-	-	-
Total	**726**	**681**	**5,038**	**168**	**61**	**5,035**	**11,709**

Diplomas by CIP

In Iowa, diploma programs relate to a specific subject area or skill leading to entry-level employment.

All 15 Iowa community colleges offer diploma programs covering many different areas of study, with the majority in skilled trades, healthcare, engineering, or computer-related fields.

Throughout the three-year study period, the majority of diploma programs have remained nearly the same and graduating a large number of students. The highest number of these awards were in the health professions, followed by business management, mechanics and repairers, and precision production trades (Figure 10).

Figure 10. FY 2010 to FY 2012 Diplomas by Two-Digit CIP

2-Digit CIP Code	Description	FY2010	FY2011	FY2012	Total Diploma
51	Health Professions & Related	1,747	1,809	1,786	5,342
52	Business Management, Marketing & Related	276	306	275	857
47	Mechanics & Repairers, General	220	279	216	715
48	Precision Production Trades	196	229	245	670
46	Construction Trades	205	209	185	599
15	Engineering Technologies & Engineering Related	38	128	88	254
19	Family and Consumer Sciences/Human Sciences	58	99	81	238
01	Agriculture	45	66	71	182
11	Computer and Information Sciences & Support Services	41	42	69	152
12	Personal & Culinary Services	43	49	60	152
50	Visual & Performing Arts	15	20	47	82
49	Transportation & Materials Moving	14	13	14	41
03	Natural Resources & Conservation	10	12	18	40
10	Communications Technologies/Technicians & Support Services	6	12	21	39
43	Homeland Security, Law Enforcement, Firefighting & Related Protective Services	7	5	7	19
30	Multi/Interdisciplinary Studies	2	9	6	17
13	Education	1	5	3	9
34	Health Related Knowledge & Skills	4	-	5	9
22	Legal Professions & Studies	4	2	-	6
09	Communication, Journalism & Related Programs	1	2	2	5
31	Parks, Recreation, Leisure & Fitness Studies	-	5	-	5
44	Human Services	1	3	-	4
14	Engineering	-	-	-	-
16	Foreign Languages, Literature & Linguistics	-	-	-	-
24	Liberal Arts & Sciences, General Studies	-	-	-	-
26	Biological & Biomedical Sciences	-	-	-	-
41	Science Technologies/Technicians	-	-	-	-
45	Social Sciences	-	-	-	-
Total		**2,934**	**3,304**	**3,199**	**9,437**

Certificates by CIP

Certificates are awarded for certain career-focused course sequences. They vary by the number of credits, but for this report were restricted to those requiring 22 or more credits. While many shorter certificate programs are offered by Iowa community colleges, they are not included in this report.

There were 1,030 certificates awarded over the three-year period with the majority in the health professions program (Figure 11). Only seven of the 15 community colleges offer the prescribed certificate programs that are listed below.

Figure 11. FY 2010 to FY 2012 Certificates by Two-Digit CIP

2-Digit CIP Code	Description	FY2010	FY2011	FY2012	Total Certificate
51	Health Professions & Related	36	48	181	265
52	Business Management, Marketing & Related	61	71	102	234
48	Precision Production Trades	48	59	82	189
47	Mechanics & Repairers, General	12	48	25	85
22	Legal Professions & Studies	15	27	23	65
15	Engineering Technologies & Engineering Related	6	16	33	55
11	Computer and Information Sciences & Support Services	14	14	24	52
01	Agriculture	8	5	6	19
12	Personal & Culinary Services	1	3	13	17
16	Foreign Languages, Literature & Linguistics	8	5	3	16
43	Homeland Security, Law Enforcement, Firefighting & Related Protective Services	2	8	3	13
44	Human Services	2	2	7	11
10	Communications Technologies/Technicians & Support Services	3	1	5	9
03	Natural Resources & Conservation	-	-	-	-
09	Communication, Journalism & Related Programs	-	-	-	-
13	Education	-	-	-	-
14	Engineering	-	-	-	-
19	Family and Consumer Sciences/Human Sciences	-	-	-	-
24	Liberal Arts & Sciences, General Studies	-	-	-	-
26	Biological & Biomedical Sciences	-	-	-	-
30	Multi/Interdisciplinary Studies	-	-	-	-
31	Parks, Recreation, Leisure & Fitness Studies	-	-	-	-
34	Health Related Knowledge & Skills	-	-	-	-
41	Science Technologies/Technicians	-	-	-	-
45	Social Sciences	-	-	-	-
46	Construction Trades	-	-	-	-
49	Transportation & Materials Moving	-	-	-	-
50	Visual & Performing Arts	-	-	-	-
Total		**216**	**307**	**507**	**1,030**

Time-to-Degree

In order to measure the time-to-degree for graduates, data were extracted from the MIS for the previous six years for all students that had received an award between FY 2010 and FY 2012. For example, FY 2012 graduates were identified if they appeared in the records for each year (FY 2011, FY 2010, FY 2009, FY 2008, FY 2007, and FY 2006).

Figures 12 and 13 below, show the distribution of time-to-completion for diploma and certificate awards in aggregate for the three cohorts. Figure 12 illustrates the percentage of cohort graduates, by the number of years they took to complete their programs; whereas Figure 13 displays the same data in cumulative format, illustrating the total percentage of students that had completed by years one through five. Though there is a variance in completion time, on average, 47.9 percent of aggregate associate degree types, 56.7 percent of diplomas, and 61.7 percent of certificates are earned within a two-year period of time. Note: Annual cohorts include students who entered an Iowa community college during any term within the fiscal year (July 1-June 30).

Figure 12. FY 2010 to FY 2012 Time-to-Degree for Associate Degrees

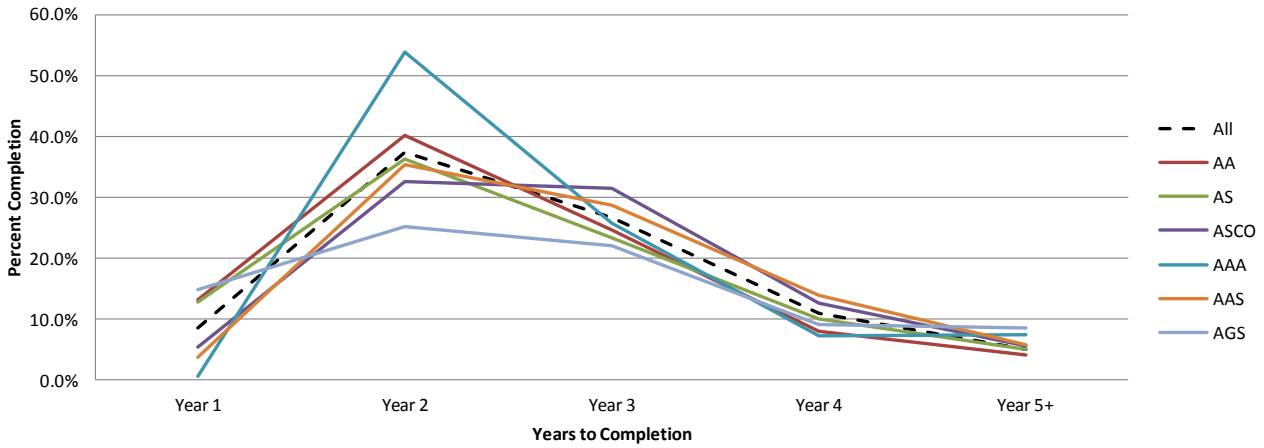
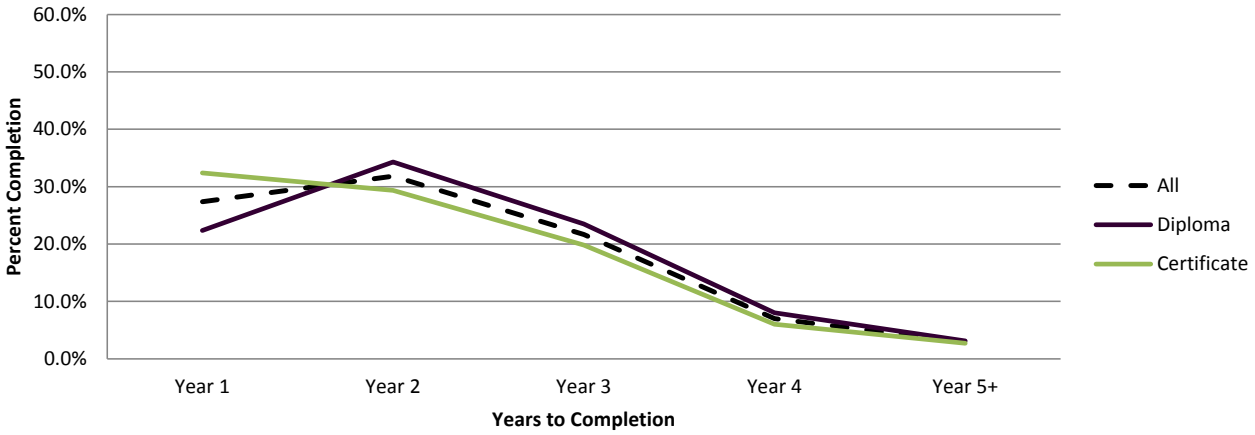


Figure 13. FY 2010 to FY 2012 Time-to-Degree for Diploma & Certificate Awards



Cohort Groups Defined

In order to more accurately study the community college graduates, each cohort was split into two different groups - those that continued their education and those that did not.

Figure 14 below represents the three different years of graduates, delineated into two groups. Each bar represents one cohort of graduates split into two subgroups. The majority of each year's graduates continued their education within the state of Iowa while a small portion transferred out-of -state, and the remainder did not continue their education (this latter group will be analyzed for in- and out-of-state employment later in this report).

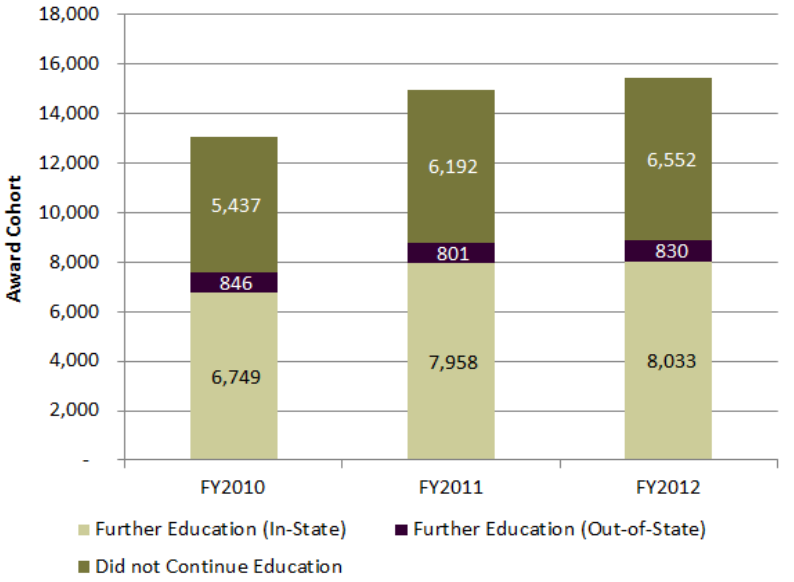
The purpose of analyzing these groups separately is to gain an understanding of the impact that both graduates who continued their education and those who left with their award to enter the workforce had on the state of Iowa.

In order to identify each of these groups, the cohorts of students (FY 2010, FY 2011, and FY 2012) were chosen from the MIS based on the previously identified methodology and program credit criteria. The MIS contains individual student records including program of study, credits received, and award type. The MIS data were matched with the National Student Clearinghouse (NSC) database to measure participation in two– or four-year and public or private institutions for the immediate year following their community college award.

If a graduate was matched/found within the NSC database they were placed into the "pursuing further education" cohort for further analysis and if the were not matched/found within the NSC , they were placed into the "workforce" cohort. Furthermore, each of those who entered the workforce the year following their award are re-matched to the NSC database to ascertain whether they have re-entered a post-secondary institution in subsequent years.

Of the 13,032 awards in FY 2010, 6,749 recipients went on to further their education within Iowa and 846 left the state of Iowa to continue their education in the year following their initial award. Of the 14,951 awards in FY 2011, 7,958 recipients continued their education in-state while 801 transferred out-of-state and in FY 2012, 8,033 of the 15,415 recipients stayed in-state to continue their education and 830 transferred to an out-of -state college.

Figure 14. Status of Graduates First Year After Award



Retention & Migration

The vast majority of Iowa community college graduates remained in Iowa in the first year after completing their programs (86.3 percent) (see Figure 15). Over 50 percent continued their education at an Iowa college, while over one-third (33.9 percent) joined the workforce. Conversely, a small percentage of graduates transferred to a college or sought employment outside of Iowa (5.7 percent and 3.5 percent respectively). Each of these groups will be studied in more detail in the following sections of this report.

Of those students that continued their education at an institution outside of Iowa, most enrolled in one of Iowa's contiguous states. For those that did venture further away, higher concentrations of graduates have enrolled at institutions in Arizona (139), California (90), Texas (61), or Florida (45) the year following their award.

Figure 16 represents aggregate numbers for those who continued their education either in- or out-of-state.

Figure 15. FY 2010 to FY 2012 Retention & Transfers, First Year Following Award

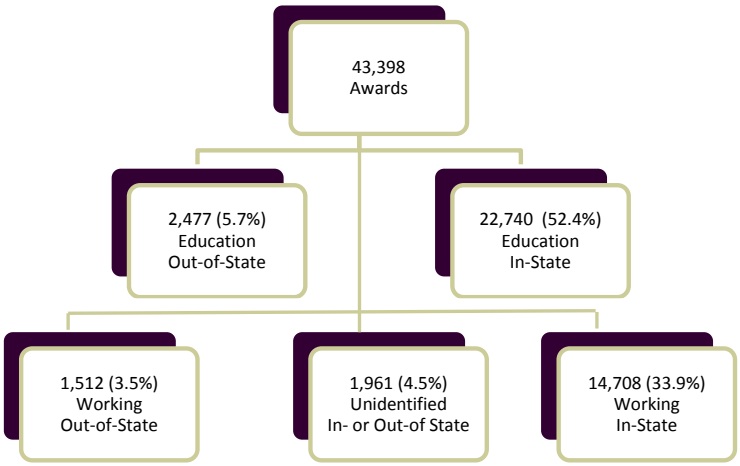
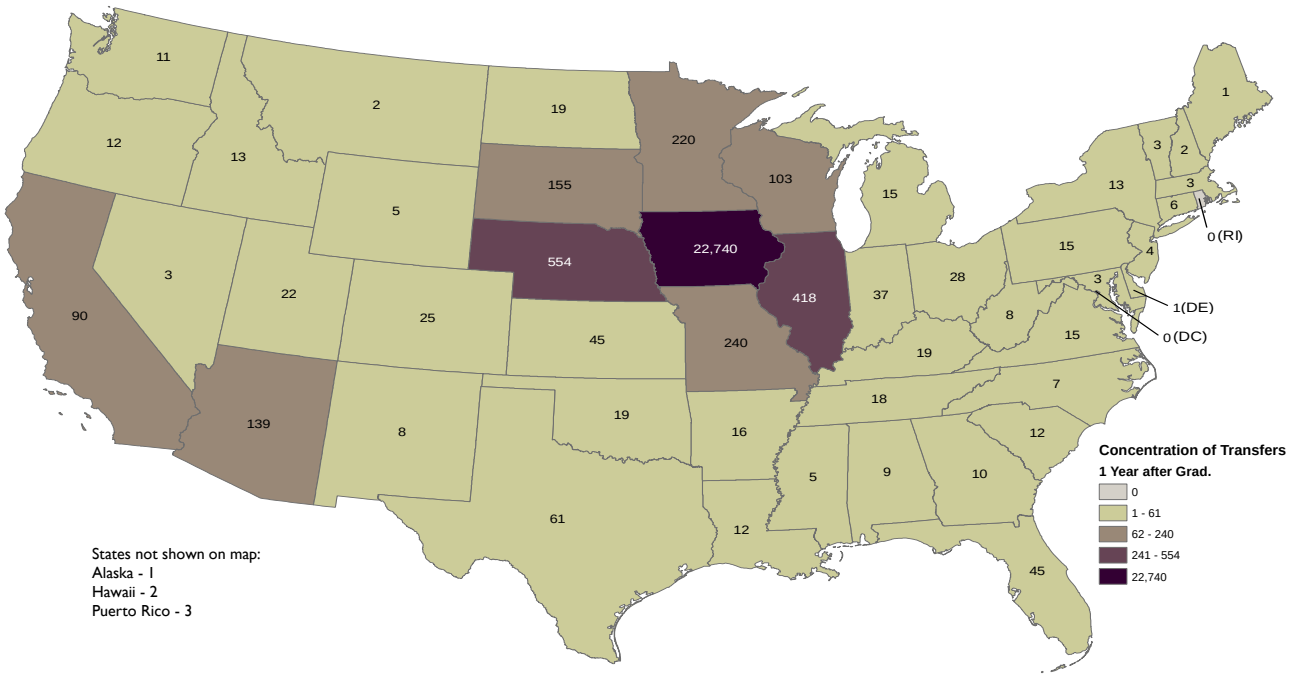


Figure 16. FY 2010 to FY 2012 Educational Migration One-Year After



Pursuing Further Education Cohort

Using the National Student Clearinghouse database, the Department of Education was able to identify whether a graduate had transferred to a college out-of-state, continued their education at a two- or four-year college, and if the college was private or public. Figure 17 identifies the number of graduates who continued their education within the first fiscal year after receiving their award from an Iowa community college related to the above attributes.

Using the FY2010 cohort as an example, 7,595 students enrolled in college the fiscal year after receiving their award (combining all semesters). Just under three-fifths (57.3 percent) continued their education at a public 2-year college (both in and out of state combined) and one-fourth (24.2 percent) transferred to a four-year public college both in- or out-of-state.

Of those who remained in Iowa (6,749), 4,250 continued their education at a two-year public college, 1,104 transferred to a private four-year and 1,395 to a public four-year college.

By analyzing each of the cohorts separately, there is a noticeable increase in the number and percentage of graduates from the FY 2011 to FY 2012 cohorts who either transferred or continued their education at a two-year public college in Iowa, while the number of transfers to the four-year public institutions in Iowa declined.

Many students earn awards on their way to getting an associate degree or higher. This type of analysis at the community colleges recognizes success in incremental steps.

Figure 17. FY 2010 to FY 2012 Further Education, First Year Following Award

Fiscal Year of Enrollment After Award	Characteristics of Institution		Continued Education		Continued Education	
	2yr / 4yr	Public/Private	In-State #	In-State %	Out-of-State #	Out-of-State %
2010 Cohort						
2011	2	Private	0	0.0%	6	0.7%
		Public	4,250	63.0%	100	11.8%
	4	Private	1,104	16.4%	294	34.8%
		Public	1,395	20.7%	446	52.7%
Total 2010 Cohort			6,749	100.0%	846	100.0%
2011 Cohort						
2012	2	Private	0	0.0%	2	0.2%
		Public	5,645	70.9%	83	10.4%
	4	Private	1,051	13.2%	280	35.0%
		Public	1,262	15.9%	436	54.4%
Total 2011 Cohort			7,958	100.0%	801	100.0%
2012 Cohort						
2013	2	Private	0	0.0%	6	0.7%
		Public	5,581	69.5%	81	9.8%
	4	Private	1,141	14.2%	278	33.5%
		Public	1,303	16.2%	465	56.0%
Total 2012 Cohort			8,025	100.0%	830	100.0%

Workforce Cohort

After analyzing the data regarding those who continued their education, a cohort was developed to analyze the employment trends of the remaining graduates.

Both in- and out-of-state employment data were gathered using the Iowa Unemployment Insurance (UI) database and the Wage Record Interchange System (WRIS). Out-of-state wage data was not available for the entirety of fiscal year FY 2011 and the first quarter of fiscal year FY 2012 (July-September FY 2011) for this analysis; however, the Iowa UI records were available to identify in-state employment for prior years.

The next sections of this report show the analysis of in- and out-of-state employment in addition to the industry of those employed and their annual wages. Out-of-state employment is measured using the WRIS system which was is not available prior to fourth quarter 2011 (October-December 2011) for this report, so out-of-state wage data for the FY 2010 and FY 2011 cohorts are incomplete. Consequently, the number of unmatched records encompasses those that could not be matched to out-of-state records and those who may have been unemployed for the described uncovered periods of time.

Due to the availability of three-years of wage data for the FY 2010 cohort, it is used as an example in Figure 18. This table illustrates the aggregate employment and wages for the FY 2010 cohort using the first three fiscal years of data available after the receipt of their award.

The data show that in FY 2011 (July 1, 2010 to June 30, 2011), there were 5,437 records after transfers were excluded. Of those, 4,502 were matched to the Iowa UI wage records, representing 82.8 percent of the non-transfer cohort. In order to compare wages from FY 2011 to current wages (FY 2013), a cost of living adjustment was applied and documented in the *Adjusted Median Wage* column of Figures18 and 19 (detailed explanation on page 50). This adjustment is used to determine whether real wages have actually increased over the study period

Figure 18. Three-Year Employment & Wage Trend for FY 2010 Cohort

Fiscal Year of Employment	Matched to Employment %	Average Quarters Matched	Unadjusted Median Wage	Adjusted Median Wage
2011	82.8%	3.60	$ 23,626	$ 24,723
2012	89.8%	3.64	$ 28,972	$ 29,455
2013	90.3%	3.82	$ 33,030	$ 33,030

The increased rate of matched records and quarters in fiscal year FY 2013 reflects the out-of-state employment data gap being filled by the availability of WRIS records.

Figure 19. Each Cohort's Employment & Wages, One Year Following Completion

Cohort Year	Fiscal Year of Employment	Matched to Employment %	Average Quarters Matched	Unadjusted Median Wage	Adjusted Median Wage
2010	2011	82.8%	3.60	$ 23,626	$ 24,723
2011	2012	91.9%	3.61	$ 24,538	$ 24,946
2012	2013	92.0%	3.75	$ 25,343	$ 25,343

Employment & Wages by State

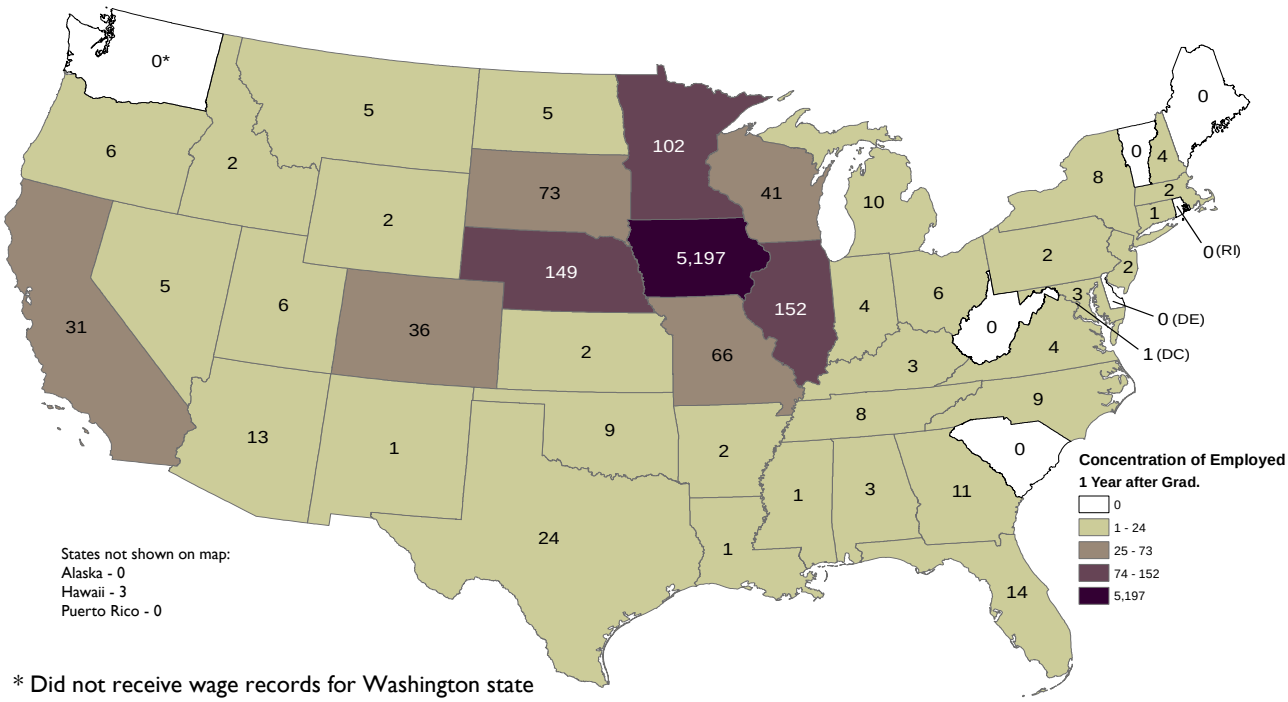
Due to limited historical data for out-of-state employment reporting (past eight quarters), the following data pertain only to the FY 2012 cohort of graduates for employment, industry, and wage analysis. Though limited for FY 2010, and FY 2011 cohorts, detailed tables relating to all cohorts can be found in Appendix A.

The Wage Record Interchange System (WRIS) was used to identify individuals who were employed out-of-state the year following graduation based on primary employment. Though the records do not identify hours (full- or part-time), overtime, or occupation, they do identify the number of graduates working in other states the year following their graduation (Figure 20).

Figure 20 illustrates that the majority of those who received an award in FY 2012 and became employed in FY 2013 remained in Iowa. Similar to those who continued their education, most graduates that were employed out-of-state, were employed in neighboring states (See Appendix A for employment and wages by state).

It is important to note that when analyzing wage data all industries are encompassed. Some industries (e.g. manufacturing) pay higher wages than others, therefore if a state has a higher concentration of manufacturing jobs it might show higher wages. Conversely, if a state has a high number of retail establishments, the average wage may be lower. For example, the annual average salary for the manufacturing industry in Iowa, which includes all such employees, is $56,680; healthcare has an average annual salary of $40,092; and the retail industry average annual salary is $24,180 (Bureau of Labor Statistics, 2013), which significantly lowers the state average wage.

Figure 20. FY 2012 Cohort Primary Employment FY 2013 by State, First Year Following Award



* Did not receive wage records for Washington state

Employment & Wages by Award Type

Figures 21 and 22 below reflect the employment and wages in- and out-of-state, in aggregate, for all those in the FY 2012 cohort that were employed in the year following receipt of their award.

Of the 3,316 AAS degree recipients from Iowa community colleges, 93.6 percent were employed within the year following receipt of their award and earned a median wage of $30,379, having worked an average of 3.78 quarters (see Figure 21). Though the percentage of AAS graduates who became employed within one year of their graduation is the highest of the categories listed, the other types exceeded 80.0 percent employed.

Figure 21. FY 2012 Cohort, FY 2013 Employment & Wages by Award Type

Award Type	Fiscal Year of Employment	# in Cohort (not enrolled)	Matched to Employment		Average Quarters Matched	Adjusted Median Wage
			#	%		
AA	2013	1,321	1,172	88.7%	3.69	$19,077
AS	2013	161	143	88.8%	3.61	$20,640
ASCO	2013	386	351	90.9%	3.72	$22,320
AGS	2013	40	32	80.0%	3.75	$17,890
AAA	2013	54	50	92.6%	3.80	$17,113
AAS	2013	3,316	3,105	93.6%	3.78	$30,379
Diploma	2013	1,053	972	92.3%	3.75	$22,770
Certificate	2013	221	204	92.3%	3.72	$22,097

Associate of Arts (AA)
Associate of Applied Arts (AAA)
Associate of General Studies (AGS)
Associate of Science (AS)
Associate of Applied Science (AAS)
Associate of Science/Career Option (ASCO)

Comparatively, Figure 22 shows the average of all FY 2012 associate degree recipients was 91.9 percent employment (both in- and out-of-state), while diploma and certificate recipients had a 92.3 percent employment percentage. Though the AAS degree (two-year program) has much higher wages when analyzed separately, the data in aggregate shows that the associate degree median wages is $3,602 per year higher than the combined diploma or certificate graduate (one-year program) median wage in the first year after graduation.

Figure 22. FY 2012 Cohort, FY 2013 Employment & Wages by Award Type Aggregate

Award Type (Aggregated)	Fiscal Year of Employment	# in Cohort (not enrolled)	Matched to Employment		Average Quarters Matched	Adjusted Median Wage
			#	%		
Diploma/Certificate	2013	1,274	1,176	92.3%	3.75	$22,584
Associate	2013	5,278	4,853	91.9%	3.75	$26,186

Employment & Wages by Award Type & State

Using the FY 2013 wage records for the FY 2012 cohort, Figures 23 and 24 below illustrate the wages earned by community college Associate of Arts (AA) and Associate of Applied Science (AAS) degree recipients by their state of employment (aggregate industries). Those with an AA degree and working in Nebraska are earning 62.3 percent more than their those in Iowa. Nebraska workers reported a median annual wage of $31,066 compared to Iowa's median annual wage of $19,144. When comparing the AAS and the AA degree wages the difference is smaller whereas those working in Iowa are only making 4.4 percent less than those working in Nebraska in 2013 ($30,254 to $31,585). Details on wages and sample size are contained in Appendix A.

Figure 23. FY 2012 Associate of Arts Degree Recipients FY 2013 Median Wages by State

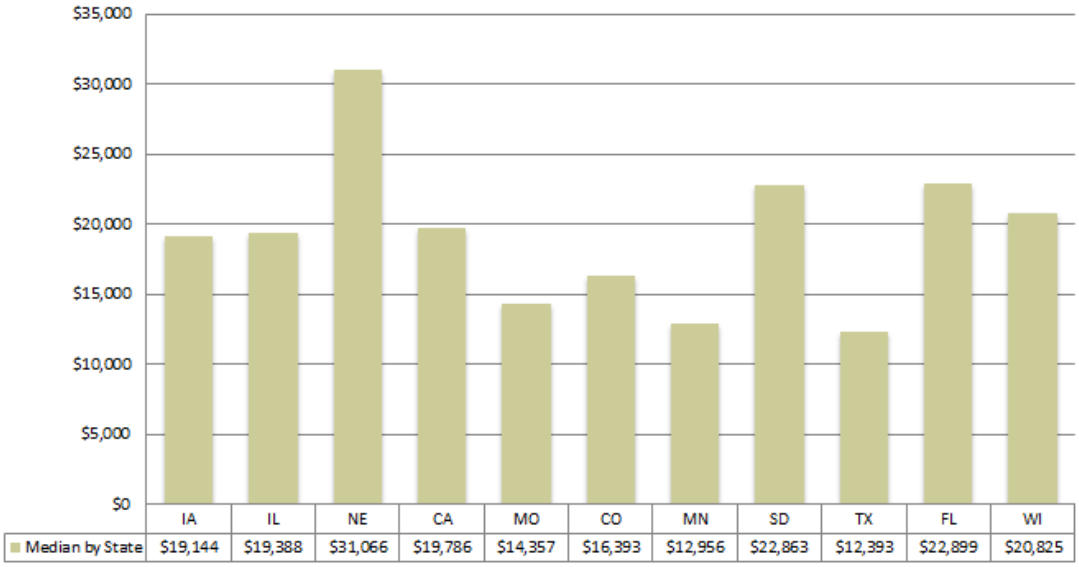


Figure 24. FY 2012 Associate of Applied Science Degree Recipients FY 2013 Median Wages by State

Employment & Wages by Industry & State

While analyzing the overall wages by state is valuable, moreover are the wages by industry and occupation. The information contained on this page and detailed in Appendix A is an analysis of the wages paid in different states by industry. An industry, such as health care and social assistance, contains many different occupations such as nurses, doctors, clerical staff, custodians, and cafeteria workers when wages are reported for Unemployment Insurance (UI). Each state collects the UI data in a similar manner which does not include the separation or identification of the number of hours worked, overtime, or bonuses, so comparing annual wages, while an estimate, can be accomplished.

On the previous page, the state of Nebraska was used as an example of overall wages by degree type and reportedly had higher wages than those of neighboring states like Iowa. This could be due to the concentration of higher wage jobs within a dominant industry in Nebraska. In order to answer this question, research was conducted by industry and state and portions of the comparison are shown below in Figure 25.

Using Iowa, Illinois and Nebraska as examples, the table below illustrates the wage differential by industry for some of the neighboring states. Though the samples are different, they do reflect a difference in wages in all four of the industries chosen.

Figure 25. FY 2012 Cohort, Sample of FY 2013 Median Wages by Industry & State

State of Employment	Industry of Employment	# Matched to Emp.	Avg. Qtrs. Matched	Adjusted Median Wage
IA	Health Care & Social Assistance	1,430	3.83	$ 29,332
NE	Health Care & Social Assistance	65	3.91	$ 34,547
IL	Health Care & Social Assistance	49	3.78	$ 30,498
IA	Finance & Insurance	178	3.85	$ 25,725
NE	Finance & Insurance	9	4.00	$ 41,875
IL	Finance & Insurance	*	*	*
IA	Manufacturing	573	3.82	$ 34,824
NE	Manufacturing	10	3.70	$ 26,453
IL	Manufacturing	20	4.00	$ 43,424
IA	Construction	218	3.66	$ 28,817
NE	Construction	5	4.00	$ 38,240
IL	Construction	3	3.67	$ 15,787

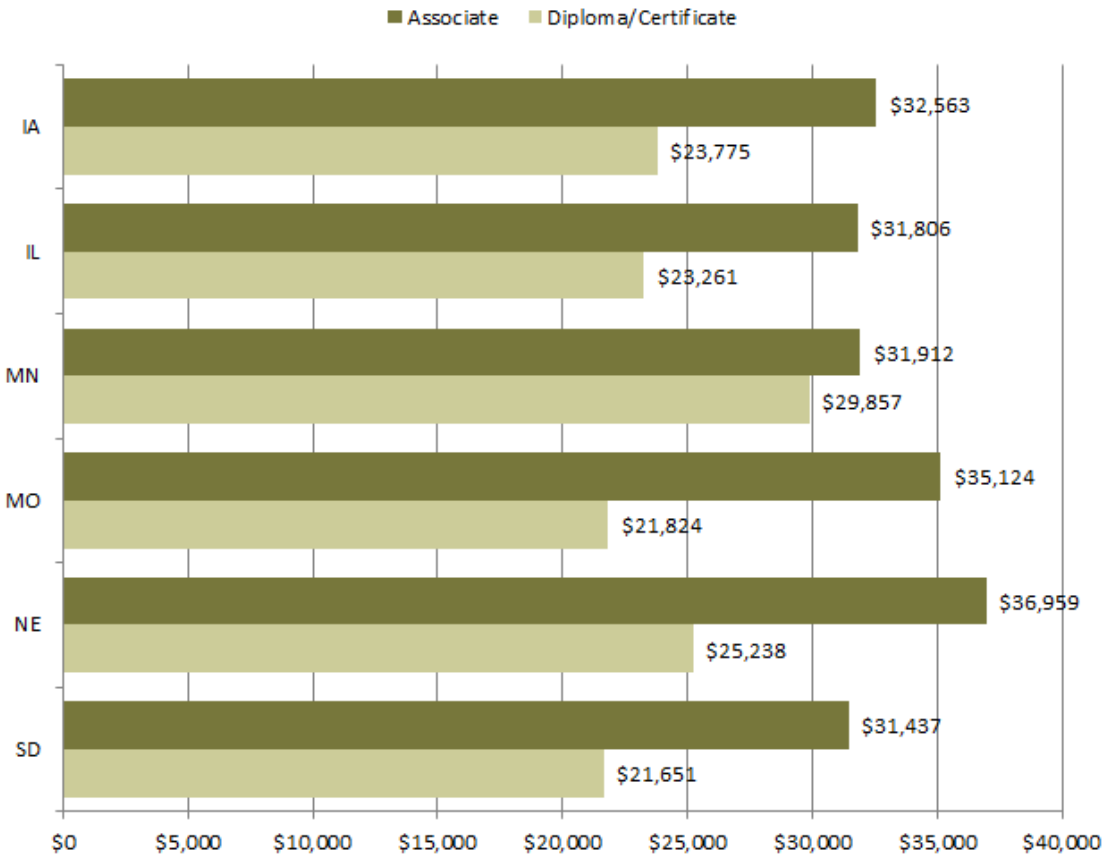
* Not Applicable

Employment & Wages by Award Type, Industry & State

In order to analyze wages by award, industry and state, the associate degrees (two-Year), diplomas and certificates (one-year) were aggregated into separate groups. For some industries the sample was still limited due to confidentiality restrictions. Subsequent annual reports will be more substantial, as multiple years of data become available as aggregate data will increase the sample size for award type, industry, and state analysis.

Using contiguous states to Iowa in Figure 26 below, the difference in 2013 wages earned for associate degree and diploma/certificate recipients working in the health care and social services industry by state are illustrated. Associate degree recipients consistently out-earned diploma/certificate recipients in the healthcare industry.

Figure 26. FY 2012 Cohort, FY 2013 Healthcare Industry Wages by State and Award

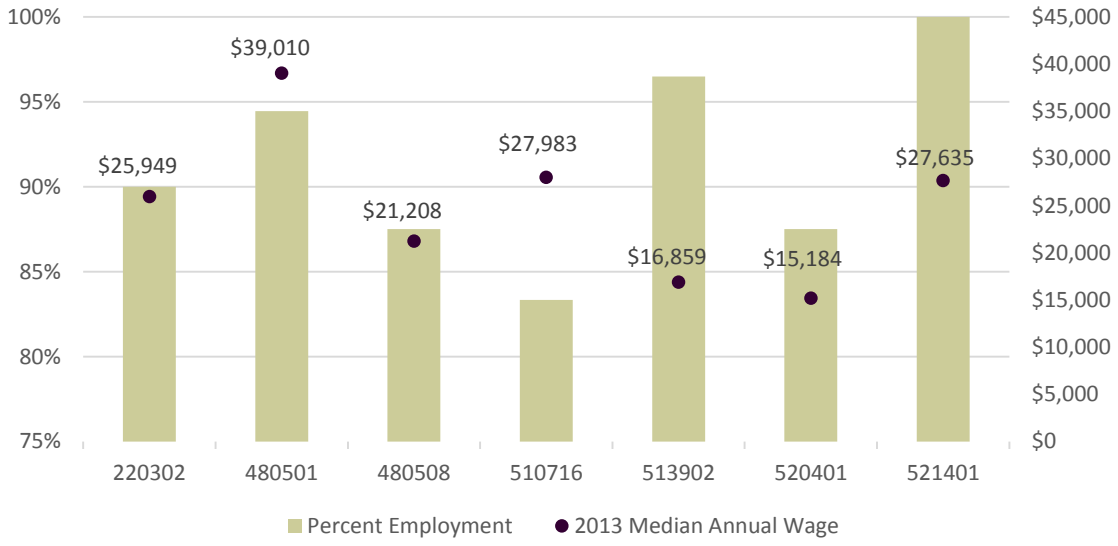


Employment & Wages by CIP

When analyzing wage and employment data, it is important to note the restrictions and limitations of the Iowa UI and WRIS data, as explained in the *Process and Methodology* section of this report. Two important factors that impact the data the most are (1) the wage data only represents people who work for a company that pays unemployment insurance tax, and (2) hours worked are not reported within the data, making it impossible to identify part- or full-time employment. The reason the median annual wage is utilized for analysis is due to the lack of knowledge pertaining to hours worked, as this approach eliminates outliers and gives a more accurate representation of the typical employed earnings than the mean would.

Using the FY 2012 statewide cohort of students who did not continue their education following their award, recipients were matched to the UI and WRIS data to determine if they obtained employment within the first year of their award. Figure 27 illustrates the data for graduates that earned a certificate by CIP code. The bars represent the percent of the cohort that matched employment records and the dots represent the FY 2013 median annual wage. For example, 100 percent of students who received a certificate in the marketing/marketing management, general program (CIP 521401) in FY 2012 were employed and earned a median annual wage of $27,635, while 94.4 percent of those in the machine tool technology/machinist certificate program (CIP 480501) were employed within the first year and earned a median annual wage of $39,010. Programs with the most graduates are shown in Figure 27, while data for all other programs can ben found in Appendix A.

Figure 27. FY 2012 Cohort, FY 2013 Employment & Wages by Certificate Program

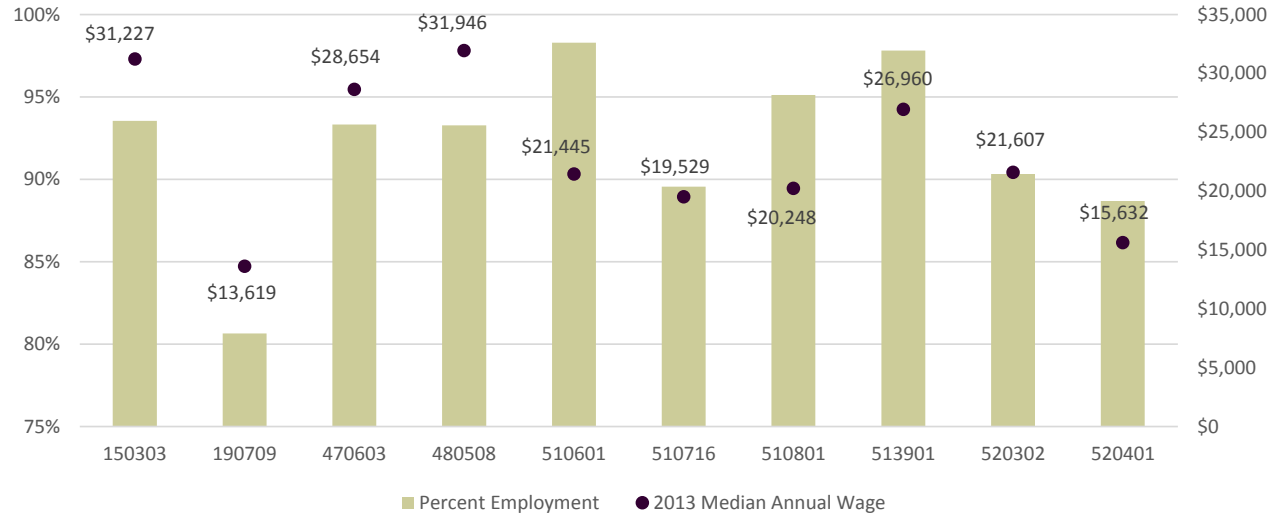


Certificate Programs Legend:
220302: Legal Assistant/Paralegal
480508: Welding Technology/Welder
513902: Nursing Asst./Aide & Patient Care Asst./Aide
521401: Marketing/Marketing Management, General
480501: Machine Tool Technology/Machinist
510716: Medical Administrative/Executive Assistant & Medical Secretary
520401: Administrative Assistant & Secretarial Science, General

See Appendix A for other CIP codes and data not represented above.

Below is a sample of Diploma and Associate of Applied Science Degree recipient employment percentages, and FY 2013 median annual wages for the FY 2012 cohort. Appendix A contains data for other CIP codes and data not represented below.

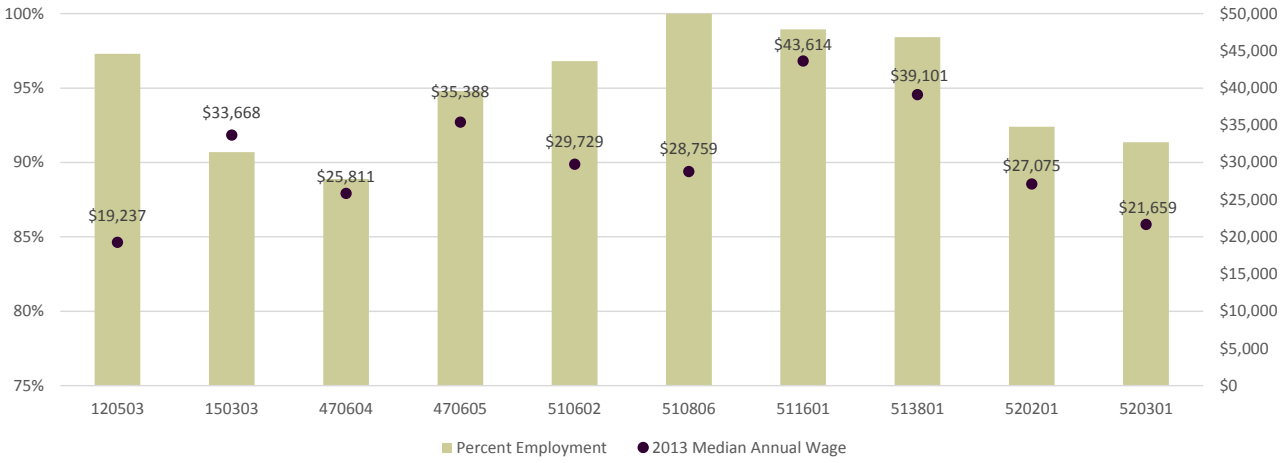
Figure 28. FY 2012 Cohort, FY 2013 Employment & Wages by Diploma Program



Diploma Programs Legend:

150303: Electrical, Electronic & Communications Engineering Tech.
190709: Child Care Provider/Assistant
470603: Autobody/Collision & Repair Technology
480508: Welding Technology/Welder
510601: Dental Assisting/Assistant
510716: Medical Administrative/Exec. Asst. & Medical Secretary
510801: Medical/Clinical Assistant
513901: Licensed Practical/Vocational Nurse
520302: Accounting Technology/Technician & Bookkeeping
520401: Administrative Asst. & Secretarial Science, General

Figure 29. FY 2012 Cohort, FY 2013 Employment & Wages Associate of Applied Science Degree



AAS Degree Legend:

120503: Culinary Arts/Chef Training
150303: Electrical, Electronic & Communications Engineering Tech.
470604: Automobile/Automotive Mechanics Tech.
470605: Diesel Mechanics Technology/Technician
510602: Dental Hygiene/Hygienist
510806: Physical Therapy Technician/Assistant
511601: Nursing
513801: Registered Nursing/Registered Nurse
520201: Business Administration & Management, General
520301: Accounting

Career Clusters

Career and technical education (CTE) in Iowa consists of educational programs offering courses that are designed to prepare individuals for employment in current or emerging occupations. These programs involve competency-based, applied learning which contributes to a student's academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability, and occupational-specific skills.

CTE programs at the community college level are organized according to the national career cluster framework. Each career cluster represents a distinct grouping of occupations and industries based on the knowledge and skills required. The following sixteen career clusters and related career pathways provide an important organizing tool for schools to develop more effective programs of study and curriculum:

Agriculture, Food, & Natural Resources
The production, processing, marketing, distribution, financing, and development of agricultural commodities and resources.

Architecture & Construction
Careers in designing, planning, managing, building and maintaining the built environment.

Arts, A/V Technology, & Communications
Designing, producing, exhibiting, performing, writing, and publishing multimedia content.

Business, Management, & Administration
Careers in planning, organizing, directing and evaluating business functions essential to efficient and productive business operations.

Education & Training
Planning, managing and providing education and training services, and related learning support services.

Finance
Planning and related services for financial and investment planning, banking, insurance, and business financial management.

Government & Public Administration
Planning and executing government functions at the local, state and federal levels.

Health Science
Planning, managing, and providing therapeutic services, diagnostic services, health informatics, support services, and biotechnology research and development.

Hospitality & Tourism
Preparing individuals for employment related to restaurant and food/beverage services, lodging, travel and tourism, recreation, amusement and attractions.

Human Services
Preparing individuals for employment that relates to families and human needs such as counseling and mental health services, family and community services, personal care, and consumer services.

Information Technology
Building linkages in IT occupations for entry level, technical, and professional careers related to the design, development, support and management of hardware, software, multimedia and systems integration services.

Law, Public Safety, Corrections, & Security
Planning, managing, and providing legal, public safety, protective services and homeland security.

Marketing
Planning, managing, and performing marketing activities to reach organizational objectives such as brand management, professional sales, merchandising, marketing communications and market research.

Manufacturing
Planning, managing and performing the processing of materials into intermediate or final products and related professional and technical support activities.

Science, Technology, Engineering, & Mathematics (STEM)
Planning, managing, and providing scientific research and professional and technical services including laboratory and testing services, and research and development services. *Please note that most STEM occupations are embedded in other career clusters.*

Transportation, Distribution, & Logistics
The planning, management, and movement of people, materials, and goods by road, pipeline, air, rail and water and related professional and technical support services such as transportation infrastructure planning. and management, logistics services, mobile equipment and facility maintenance.

Awards by Career Cluster

Career clusters are designed to prepare students for success in a career field of interest, concentrating on a particular skill set that will help them with job placement. However, when researching career clusters it is important to note that each cluster represents multiple industries and a vast number of occupations.

Defined on the previous page, career clusters encompass multiple programs at the community college level. Figure 30 below illustrates the number of awards by college parallel/liberal arts and career cluster graduates for the years FY 2010 to FY 2012 for Iowa's community colleges.

College parallel/liberal arts and the health science career cluster make up the vast majority of awards throughout the state. As seen earlier, most students in the college parallel/liberal arts category will transfer to higher education upon graduation so therefore have been separated from the clusters for this analysis. Most of the career cluster graduates move directly into the workforce so are the focus of the employment and wage research.

Note: Data was not available for one of the sixteen career clusters so they are not listed in Figure 30 (Government).

Figure 30. FY 2010 - FY 2012 Awards by Career Cluster

Cluster Name	FY2010 Awards	FY2011 Awards	FY2012 Awards	Total Awards	Increase/Decrease FY2010 to FY2012
Agriculture, Food and Natural Resource Cluster	427	518	557	1,502	130
Architecture and Construction Cluster	532	643	595	1,770	63
Arts, Audio/Video Technology and Communications Cluster	249	289	306	844	57
Business, Management and Administration Cluster	904	1,052	1,053	3,009	149
Education and Training Cluster	22	28	40	90	18
Finance Cluster	6	14	9	29	3
Health Science Cluster	3,550	3,857	4,053	11,460	503
Hospitality and Tourism Cluster	137	156	225	518	88
Human Service Cluster	258	331	343	932	85
Information Technology Cluster	269	344	430	1,043	161
Law, Public Safety, Corrections and Security Cluster	280	343	305	928	25
Manufacturing Career Cluster	657	876	858	2,391	201
Marketing Sales and Service Cluster	167	129	134	430	(33)
Science, Technology, Engineering and Mathematics Cluster	51	78	62	191	11
Transportation, Distribution, and Logistics Cluster	403	592	558	1,553	155
College Parallel/Liberal Arts	5,120	5,701	5,887	16,708	767
Total	13,032	14,951	15,415	43,398	2,383

Employment by Career Cluster

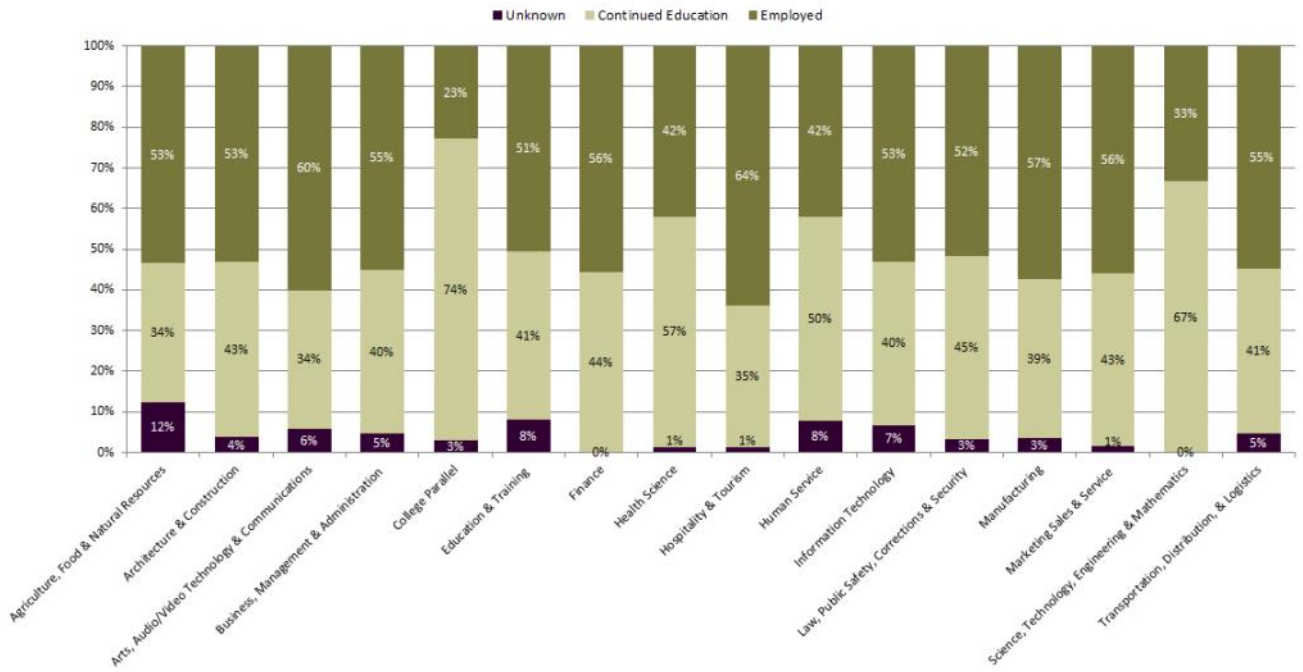
By analyzing each career cluster and charting them based on the percentage of students that continued their education versus those that became employed, it is evident which clusters lead to continued education and which are targeted toward direct employment.

Using the FY 2012 cohort as an example (Figure 31), the data show that within the first year following receipt of the award, nearly two-thirds of the hospitality and tourism (64 percent) and arts, audio/video technology and communications (60 percent) graduates became employed, over one-third continued their education (both clusters) and there was a small percentage (one percent and six percent respectively) who could not be found in either the Unemployment Insurance (UI) wage records or the National Student Clearinghouse records and are thus denoted as "Unknown" in the chart below.

There should be no surprise that clusters normally targeted at transfer to a four-year institution, such as college parallel and STEM, have higher rates of graduates continuing their education. This is, of course, accompanied by lower rates of graduates entering employment after graduation.

Similar data were analyzed for other cohorts and is available in Appendix A. It is important to reiterate that out-of-state (WRIS) data was not available for the entirety of FY 2011 or the first quarter of FY 2012 (July—September 2011), therefore when analyzing employment data one year following the award (FY 2013), the FY 2012 cohort is more inclusive.

Figure 31. FY 2012 Cohort Outcomes by Career Cluster, First Year Following Award (FY 2013)



Transition into Workforce

In the previous sections, career cluster and primary industry sector of employment were analyzed independently. A major point of interest to researchers is the cross-tabulation of these two variables, by looking at which industry sectors completers are going into from each career cluster. Figure 32 plots these two variables against each other for the FY 2010, FY 2011 and FY 2012 cohorts in aggregate, utilizing Circos, which is software that uses polar coordinate mapping to illustrate data relationships.

The Iowa Unemployment Insurance (UI) Wage record database and the Wage Record Interchange System (WRIS) provide the industry information pertaining to each community college completer, used in these illustrations

The right side of the circle represents the industry sectors in which community college graduates are employed. Each of the grey bars corresponds to one of the twenty aggregate industry sectors shown. The width of each bar is determined by employment of the overall industry. Similarly, the left side of the chart, represented by colored bars, are career clusters and college parallel. Hundreds of ribbons (denoting graduates) can connect the left side to the right side bars to illustrate the correlation between clusters and the industry of principal employment (see Figure 31 on the next page).

An important thing to keep in mind is that this data show the industry sector in which completers are primarily employed, not their actual occupations. For instance, a person that received their degree in health science could be a pharmaceutical technician working in the pharmacy of a large retail store. While they are doing work related to the health care field, they are technically employed in the retail trade sector. The distinction between occupation and industry sector is important to consider when analyzing the flow from education to industry shown in Figures 33 and 34.

Figure 32. Circos Visualization

Career Cluster

College Parallel/Liberal Arts
Agriculture, Food and Natural Resource
Architecture and Construction
Arts, Audio/Video Technology and Communications
Business, Management and Administration
Education and Training
Finance
Government and Public Administration
Health Science
Hospitality and Tourism
Human Service
Information Technology
Law, Public Safety, Corrections and Security
Manufacturing Career
Marketing Sales and Service
Science, Technology, Engineering and Mathematics
Transportation, Distribution, and Logistics

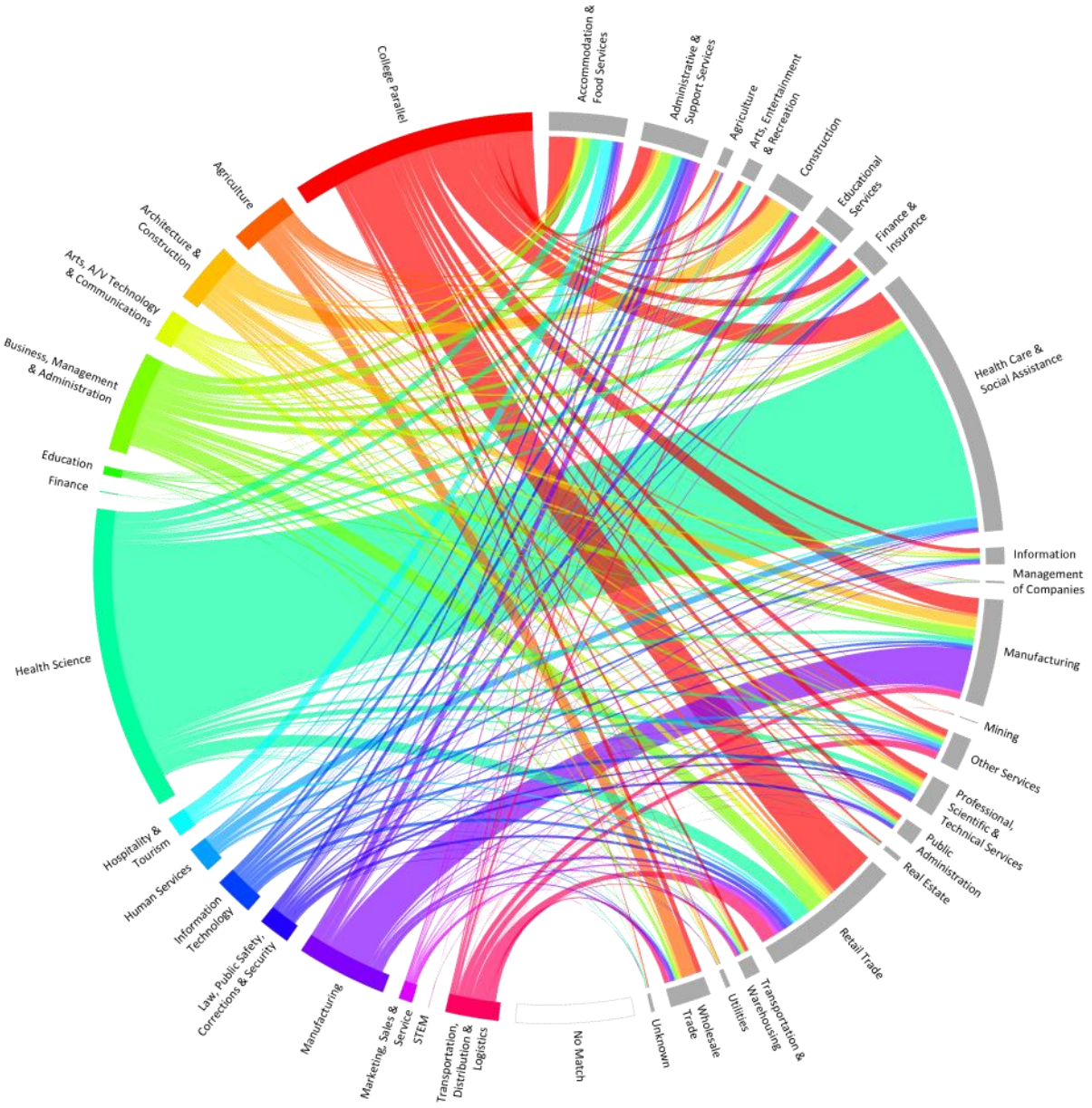
Industry Sector

Accommodation & Food Services
Admin. Support, Waste Mgmt. & Remediation
Agriculture, Forestry, Fishing & Hunting
Arts, Entertainment & Recreation
Construction
Educational Services
Finance & Insurance
Health Care & Social Assistance
Information
Management of Companies & Enterprises
Manufacturing
Mining
Other Services
Professional, Scientific & Tech. Services
Public Administration
Real Estate, Rental & Leasing
Retail Trade
Transportation & Warehousing
Utilities
Wholesale Trade

Cluster to Industry

As previously mentioned, students that chose the college parallel route and the health science career cluster represent the largest portion of FY 2010 to FY 2012 graduates, which explains why the red and green sectors on the left of Figure 33 below are so wide. All graduates who entered the workforce within one year of graduation are graphically represented in Figure 33 (the "no match" section corresponds to those graduates that did not match UI wage records). For example, the majority of health science completers obtained employment within the health care and social assistance industry, but this career cluster provided workers in nearly every industry. The college parallel completers were disbursed as well, but the largest industry sectors of employment were retail trade, health care and social assistance, or finance and insurance.

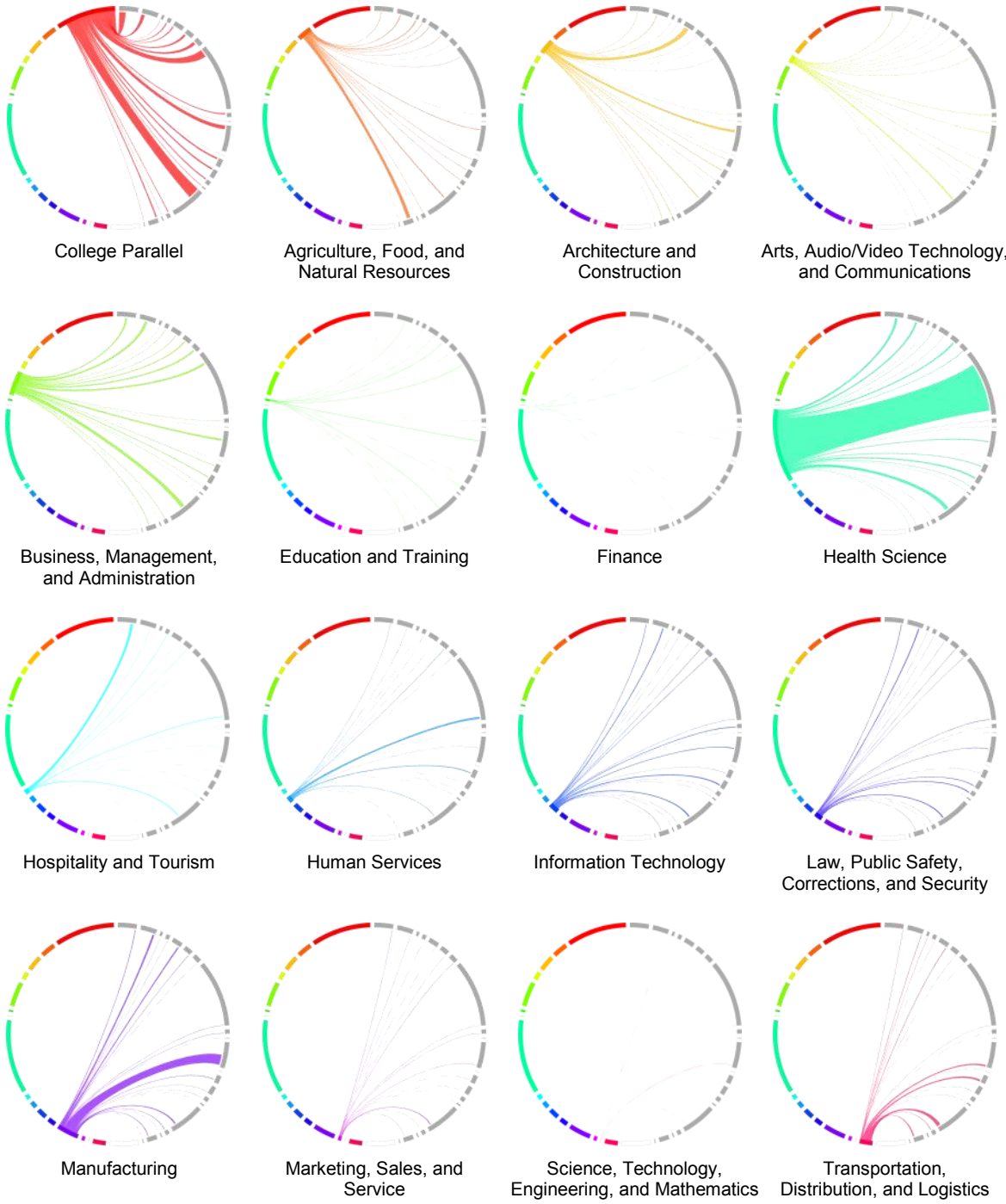
Figure 33. Cluster to Industry Mapping for FY 2010-FY 2012 Community College Graduates



Transition into Workforce

Each of the circular graphics below in Figure 34 illustrate awards by the career clusters and college parallel programs on the left side of the circle moving across the circle to the industry in which each student is working. Each cluster is represented by a colored bar and accompanying ribbon, the width of the bar and ribbon represents the number of students from the study cohort who make up the cluster.

Figure 34. Industry Mapping by Cluster, FY 2010-FY 2012 Community College Graduates



Career Pathways to Occupations

While a **career cluster** contains a broad group of occupations and industries and a **career pathway** contains a series of courses that prepare students for an occupation, they are normally not organized to meet the career interests and availability of a particular **occupation**. However, the National Crosswalk Service Center (NCSC) and the Research Center for Career and Technical Education (NRCCTE) uses data published through the *Crosswalk Validation Project* which attempts to link the three topics by using the CIP code, Standard Occupational Classification (SOC) codes, and the Employment and Training Administration's Occupational Network (O*NET) classification.

In order to complete the process, guidelines were developed to assist in the assignment of SOC codes and how they are classified into a particular cluster or pathway. This process offers consistency and rationale when determining the assignment of an occupation. Additionally, SOC occupational definitions were compared to the career cluster and career pathway definitions to determine the best fit.

In order to choose which occupations should be reflected in this report, researchers consulted the Bureau of Labor Statistics, *Industry to Occupation Matrix.* This matrix summarizes all occupations within an industry and lists each by percentage of employment within that industry. For example, production occupations make up 51.0 percent of manufacturing jobs, followed by office and administrative support occupations at 9.5 percent of the industry.

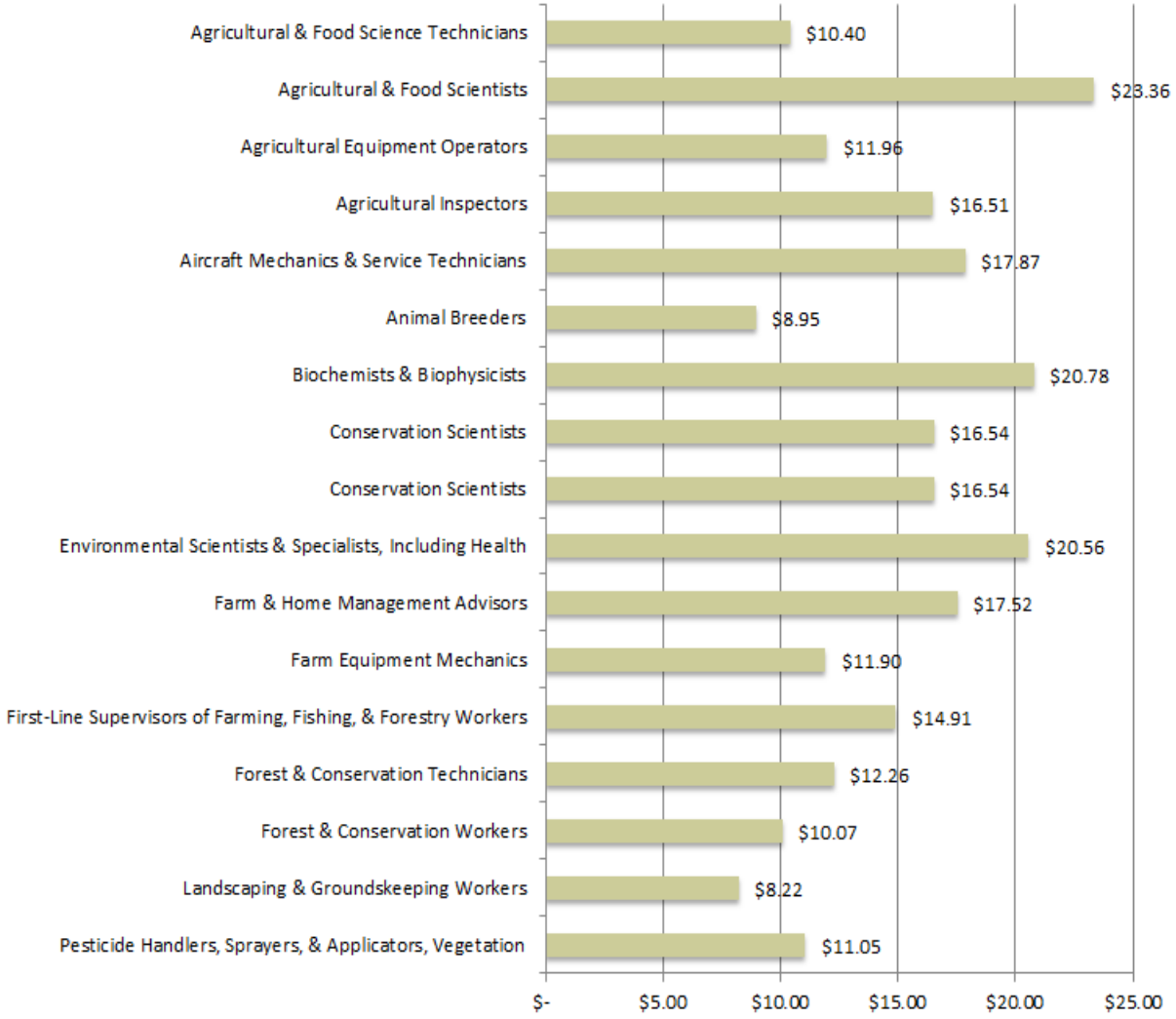
By using the list of occupations developed by the NRCCTE, data obtained from the industry to occupation matrix, and corresponding 2013 Iowa entry level average wages, from the Iowa Wage Survey, correlations of each career cluster, pathway and wages by occupation are provided in Figures 35 through 50 on the following pages.

Agriculture, Food & Natural Resources Cluster

The Agriculture, Food, & Natural Resources Career Cluster includes the following Career Pathways:

- Agribusiness Systems
- Animal Systems
- Environmental Service Systems
- Food Products and Processing Systems
- Natural Resources Systems
- Plant Systems
- Power Structure and Technical Systems

Figure 35. Agriculture, Food, & Natural Resources Occupations & Entry Level Average Wages

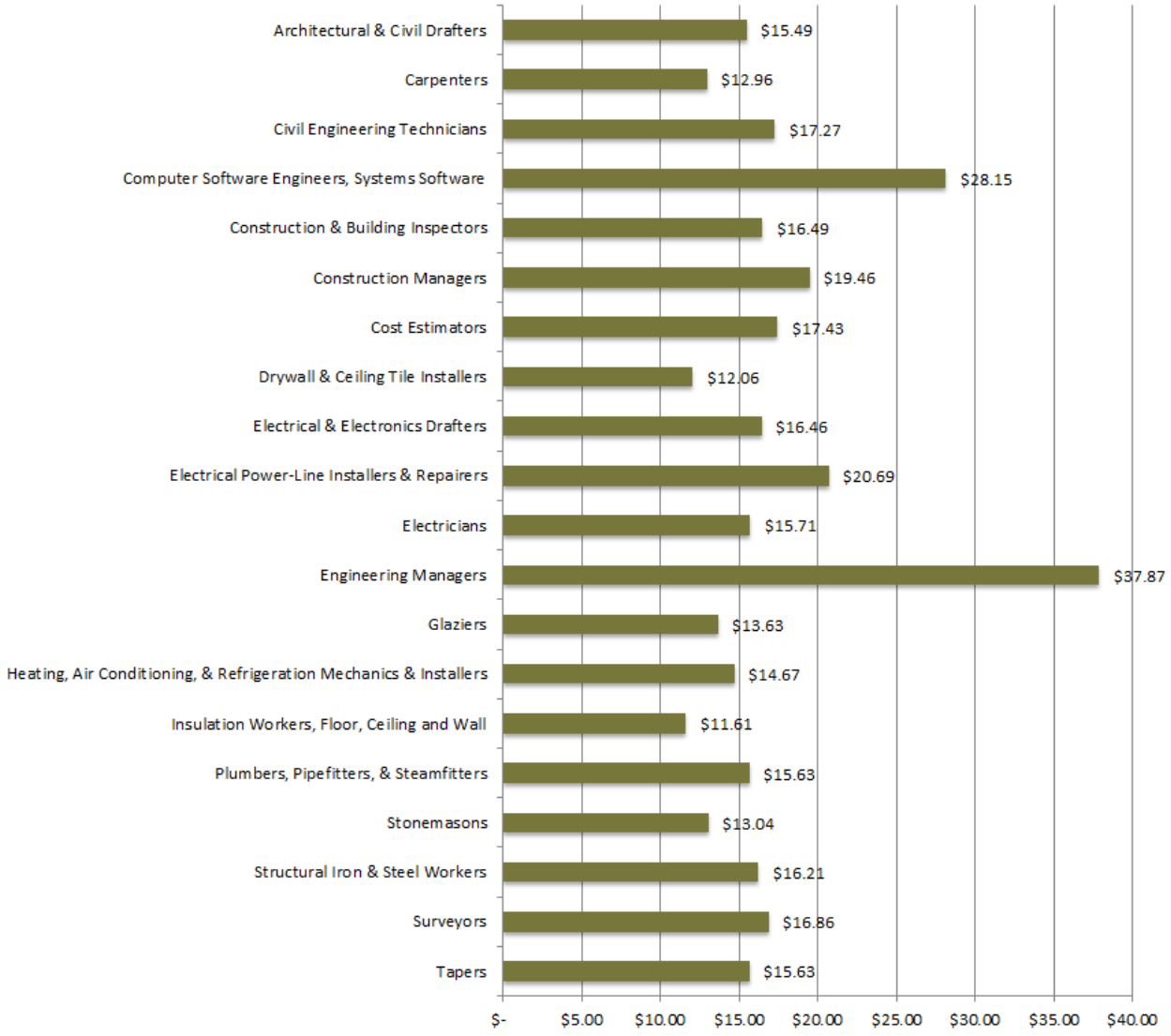


Architecture & Construction Cluster

The Architecture & Construction Career Cluster includes the following Career Pathways:

- Construction
- Design/Pre-Construction
- Maintenance/Operations

Figure 36. Architecture & Construction Occupations & Entry Level Average Wages

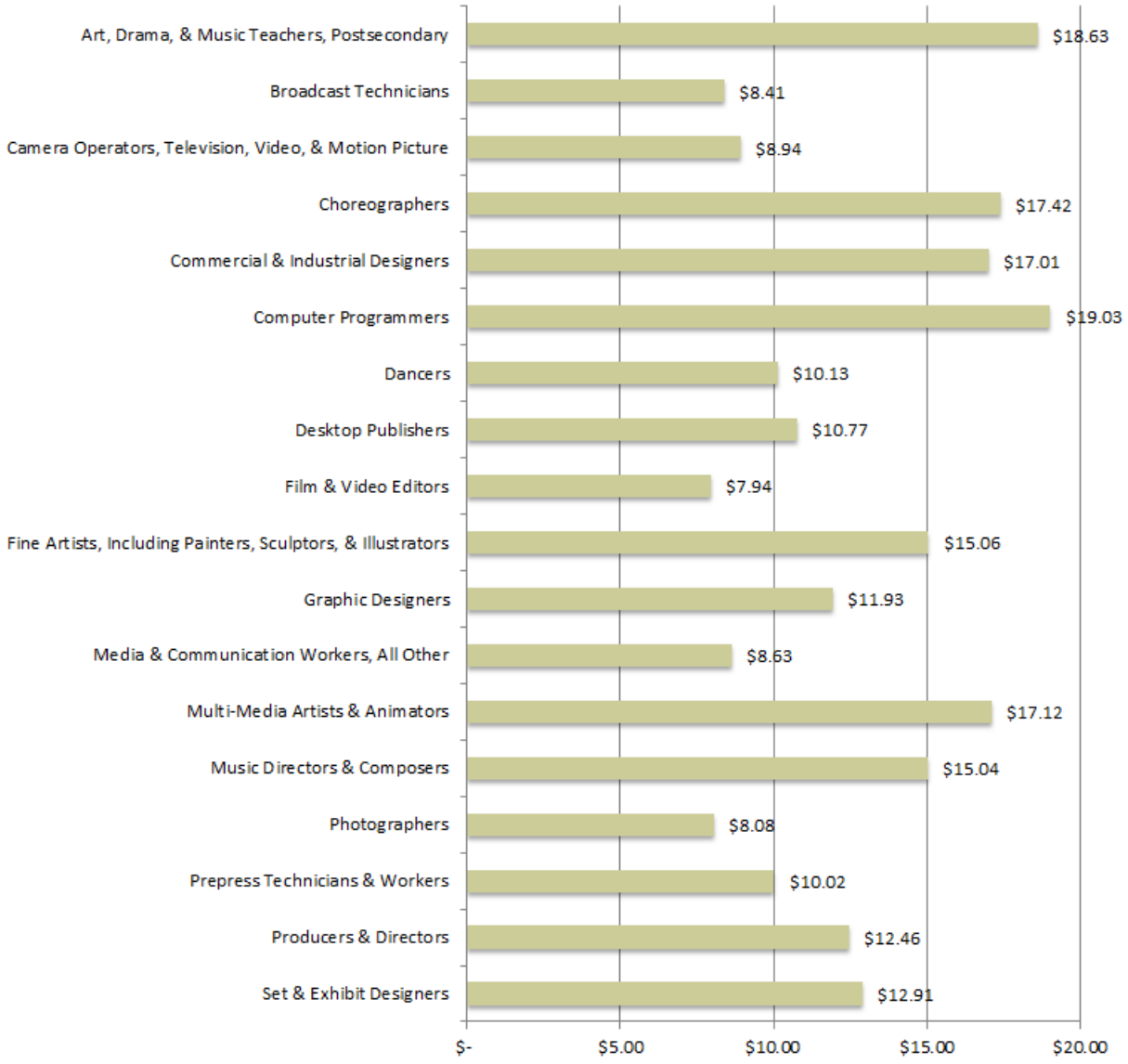


Arts, Audio/Video Technology, & Communications Cluster

The Arts, Audio/Video Technology, & Communications Career Cluster includes the following Career Pathways:

- Audio & Video Technology & Film
- Journalism & Broadcasting
- Performing Arts
- Printing Technology
- Telecommunications
- Visual Arts

Figure 37. Arts, Audio/Video Technology, & Communications Occupations & Entry Level Average Wages

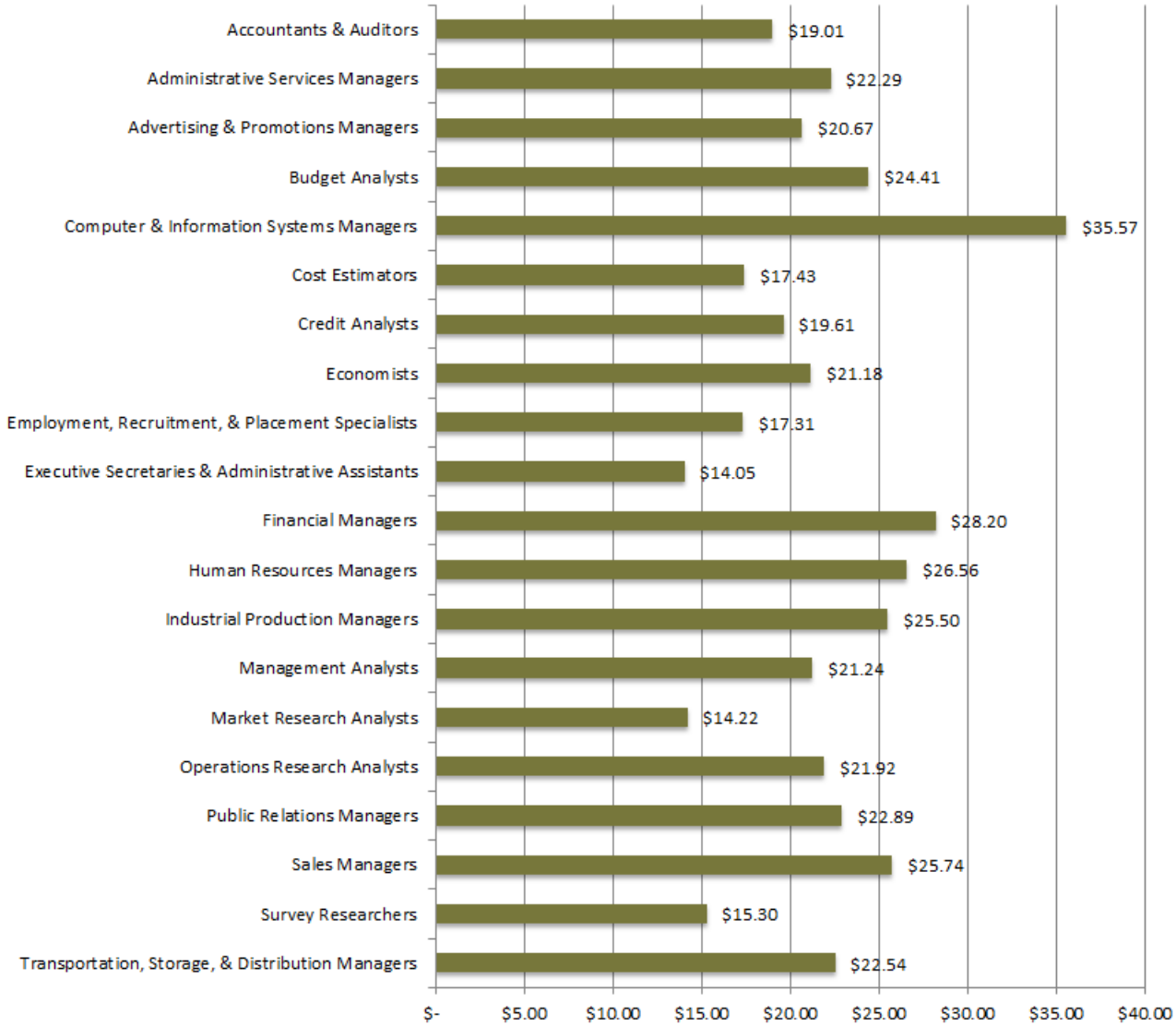


Business, Management, & Administration Cluster

The Business Management, & Administration Career Cluster includes the following Career Pathways:

- Administrative & Information Support
- Business Financial Management & Accounting
- Human Resources
- Management
- Marketing

Figure 38. Business, Management, & Administration Occupations & Entry Level Average Wages

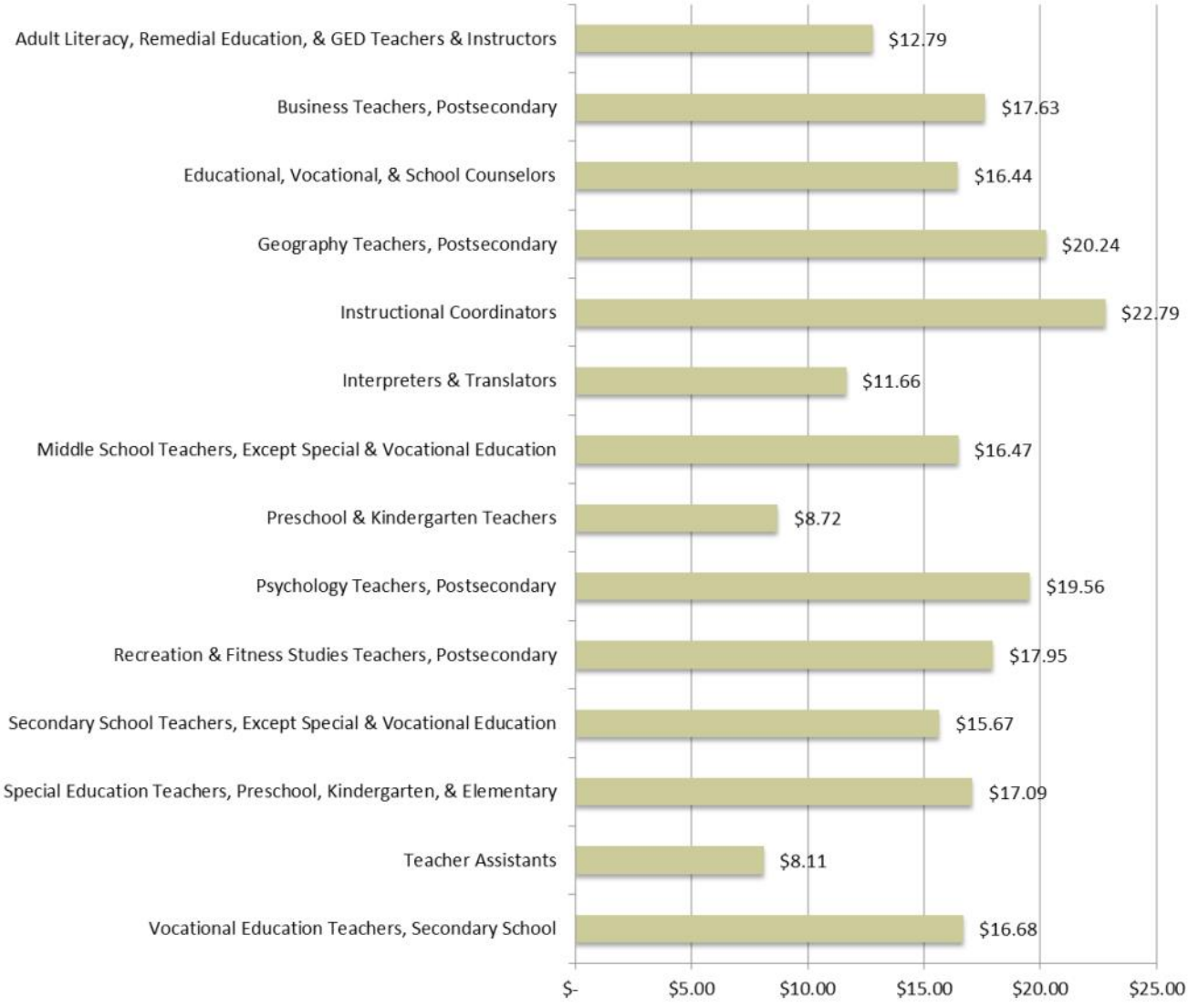


Education & Training Cluster

The Education & Training Career Cluster includes the following Career Pathways:

- Administration & Administrative Support
- Professional Support Services
- Teaching & Training

Figure 39. Education & Training Occupations & Entry Level Average Wages

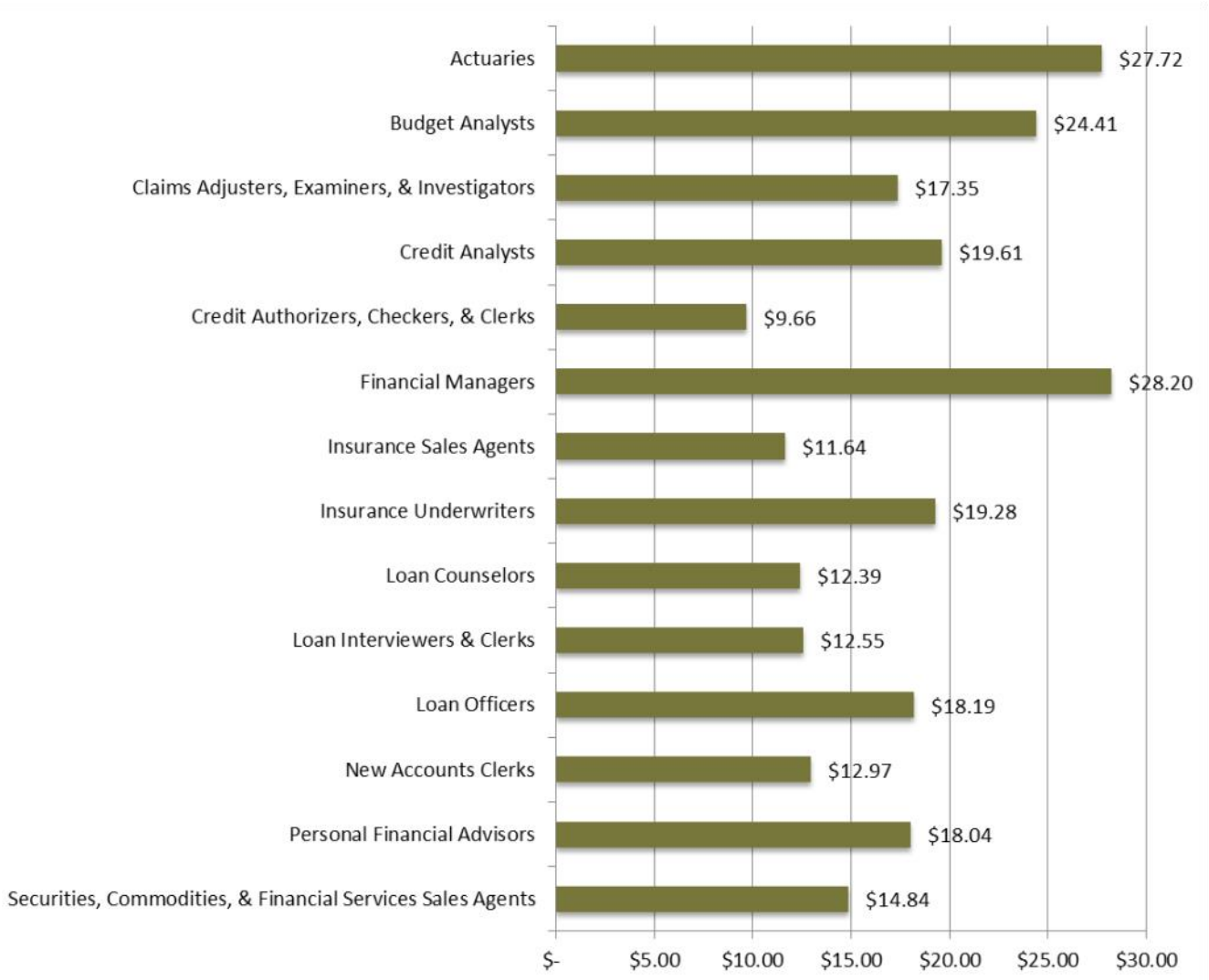


Finance Cluster

The Finance Career Cluster includes the following Career Pathways:

- Banking & Related Services
- Financial & Investment Planning
- Insurance Services

Figure 40. Finance Occupations & Entry Level Average Wages

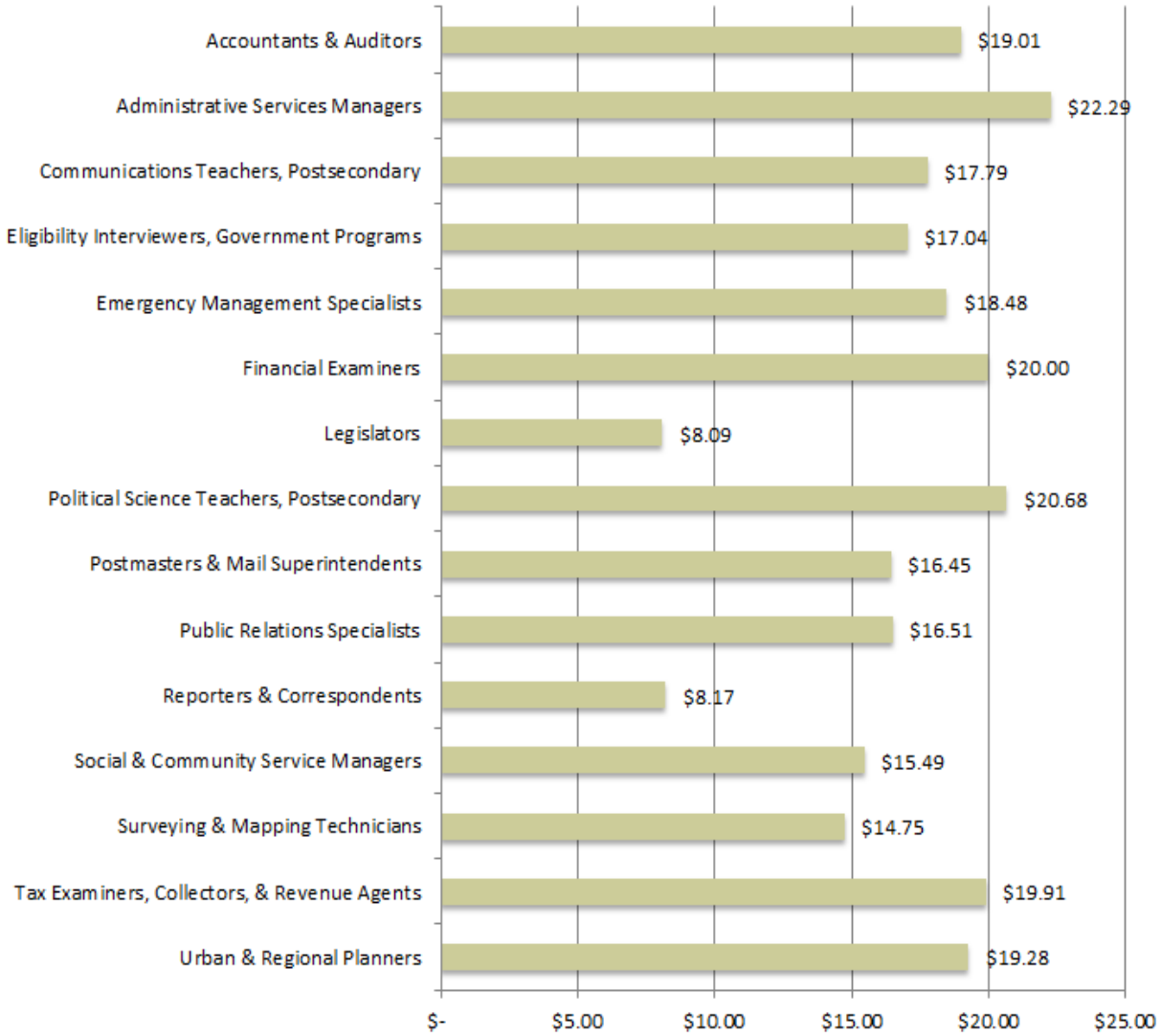


Government & Public Administration Cluster

The Government & Public Administration Career Cluster includes the following Career Pathways:

- Governance (Legislators & General Government Executives)
- Planning
- Public Management & Administration
- Revenue & Taxation

Figure 41. Government & Public Administration Occupations & Entry Level Average Wages

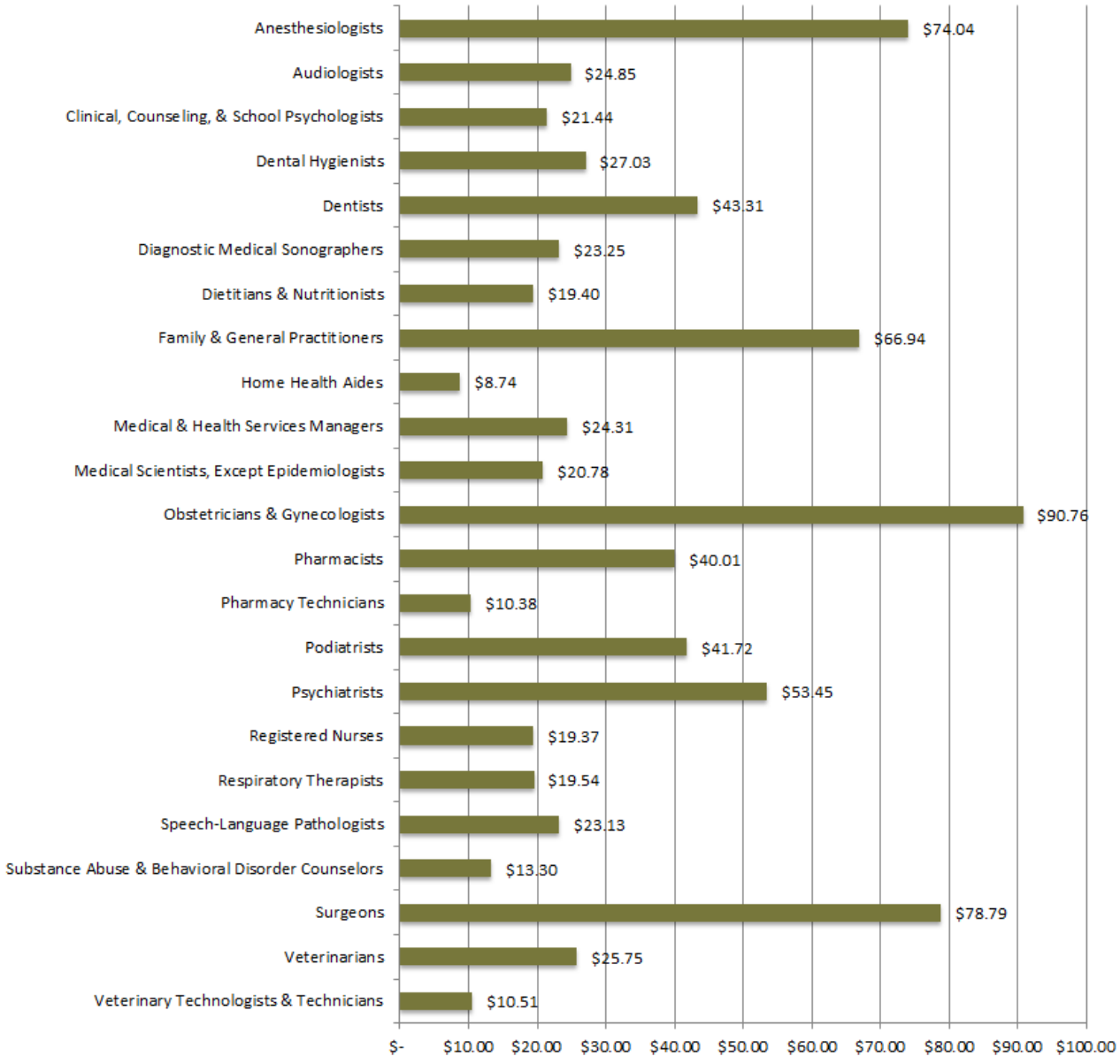


Health Science Cluster

The Health Science Career Cluster includes the following Career Pathways:

- Biotechnology Research & Development
- Diagnostics Services
- Health Informatics
- Support Services
- Therapeutic Services

Figure 42. Health Science Occupations & Entry Level Average Wages

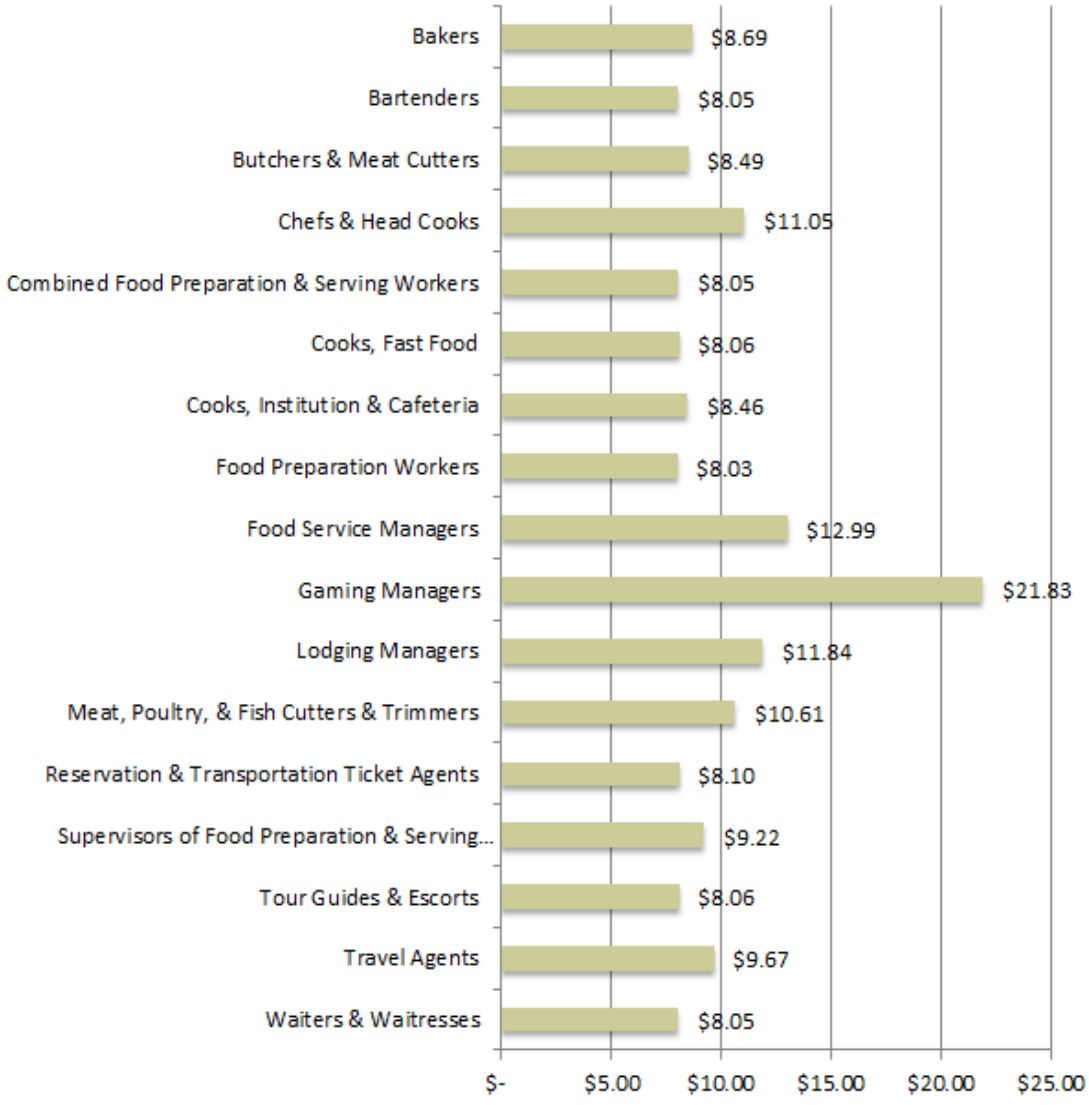


Hospitality & Tourism Cluster

The Hospitality & Tourism Career Cluster includes the following Career Pathways:

- Lodging
- Recreation, Amusements & Attractions
- Restaurants & Food/Beverage Services
- Travel & Tourism

Figure 43. Hospitality & Tourism Occupations & Entry Level Average Wages

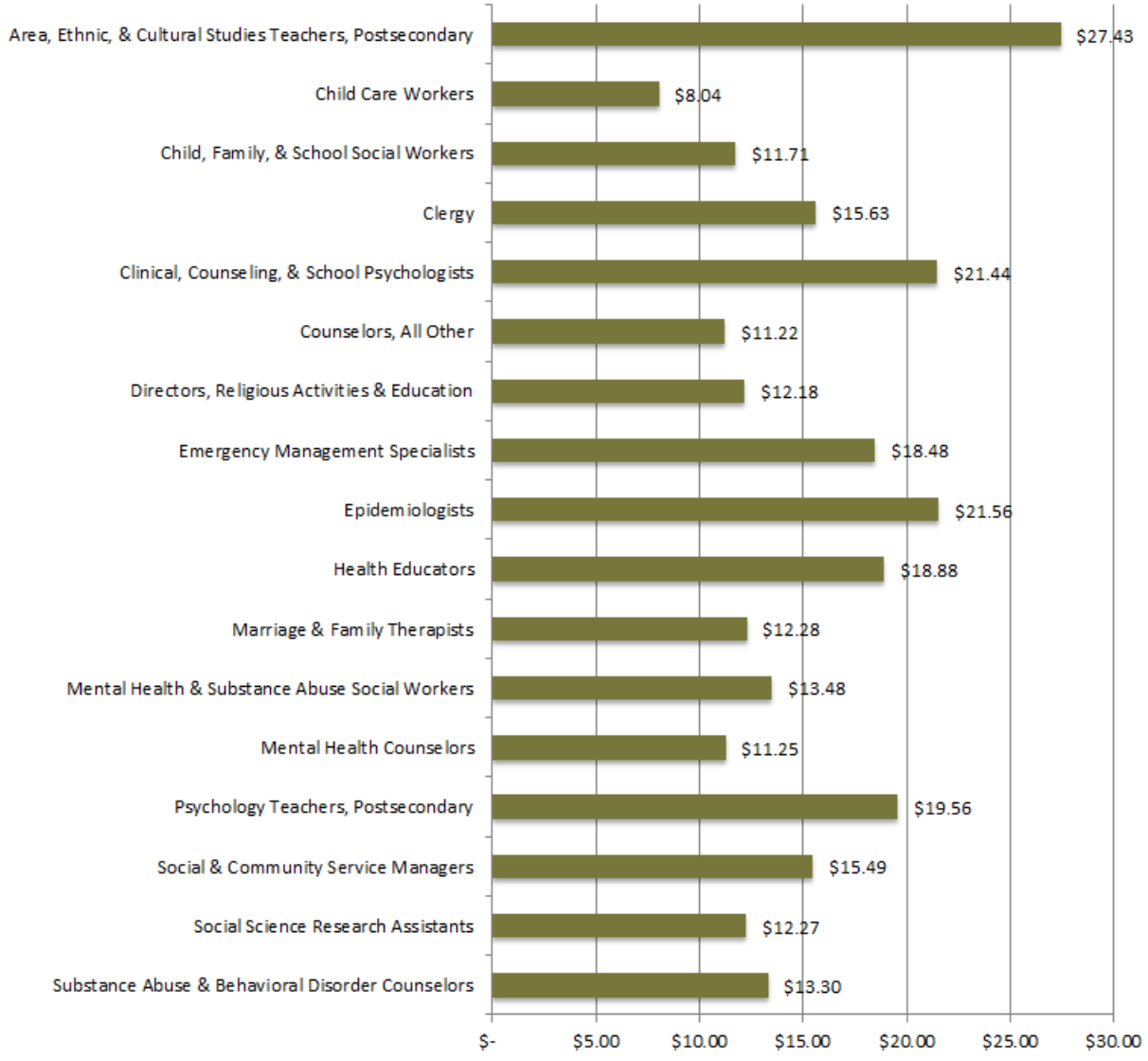


Human Services Cluster

The Human Services Career Cluster includes the following Career Pathways:

- Counseling & Mental Health Services
- Consumer Services
- Early Childhood Development & Services
- Family & Community Services
- Personal Care Services

Figure 44. Human Services Occupations & Entry Level Average Wages



Information Technology Cluster

The Information Technology Career Cluster includes the following Career Pathways:

- Information Support Services
- Interactive Media
- Network Systems
- Programming & Software Development

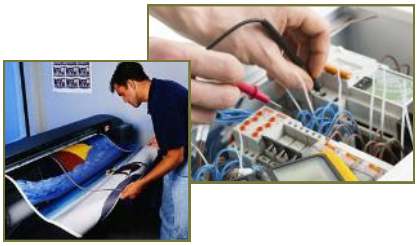
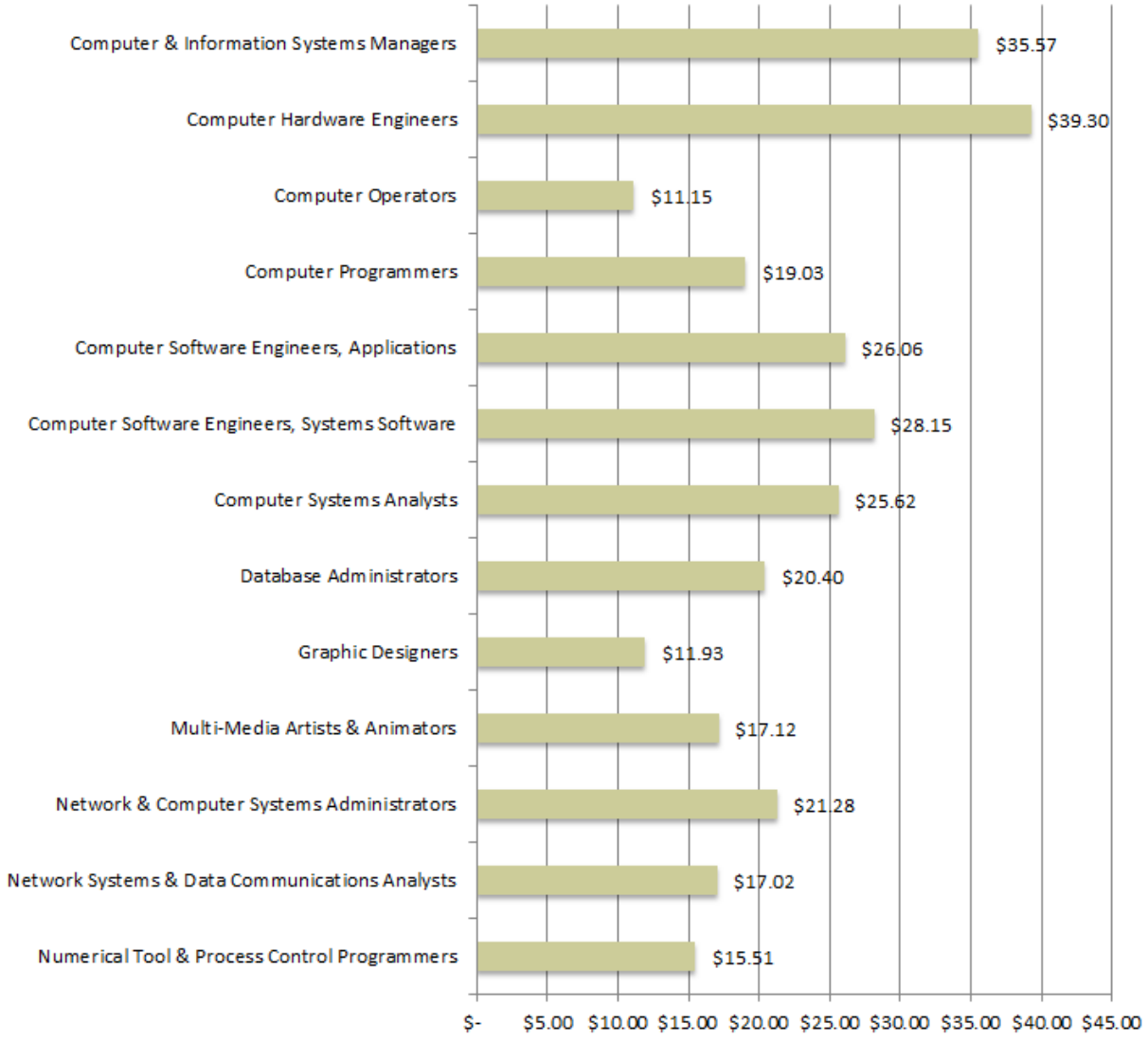


Figure 45. Information Technology Occupations & Entry Level Average Wages

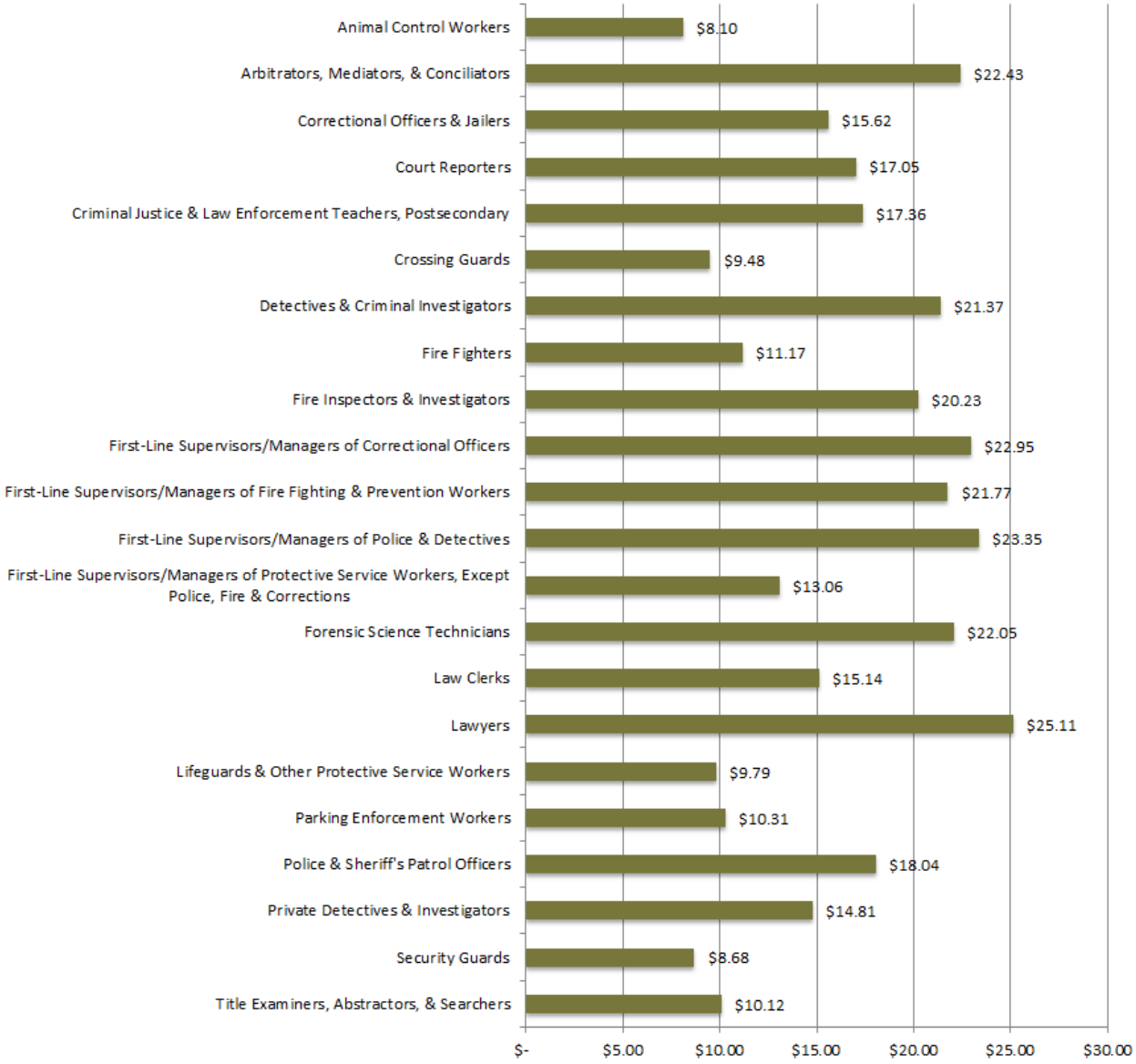


Law, Public Safety, Corrections, & Security Cluster

The Law, Public Safety, Corrections, & Security Career Cluster includes the following Career Pathways:

- Correction Services
- Emergency & Fire Management Services
- Law Enforcement Services
- Legal Services
- Security & Protective Services

Figure 46. Law, Public Safety, Corrections & Security Occupations & Entry Level Average Wages



Manufacturing Cluster

The Manufacturing Career Cluster includes the following Career Pathways:

- Maintenance, Installation & Repair
- Manufacturing Production Process Development
- Production
- Quality Assurance

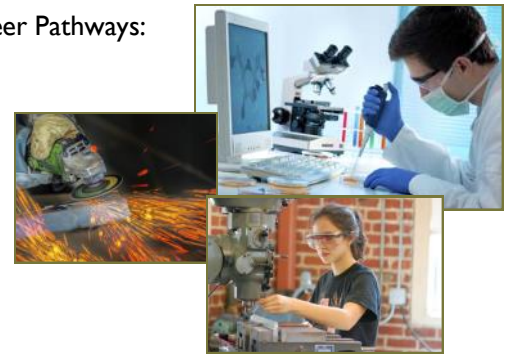
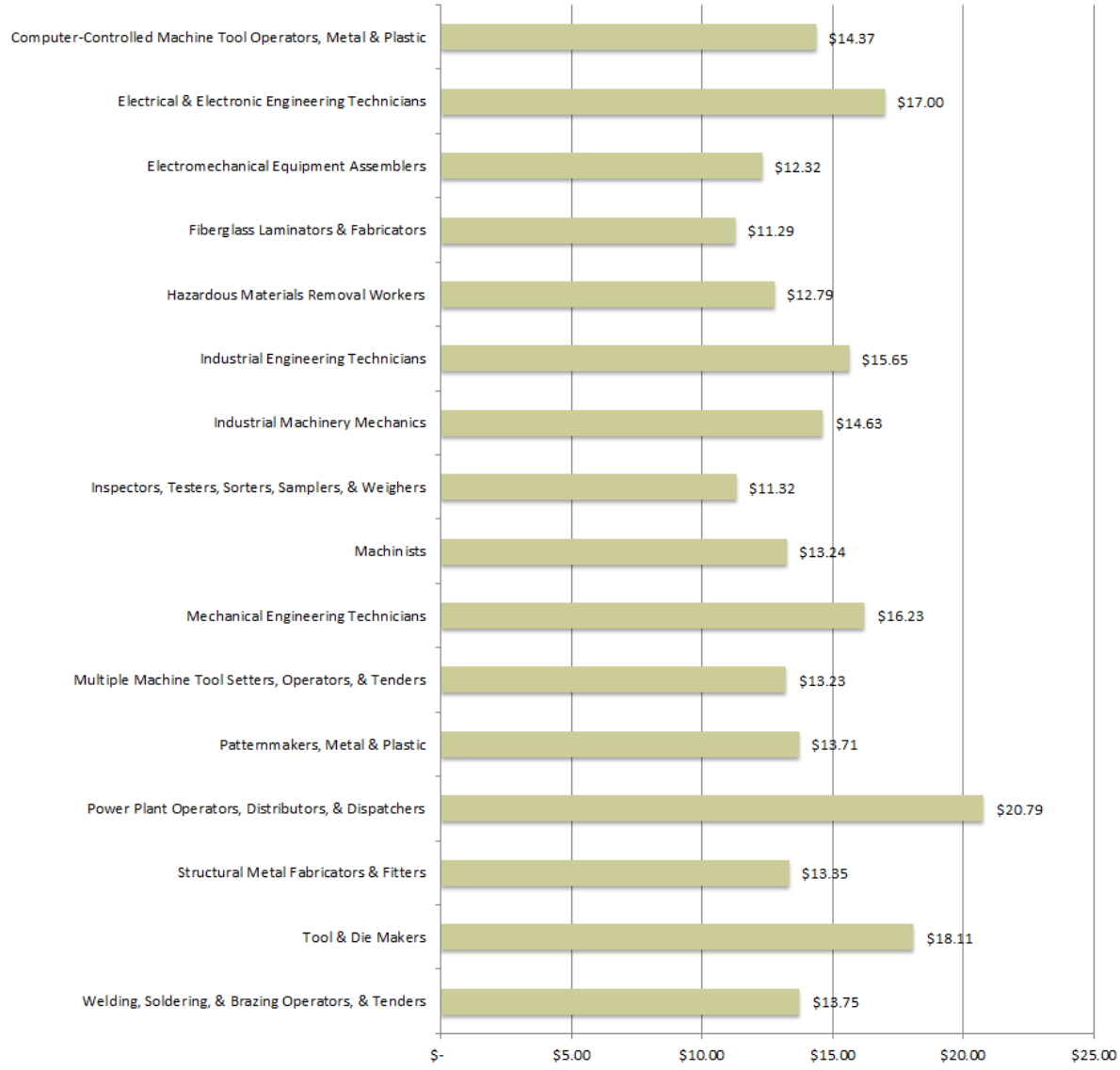


Figure 47. Manufacturing Occupations & Entry Level Average Wages

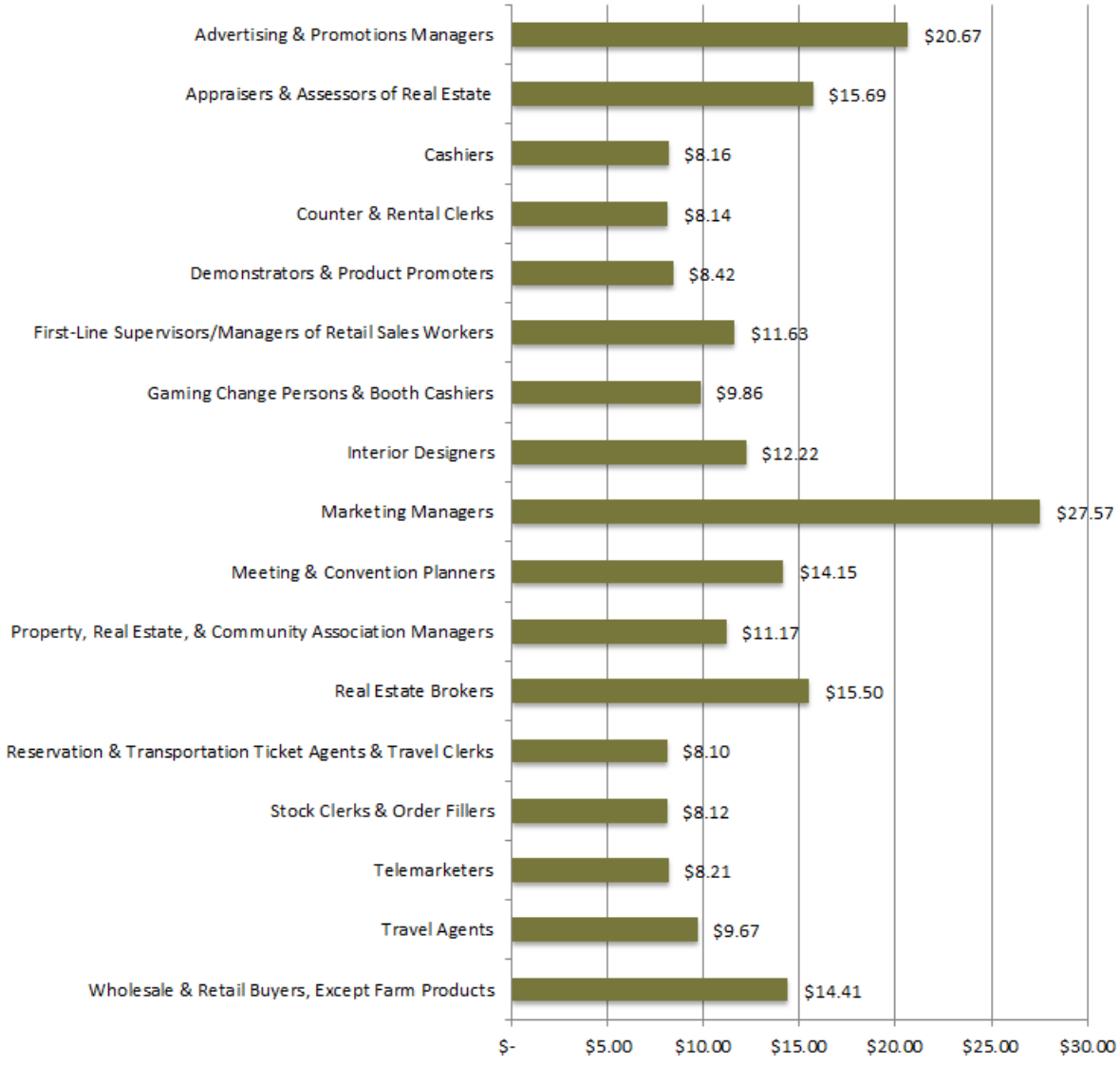


Marketing, Sales, & Service Cluster

The Marketing, Sales, & Service Career Cluster includes the following Career Pathways:

- Buying & Merchandising
- E-Marketing
- Management & Entrepreneurship
- Marketing Communications & Promotion
- Marketing Information Management & Research
- Professional Sales & Marketing

Figure 48. Marketing, Sales, & Service Occupations & Entry Level Average Wages



Science, Technology, Engineering, & Mathematics Cluster

The Science, Technology, Engineering, & Mathematics (STEM) Career Cluster includes the following Career Pathways:

- Engineering & Technology
- Science & Mathematics

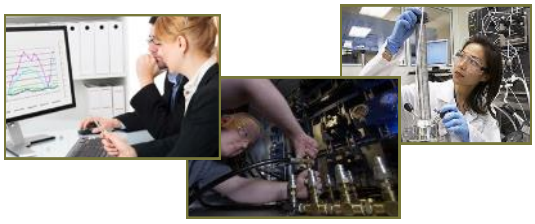
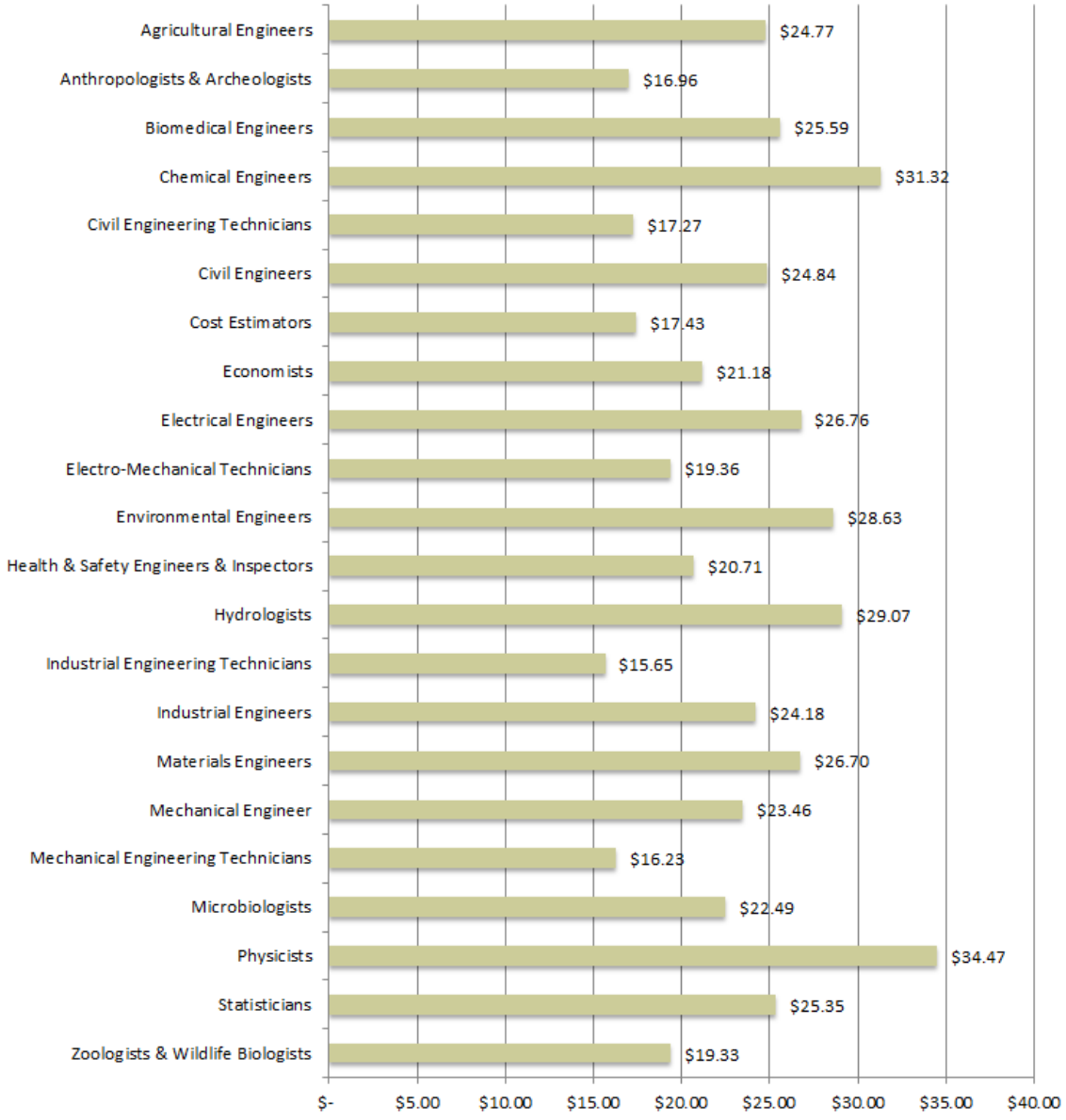


Figure 49. STEM Occupations & Entry Level Average Wages

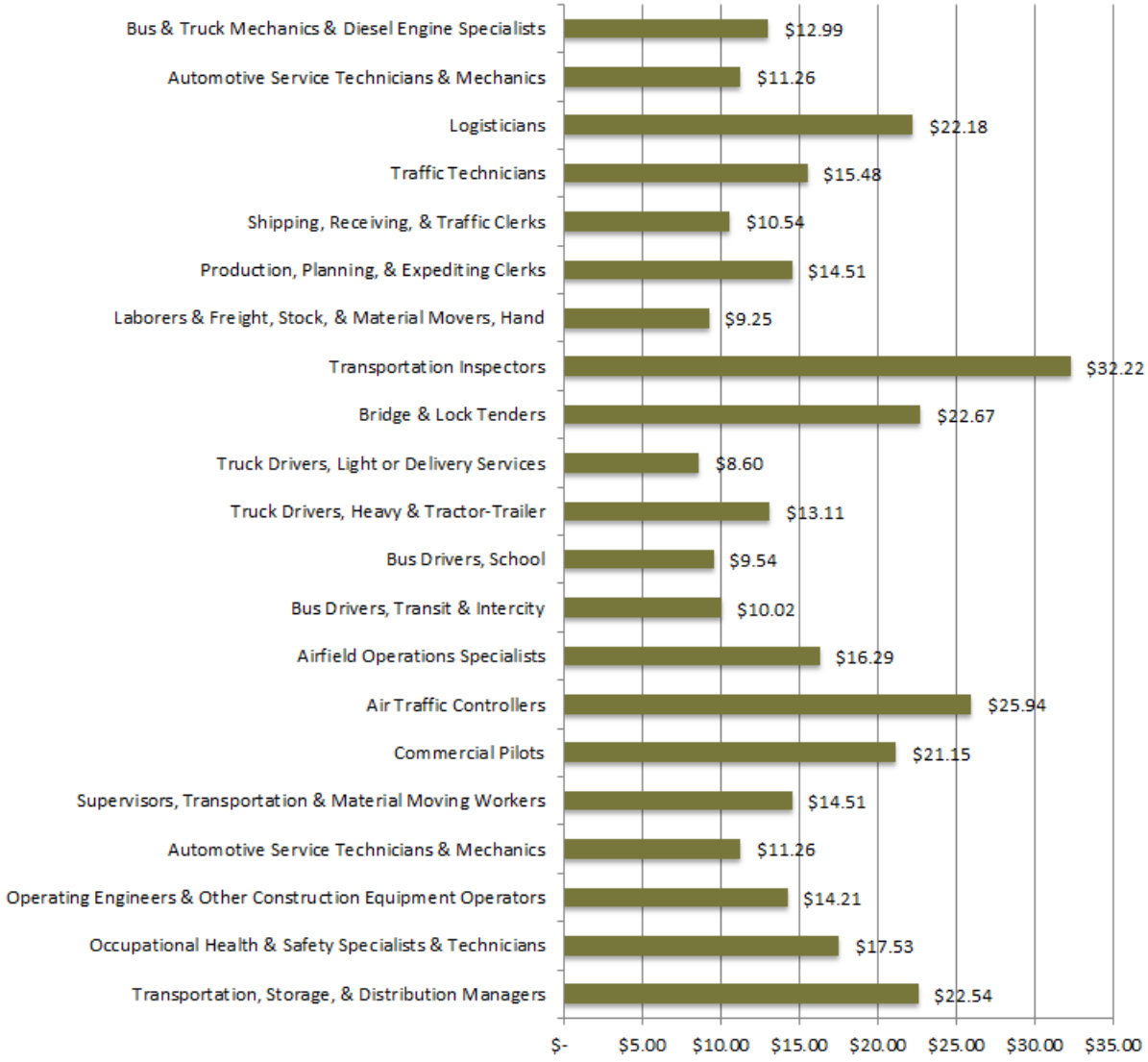


Transportation, Distribution, & Logistics Cluster

The Transportation, Distribution, & Logistics Career Cluster includes the following Career Pathways:

- Facility & Mobile Equipment Maintenance
- Logistics Planning & Management Services
- Sales & Service
- Transportation Operations
- Warehousing & Distribution Center Operations

Figure 50. Transportation, Distribution, & Logistics Occupations & Entry Level Average Wages



Employment & Wage Record Methodology

- All wages for this report originate either from the Iowa Unemployment Insurance (UI) wage database or the Wage Record Interchange System (WRIS) network of state UI wage databases.

- Both the actual wage earned ("Unadjusted Median Wage") and the wage adjusted for inflation ("Adjusted Median Wage") are included in all wage related tables. Wages are adjusted for inflation to fiscal year 2013 levels (CPI-u=231.3523) in order to make longitudinal comparisons more legitimate using the Consumer Price Index (CPI-u) as calculated by the U.S. Bureau of Labor Statistics. The formula used for adjusting wages is as follows:

$$W_{adj} = \frac{CPI_t}{CPI_{base}} * W_t$$

  where CPI_{base} is the CPI value of the base time period (FY2013), CPI_t is the CPI value of the time period being adjusted from, and W_t is the wage of the time period being adjusted from. Wages are adjusted after they have been aggregated by fiscal year (using fiscal year average CPI values).

- The aggregate wages reported throughout this report do not include those graduates who did not match with a record in the UI wage database (i.e. the median wages only include those who had wages covered by employer UI tax during that year).

- To protect the individual identities, small sample size cells were suppressed using the following rules.
  1. Suppress cell if number of employed in cell is less than three
  2. When there is only one non-suppressed cell in a sub-group, suppress all cells in the subgroup when the number of people employed suppressed is less than or equal to two.

- Out-of-state (WRIS) data was not available for the entirety of fiscal year FY2011, and the first quarter of fiscal year FY2012 (July-September FY2011) due to the available data within the WRIS system (8 quarters) during this reporting period.

References

Bureau of Labor Statistics,
http://www.bls.gov/emp/ep_table_109.htm

Classification of Instructional Programs (CIP): 2000 Edition,
http://nces.ed.gov/pubs2002/2002165_2.pdf

Crosswalk Validation Project,
http://www.careertech.org/sites/default/files/CrosswalkValidationProject

Iowa Workforce Development, 2013 Iowa Wage Survey,
http://iwin.iwd.state.ia.us/iowa/ArticleReader?itemid=00004080

Krzywinski, M. et al. "Circos: an Information Aesthetic for Comparative Genomics.",
http://www.circos.ca/

National Center for Education Statistics (NCES),
https://nces.ed.gov/pubs2002/cip2000/

Appendix A—Contents

Below is a list of the detailed data tables for this report. There are separate spreadsheets for each cohort (FY2010, FY2011, FY2012) which can be accessed at https://www.educateiowa.gov/community-colleges.

Table 1: Total Enrolled – Further Postsecondary Education

Table 2: Total Enrolled – Further Postsecondary Education by Institution Type

Table 3: Total Enrolled – Further Postsecondary Education by State

Table 4: Total Enrolled – Further Postsecondary Education by Institution Type & State

Table 5: Overall Employment & Wages

Table 6: Overall Employment & Wages by State Employed

Table 7: Overall Employment & Wages by Industry Employed

Table 8: Overall Employment & Wages by State & Industry Employed

Table 9: Employment & Wages by Award Type (1 or 2 Year)

Table 10: Employment & Wages by Award Type (1 or 2 Year) by State Employed

Table 11: Employment & Wages by Award Type (1 or 2 Year) by Industry Employed

Table 12: Employment & Wages by Award Type (1 or 2 Year) by State & Industry Employed

Table 13: Employment & Wages by Specific Award Type

Table 14: Employment & Wages by Specific Award Type & State Employed

Table 15: Employment & Wages by Specific Award Type & Industry Employed

Table 16: Employment & Wages by Specific Award Type, State & Industry Employed

Table 17: Employment & Wages by Program (CIP) & Specific Award Type

Table 18: Employment & Wages by Program (CIP), Specific Award Type & State Employed

Table 19: Employment & Wages by Program (CIP), Specific Award Type & Industry Employed

Table 20: Employment & Wages by Program (CIP), Specific Award Type, State & Industry Employed

Table 21: Transfer & Employment by Career Cluster

Table 22: Employment by Career Cluster & Industry

This page intentionally left blank

Community Colleges