

EDUCATION OUTCOMES

Certificate, Diploma, and Associate Degree Programs

IOWA COMMUNITY COLLEGES

Academic Year 2012 to Academic Year 2016

Issued
MARCH
2018



**COMMUNITY COLLEGES &
WORKFORCE PREPARATION**
PROSPERITY THROUGH EDUCATION
www.educateiowa.gov/ccpublications

This page was intentionally left blank

**Iowa Department
of Education**

Phone: 515-281-8260

Fax: 515-242-5988

www.educateiowa.gov

Ryan Wise

Director

Iowa Department
of Education

515-281-3436

ryan.wise@iowa.gov

Jeremy Varner

Administrator

Division of

Community Colleges &
Workforce Preparation

515-281-8260

jeremy.varner@iowa.gov

Barbara Burrows

Chief

Bureau of

Community Colleges

515-281-0319

barbara.burrows@iowa.gov

Paula Nissen

Education Consultant

Bureau of

Community Colleges

515-418-8273

paula.nissen2@iowa.gov

State of Iowa

Department of Education

Grimes State Office Building

400 E. 14th Street

Des Moines, Iowa 50319-0146

State Board of Education

Charles Edwards, Jr., President, Des Moines

Michael L. Knedler, Vice President, Council Bluffs

Brooke Axiotis, Des Moines

Michael Bearden, Gladbrook

Bettie Bolar, Marshalltown

Angela English, Dyersville

Mike May, Spirit Lake

Mary Ellen Miller, Mason City and Corydon

Robert Nishimwe, Student Member, Des Moines

Administration

Ryan M. Wise, Director and Executive Officer
of the State Board of Education

Division of Community Colleges and Workforce Preparation

Jeremy Varner, Division Administrator

Bureau of Community Colleges

Barbara Burrows, Bureau Chief

Paula Nissen, Education Consultant

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.

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

**Iowa Department of Education
Division of Community Colleges
and Workforce Preparation
Grimes State Office Building
400 E. 14th Street
Des Moines, IA 50319-0146**

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

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

Barbara Burrows
Bureau Chief
515-281-0319
Barbara.Burrows@iowa.gov

Paula Nissen
Education Consultant
515-418-8273
Paula.Nissen2@iowa.gov

Vladimir Bassis
Education Consultant
515-281-3671
Vladimir.Bassis@iowa.gov

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

Phone: 515-725-3860
Fax: 515-281-9656
www.iowaworkforcedevelopment.gov

Cathy Ross
Labor Market Information Director
515-725-3860
Cathy.Ross@iwd.iowa.gov

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

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

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



**COMMUNITY COLLEGES &
WORKFORCE PREPARATION**
PROSPERITY THROUGH EDUCATION

**IOWA
WORKFORCE
DEVELOPMENT**

Preface

In 2015, the Iowa Department of Education's Division of Community Colleges and Workforce Preparation collaborated with Iowa Workforce Development and Georgetown University's Center on Education to perform a study of the education and training needs of employers in Iowa compared to the current education level of Iowans.

The study revealed that, by 2025, about 68 percent of all jobs in Iowa will require some postsecondary training or education beyond high school. The subsequent report stated:

Since the 1980s, education or training beyond high school has become the new minimum threshold for Americans to earn a living wage and attain middle class status. In 1973, only 28 percent of U.S. jobs required education beyond a high school diploma; by 2025, almost two out of three jobs in the nation will require at least some postsecondary education or training. Iowa's economy reflects this national trend and demonstrates a steady increase in the demand for postsecondary education and training in the industries that form the mainstay of the national economy.

In response to this report, former Iowa Governor Terry Branstad set a goal which calls for 70 percent of Iowans in the workforce to have education or training beyond high school by 2025. This will allow more Iowans to have better career opportunities and employers to have the skilled workers they need. Iowa's current Governor Kim Reynolds, has incorporated this goal into the Future Ready Iowa initiative.

Iowa's community colleges are the state's largest postsecondary education sector, offering a plethora of education and training programs designed to meet state and regional economic needs. Due to their responsiveness and commitment to workforce training, these institutions are well-positioned to prepare the skilled workers of the future. To inform their academic planning, the Education Outcomes Report provides information about community college awards, time-to-degree, retention, migration, transfer to four-year institutions, employment and wages, and career clusters. This information can assist institutions with program development and improvement, particularly with career and technical education programs.

Annually, Iowa Department of Education (IDOE) partners with Iowa Workforce Development (IWD) to link state and national education and workforce data to monitor the outcomes of students enrolled in Iowa's 15 community colleges. Five (5) student cohorts were established for this education outcomes report and were tracked longitudinally to capture future education or employment information (wages and industry sectors of those completing Iowa community college education and training programs).

Additional interactive charts that compare outcomes by state and program are available on the IDOE's website at: <https://www.educateiowa.gov/iowa-community-college-program-outcomes-0>.

This page was intentionally left blank

Table of Contents

Iowa Community College Education Outcomes	8
Process and Methodology	9
Statewide Total Awards.....	10
Awards by Classification of Instructional Program	11
Associate Degrees by CIP-AY2012 to AY2016	12
Associate Degrees by CIP-AY2012.....	13
Associate Degrees by CIP-AY2013.....	14
Associate Degrees by CIP-AY2014.....	15
Associate Degrees by CIP-AY2015.....	16
Associate Degrees by CIP-AY2016.....	17
Diplomas by CIP	18
Certificates by CIP	19
Short-Term Awards by CIP	20
Time to Degree	21
Joint Enrollment	23
Cohort Groups Defined	24
Retention and Migration	25
Pursuing Further Education Cohort.....	26
Workforce Cohort	27
Employment and Wages by State	28
Employment and Wages by Award Type.....	29
Employment and Wages by Gender	30
Employment and Wages by Industry Sector	31
Employment and Wages by Award Type and Industry	32
Employment and Wages by CIP	33
Career Clusters	35
Awards by Career Cluster	36
Employment by Career Cluster	37
Transition into the Workforce	38
Cluster to Industry.....	39
Employment and Wage Record Methodology	41
References.....	41
Appendix A—Contents (with a link to online tables).....	42

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

The *Iowa Community Colleges Education Outcomes: Certificate, Diploma, and Associate Degree Programs Report*, published annually, is an attempt to answer the questions regarding the outcomes of students completing community college programs. This report and other related resources provide institutional data designed to inform community college administrators and policymakers as they engage in planning and program improvement.

Throughout this report, employment and wages are analyzed to illustrate the important impact that the education and training provided by Iowa's community colleges has on the economy. Program and award levels are analyzed separately in order to access the benefits of each. Research parameters were set to distinguish between programs consisting of 22 credit hours or more, considered "long-term" awards; and those consisting of less than 22 credit hours, considered "short-term" awards. These parameters, which are applied by credit-hour definition, ensure a uniform approach to the research for the purposes of this report.

Coinciding with the programs, five annualized cohorts of student award recipients were studied regarding their subsequent employment and wages (academic years [AY] 2012, 2013, 2014, 2015, and 2016). These cohorts will be studied longitudinally for a period of five years after graduation. The research is limited to five years because previous program outcomes research regarding two-year college education revealed that wage growth slows within a five-year period.

Unit record tracking of student data is the preferred method 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 because of confidentiality laws restricting the use of unit-level data.

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

In Iowa, as in many states throughout the nation, education and employer records are held in two different agencies of state government, the IDOE and IWD, respectively. The partnership of these two agencies has allowed for data sharing through agreements that adhere to all Unemployment Insurance (UI) and Family Educational Rights and Privacy Act (FERPA) regulations and rules. Research objectives are clearly stated in the agreements and limited staff have access to the data. Furthermore, these IDOE and IWD staff members have signed confidentiality agreements pertaining to the reporting and use of the student records.



Process and Methodology

In order to properly conduct the research for this report, data criteria was established based on less than 22 or 22 or more credit hours for associate, diploma, and certificate awards. The 22 credit-hour threshold between “long-term” and “short-term” programs has been established within the Community College Management Information System (MIS) at the IDOE. All data were extracted from the MIS and grouped based on this threshold, along with the credential’s award date. This award date is referenced throughout this report as academic year (i.e. grouped September 1, 2015, to August 31, 2016, is AY 2016). Students who received awards in AY 2012, AY 2013, AY 2014, AY 2015, or AY 2016 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) to identify the students that continued their education after receiving their community college award. 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- or four-year, and private or public) and by transfer location, allowing for the study of graduate out-migration (leaving Iowa).

Before tracking the students into the workforce, students with multiple awards were flagged as such, and then unduplicated, so that each student could be tracked based on their highest award level. An exception was made for students who received more than one award at the same level for the completion of different programs. Such students were tracked based on all awards received.

Deduplication was conducted in the following hierarchal order: Associate degree [Associate of Applied Science (AAS), Associate of Applied Arts (AAA), Associate of Professional Studies (APS), Associate of Science/Career Option (ASCO),

Associate of Science (AS), and Associate of Arts (AA)], Diploma, Certificate, and short-term award (both diploma and certificate). Additionally, students without Social Security Numbers (SSN) were excluded from the workforce analysis due to matching restrictions. Matching to UI wage records* is conducted using SSN.

Once unduplicated, the data were then sent via secure file transfer to IWD in order to match the education records to the UI wage records. This match provided employment, wage, and industry data by quarter for each award type and cohort. Quarterly wages are aggregated using the following timeframes:

Quarter 1: January 1 to March 31

Quarter 2: April 1 to June 30

Quarter 3: July 1 to September 30

Quarter 4: October 1 to December 31

In an attempt to match the academic year for annual reporting, the quarterly wages were aggregated from October 1 (Quarter 4) to September 30 (Quarter 3), which are the dates that most closely align with Iowa’s community colleges’ academic year.

Furthermore, due to the confidentiality of the wage record data, IWD processed the records based on the research objectives and returned aggregate data for IDOE analysts to interpret and use in this report. The data from the IDOE and IWD were thoroughly scrutinized to maintain confidentiality and abide by all rules, regulations, and restrictions for each of the data sources. Additionally, data-sharing agreements have gone through comprehensive 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, railroad workers covered by the railroad unemployment insurance system, and students employed in a college or university as a part of a financial aid package.*

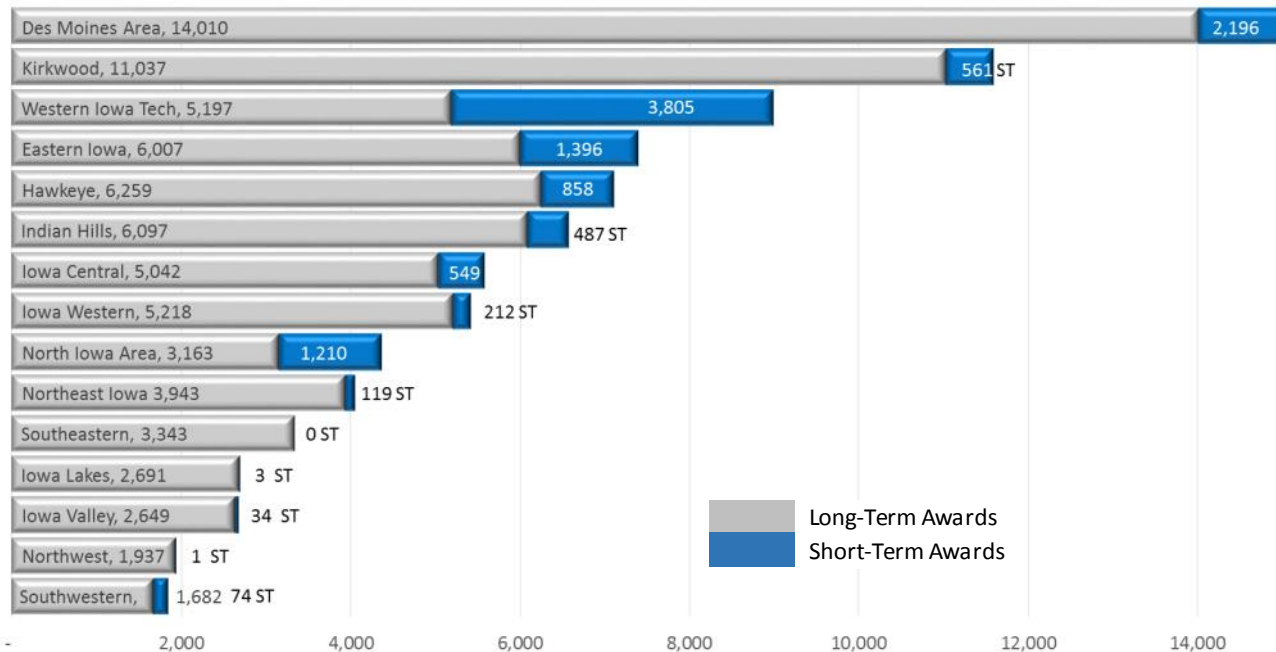
Statewide Total Awards

For this portion of the report, an aggregate analysis was conducted on 89,880 short- and long-term awards received by Iowa community college students from AY 2012 through AY 2016. Though each college yielded a different number of total awards, in aggregate there were 60,093 associate degrees, 15,622 long-term diplomas, 2,560 long-term certificates, 88 short-term diplomas, and 11,517 short-term certificates awarded to graduates by the 15 Iowa community colleges during academic years 2012 to 2016 (see Figure 1). Transfer status (further education), employment, wages, and time-to-degree are reported by award type in addition to short- or long-term timeframes later in this report. If a student received more than one award, the highest award level was used for the analysis of employment and wage data (deduplication was conducted in the following hierarchical order: AAS-AAA-APS-ASCO-AS-AA-Diploma-Certificate-Short-Term award). This information can be used to study the impact of each award type and its correlation to the workforce and further education.

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

This comprehensive report and detailed spreadsheets for each academic year can be found at: <https://www.educateiowa.gov/iowa-community-college-program-outcomes>.

Figure 1. AY 2012 to AY 2016 Total short- and long-Term Awards by Iowa Community Colleges



Awards by Classification of Instructional Program

The purpose of the Classification of Instructional Program (CIP) is to provide a taxonomic scheme to enable the tracking, assessment, and reporting of fields of study and program completion. The CIP system was established by the U.S. Department of Education's National Center for Education Statistics (NCES) in 1980.

The data contained within this report is analyzed at the two- or six-digit CIP level. Appendix A, and the accompanying on-line tables, contain detailed information for six-digit

program-level data. Figure 2 lists the program descriptions at the two-digit CIP level and the corresponding number of awards earned by Iowa's community college students in each academic year from 2012 to 2016.

The majority of awards were earned in liberal arts and sciences, health professions, business management and marketing, and mechanics and repairers programs. It is important to note that not all community colleges offer the same number of programs within these CIP categories.

Figure 2. AY 2012 to AY 2016 Statewide Awards by Two-Digit CIP

2-Digit CIP Code	Description	AY2012	AY2013	AY2014	AY2015	AY2016	Total
24	Liberal Arts & Sciences, General Studies	6,473	6,295	6,090	6,068	6,391	31,317
51	Health Professions & Related	4,704	4,562	4,320	4,855	4,794	23,235
52	Business Management, Marketing & Related	1,700	1,732	1,536	1,418	1,160	7,546
47	Mechanics & Repairers, General	939	1,012	883	1,064	1,182	5,080
48	Precision Production Trades	698	753	691	1,083	982	4,207
15	Engineering Technologies & Engineering Related	548	553	619	595	621	2,936
01	Agriculture	544	578	515	671	583	2,891
11	Computer and Information Sciences & Support Services	504	527	489	455	613	2,588
46	Construction Trades	280	294	253	373	373	1,573
43	Homeland Security, Law Enforcement, Firefighting & Related Protective Services	344	275	259	334	270	1,482
19	Family & Consumer Sciences/Human Sciences	256	312	296	214	291	1,369
12	Personal & Culinary Services	217	236	251	259	347	1,310
50	Visual & Performing Arts	200	164	183	189	209	945
10	Communications Technologies/Technicians & Support Services	153	126	155	191	158	783
49	Transportation & Materials Moving	170	150	46	100	97	563
44	Human Services	127	91	98	68	72	456
03	Natural Resources & Conservation	88	68	74	65	53	348
30	Multi/Interdisciplinary Studies	85	59	64	44	35	287
22	Legal Professions & Studies	64	72	53	42	43	274
13	Education	8	65	61	61	61	256
16	Foreign Languages, Literature & Linguistics	27	22	22	17	26	114
31	Parks, Recreation, Leisure & Fitness Studies	12	8	25	21	22	88
26	Biological & Biomedical Sciences	6	13	9	8	24	60
14	Engineering	22	13	11	5	7	58
09	Communication, Journalism & Related Programs	3	5	9	13	19	49
41	Science Technologies/Technicians	2	6	11	13	8	40
45	Social Sciences	3	4	1	3	3	14
34	Health Related Knowledge & Skills	8	1	0	2	0	11
Total		18,185	17,996	17,024	18,231	18,444	89,880

Associate Degrees by CIP – AY 2012 to AY 2016 Totals

During academic years 2012 through 2016, there were seven types of associate degrees awarded by Iowa community colleges, analyzed separately on the following pages. These award types are:

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

Figure 3 contains an aggregation of all associate degrees awarded in AY 2012 through AY 2016. Liberal arts and sciences accounts for slightly more than 50 percent of all such degrees awarded (51.3 percent in AY 2012, 51.9 percent in AY 2013, 50.9 percent in AY 2014, 51.8 percent in AY 2015, and 54.8 percent in AY 2016).

Figure 3. AY 2012 to AY 2016 Associate Degrees by Two-Digit CIP

2-Digit CIP Code	Description	AY2012	AY2013	AY2014	AY2015	AY2016	Total Associate Degrees
24	Liberal Arts & Sciences, General Studies	6,473	6,295	6,090	6,068	6,391	31,317
51	Health Professions & Related	2,143	2,079	2,153	2,098	1,966	10,439
52	Business Management, Marketing & Related	922	872	785	661	586	3,826
47	Mechanics & Repairers, General	599	577	555	516	557	2,804
01	Agriculture	421	434	413	521	465	2,254
15	Engineering Technologies & Engineering Related	381	352	419	353	299	1,804
11	Computer & Information Sciences & Support Services	347	347	344	315	312	1,665
43	Homeland Security, Law Enforcement, Firefighting & Related Protective Services	331	236	233	293	206	1,299
12	Personal & Culinary Services	145	154	132	113	148	692
10	Communications Technologies/Technicians & Support Services	112	110	136	139	120	617
48	Precision Production Trades	93	86	111	115	122	527
50	Visual & Performing Arts	118	93	113	107	85	516
19	Family & Consumer Sciences/Human Sciences	115	127	92	85	90	509
46	Construction Trades	85	68	78	91	80	402
44	Humans Services	103	82	89	61	57	392
30	Multi/Interdisciplinary Studies	79	58	64	44	35	280
03	Natural Resources & Conservation	46	42	48	40	34	210
22	Legal Professions & Studies	39	44	33	35	25	176
16	Foreign Languages, Literatures & Linguistics	25	18	22	17	19	101
14	Engineering	21	13	10	5	7	56
31	Parks, Recreation, Leisure & Fitness Studies	12	8	9	4	10	43
41	Science Technologies/Technicians	2	6	11	13	8	40
09	Communication, Journalism & Related Programs	1	3	5	13	18	40
26	Biological & Biomedical Sciences	5	12	4	6	8	35
49	Transportation & Materials Moving	5	10	10	4	3	32
45	Social Sciences	3	4	1	3	3	14
34	Health Related Knowledge & Skills	-	1	-	2	-	3
13	Education	-	-	-	-	-	-
Total		12,626	12,131	11,960	11,722	11,654	60,093

Associates Degrees by CIP – AY 2012

Figure 5 illustrates the number of associate degrees by award type for AY 2012, listed in descending order of total awards. Associate of Arts (AA) and Associate of Applied Science (AAS) degrees accounted for 83.3 percent of associate degrees earned in Iowa's community colleges in AY 2012, as illustrated in Figure 4.

Liberal arts and sciences degrees make up the majority of associate degrees awarded (6,473); followed by health professions and related (2,143); and business management, marketing, and related (922) degrees.

Figure 4. Percent of Associate Degrees, AY 2012

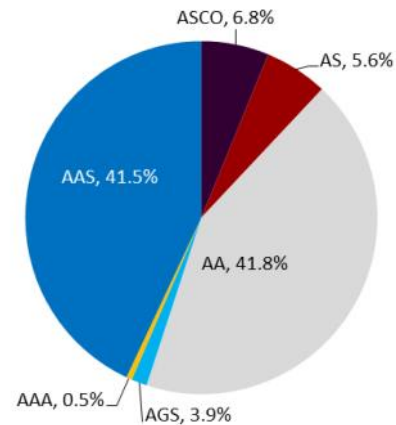


Figure 5. AY 2012 Associate Degrees by Two-Digit CIP

2-Digit CIP Code	Description	ASCO	AS	AA	AGS	AAA	AAS	Total
24	Liberal Arts & Sciences, General Studies	-	704	5,282	487	-	-	6,473
51	Health Professions & Related	45	-	-	-	-	2,098	2,143
52	Business Management, Marketing & Related	314	-	-	-	-	608	922
47	Mechanics & Repairers, General	-	-	-	-	-	599	599
01	Agriculture	11	-	-	-	-	410	421
15	Engineering Technologies & Engineering Related	1	-	-	-	-	380	381
11	Computer and Information Sciences & Support Services	50	-	-	-	-	297	347
43	Homeland Security, Law Enforcement, Firefighting & Related Protective Services	201	-	-	-	-	130	331
12	Personal & Culinary Services	-	-	-	-	-	145	145
50	Visual & Performing Arts	11	-	-	-	44	63	118
19	Family and Consumer Sciences/Human Sciences	46	-	-	-	-	69	115
10	Communications Technologies/Technicians & Support Services	14	-	-	-	20	78	112
44	Human Services	96	-	-	-	-	7	103
48	Precision Production Trades	-	-	-	-	-	93	93
46	Construction Trades	-	-	-	-	-	85	85
30	Multi/Interdisciplinary Studies	-	-	-	-	-	79	79
03	Natural Resources & Conservation	16	-	-	-	-	30	46
22	Legal Professions & Studies	30	-	-	-	-	9	39
16	Foreign Languages, Literature & Linguistics	3	-	-	-	-	22	25
14	Engineering	-	-	-	-	-	21	21
31	Parks, Recreation, Leisure & Fitness Studies	12	-	-	-	-	-	12
26	Biological & Biomedical Sciences	2	-	-	-	-	3	5
49	Transportation & Materials Moving	2	-	-	-	-	3	5
45	Social Sciences	-	-	-	-	-	3	3
41	Science Technologies/Technicians	-	-	-	-	-	2	2
09	Communication, Journalism & Related Programs	1	-	-	-	-	-	1
13	Education	-	-	-	-	-	-	-
34	Health Related Knowledge & Skills	-	-	-	-	-	-	-
Total		855	704	5,282	487	64	5,234	12,626

Associate Degrees by CIP – AY 2013

In AY 2013, the number of associate degrees awarded by Iowa's community colleges decreased from 12,626 to 12,131, representing a 3.9 percent decrease.

Figure 6 illustrates a shift in award type distribution, with AA awards increasing by 2.1 percentage points and ASCO awards decreasing by 1.1 percentage points.

The majority of the decrease in awards occurred in the areas of liberal arts and sciences (178), and homeland security, law enforcement, firefighting, and related projective services (95) (Figure 7).

Figure 6. Percent of Associate Degrees, AY 2013

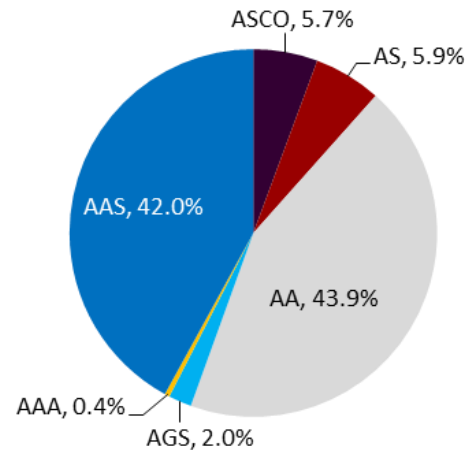


Figure 7. AY 2013 Associate Degrees by Two-Digit CIP

2-Digit CIP Code	Description	ASCO	AS	AA	AGS	AAA	AAS	Total
24	Liberal Arts & Sciences, General Studies	-	720	5,329	246	-	-	6,295
51	Health Professions & Related	35	-	-	-	-	2,044	2,079
52	Business Management, Marketing & Related	252	-	-	-	-	620	872
47	Mechanics & Repairers, General	-	-	-	-	-	577	577
01	Agriculture	10	-	-	-	1	423	434
15	Engineering Technologies & Engineering Related	1	-	-	-	-	351	352
11	Computer and Information Sciences & Support Services	45	-	-	-	3	299	347
43	Homeland Security, Law Enforcement, Firefighting & Related Protective Services	129	-	-	-	-	107	236
12	Personal & Culinary Services	-	-	-	-	-	154	154
19	Family and Consumer Sciences/Human Sciences	48	-	-	-	-	79	127
10	Communications Technologies/Technicians & Support Services	4	-	-	-	10	96	110
50	Visual & Performing Arts	9	-	-	-	37	47	93
48	Precision Production Trades	-	-	-	-	-	86	86
44	Human Services	76	-	-	-	-	6	82
46	Construction Trades	1	-	-	-	2	65	68
30	Multi/Interdisciplinary Studies	-	-	-	-	-	58	58
22	Legal Professions & Studies	33	-	-	-	-	11	44
03	Natural Resources & Conservation	14	-	-	-	-	28	42
16	Foreign Languages, Literature & Linguistics	2	-	-	-	-	16	18
14	Engineering	3	-	-	-	-	10	13
26	Biological & Biomedical Sciences	10	-	-	-	-	2	12
49	Transportation & Materials Moving	4	-	-	-	-	6	10
31	Parks, Recreation, Leisure & Fitness Studies	8	-	-	-	-	-	8
41	Science Technologies/Technicians	-	-	-	-	-	6	6
45	Social Sciences	-	-	-	-	-	4	4
09	Communication, Journalism & Related Programs	3	-	-	-	-	-	3
34	Health Related Knowledge & Skills	-	-	-	-	-	1	1
13	Education	-	-	-	-	-	-	-
Total		687	720	5,329	246	53	5,096	12,131

Associate Degrees by CIP – AY 2014

In AY 2014, the number of associate degrees awarded by Iowa community colleges continued to decline, but at a slower pace. This year saw a decrease of 171 (1.4 percent) awards as compared to the 495 decrease in AY 2013.

AY 2014 was the first year that APS awards were reported, so minimal data was available (Figure 8). The APS program option replaced the ASCO program option that was eliminated by legislation (2013).

The majority of the decrease in awards occurred in the areas of liberal arts and sciences (205), and business management (87). Balancing out this decrease was a relatively large increase in awards in health professions (74), and engineering technologies and related studies (67) (Figure 9).

Figure 8. Percent of Associate Degrees, AY 2014

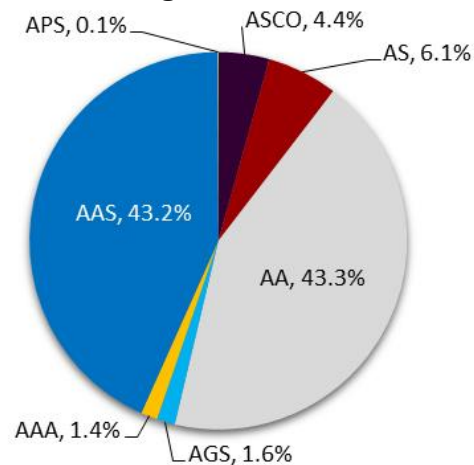


Figure 9. AY 2014 Associate Degrees by Two-Digit CIP

2-Digit CIP Code	Description	ASCO	AS	AA	AGS	AAA	AAS	APS	Total
24	Liberal Arts & Sciences, General Studies	-	726	5,177	187	-	-	-	6,090
51	Health Professions & Related	18	-	-	-	54	2,077	4	2,153
52	Business Management, Marketing & Related	206	-	-	-	19	560	-	785
47	Mechanics & Repairers, General	-	-	-	-	9	546	-	555
15	Engineering Technologies & Engineering Related	-	-	-	-	-	419	-	419
01	Agriculture	-	-	-	-	7	406	-	413
11	Computer and Information Sciences & Support	20	-	-	-	5	319	-	344
43	Homeland Security, Law Enforcement, Firefighting & Related Protective Services	115	-	-	-	-	118	-	233
10	Communications Technologies/Technicians & Support Services	6	-	-	-	22	108	-	136
12	Personal & Culinary Services	-	-	-	-	-	132	-	132
50	Visual & Performing Arts	5	-	-	-	43	65	-	113
48	Precision Production Trades	-	-	-	-	2	109	-	111
19	Family and Consumer Sciences/Human Sciences	19	-	-	-	-	73	-	92
44	Human Services	79	-	-	-	-	4	6	89
46	Construction Trades	-	-	-	-	8	70	-	78
30	Multi/Interdisciplinary Studies	-	-	-	-	-	64	-	64
03	Natural Resources & Conservation	9	-	-	-	-	39	-	48
22	Legal Professions & Studies	24	-	-	-	-	9	-	33
16	Foreign Languages, Literature & Linguistics	4	-	-	-	-	18	-	22
41	Science Technologies/Technicians	-	-	-	-	-	11	-	11
49	Transportation & Materials Moving	5	-	-	-	-	5	-	10
14	Engineering	-	-	-	-	-	10	-	10
31	Parks, Recreation, Leisure & Fitness Studies	7	-	-	-	-	2	-	9
09	Communication, Journalism & Related Programs	-	-	-	-	-	5	-	5
26	Biological & Biomedical Sciences	4	-	-	-	-	-	-	4
45	Social Sciences	-	-	-	-	-	1	-	1
13	Education	-	-	-	-	-	-	-	-
34	Health Related Knowledge & Skills	-	-	-	-	-	-	-	-
Total		521	726	5,177	187	169	5,170	10	11,960

Associate Degrees by CIP – AY 2015

In 2015, associate degrees decreased by 2.0 percent (238 associate degrees). Again, Associate of Arts (AA) and Associate of Applied Science (AAS) degrees made up the majority of associate degrees awarded through Iowa's 15 community colleges statewide as noted in both Figures 10 and 11.

However, there was a notable increase in the number of AAS degrees awarded in agriculture, which increased from 406 awards in AY 2014 to 516 awards in AY 2015.

Figure 10. Percent of Associate Degrees, AY 2015

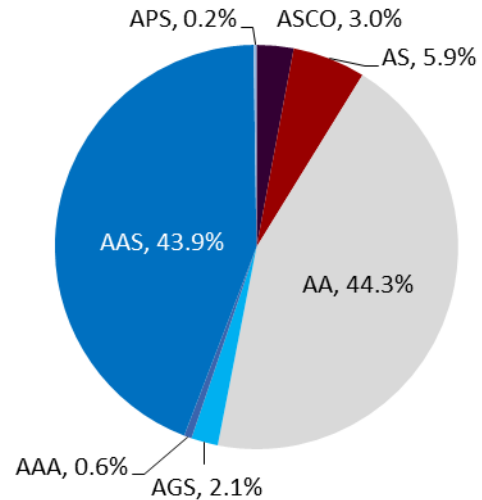


Figure 11. AY 2015 Associate Degrees by Two-Digit CIP

2-Digit CIP Code	Description	ASCO	AS	AA	AGS	AAA	AAS	APS	Total
24	Liberal Arts & Sciences, General Studies	-	686	5,124	252	-	6	-	6,068
51	Health Professions & Related	10	-	2	-	-	2,077	9	2,098
52	Business Management, Marketing & Related	130	-	1	-	-	530	-	661
01	Agriculture	5	-	-	-	-	516	-	521
47	Mechanics & Repairers, General	1	-	-	-	-	515	-	516
15	Engineering Technologies & Engineering Related	-	-	-	-	-	353	-	353
11	Computer and Information Sciences & Support Services	17	-	-	-	-	298	-	315
43	Homeland Security, Law Enforcement, Firefighting & Related Protective Services	68	-	60	-	-	163	2	293
10	Communications Technologies/Technicians & Support Services	10	-	-	-	17	112	-	139
48	Precision Production Trades	-	-	1	-	-	114	-	115
12	Personal & Culinary Services	-	-	-	-	-	113	-	113
50	Visual & Performing Arts	-	-	-	-	48	59	-	107
46	Construction Trades	-	-	2	-	-	89	-	91
19	Family and Consumer Sciences/Human Sciences	21	-	-	-	-	64	-	85
44	Human Services	38	-	-	-	-	7	16	61
30	Multi/Interdisciplinary Studies	-	-	-	-	-	44	-	44
03	Natural Resources & Conservation	8	-	-	-	-	32	-	40
22	Legal Professions & Studies	21	-	-	-	-	14	-	35
16	Foreign Languages, Literature & Linguistics	4	-	-	-	-	13	-	17
09	Communication, Journalism & Related Programs	1	-	-	-	6	6	-	13
41	Science Technologies/Technicians	-	-	-	-	-	13	-	13
26	Biological & Biomedical Sciences	5	-	-	-	-	1	-	6
14	Engineering	1	-	-	-	-	4	-	5
31	Parks, Recreation, Leisure & Fitness Studies	4	-	-	-	-	-	-	4
49	Transportation & Materials Moving	3	-	-	-	-	1	-	4
45	Social Sciences	-	-	-	-	-	3	-	3
34	Health Related Knowledge & Skills	-	-	-	-	-	2	-	2
13	Education	-	-	-	-	-	-	-	-
Total		347	686	5,190	252	71	5,149	27	11,722

Associate Degrees by CIP – AY 2016

In 2016, there was a 108 percent increase in Associate of General Science (AGS) Liberal Arts and Science, General Studies degree awards. The AGS degree is designed to be more flexible in order to meet a student's unique career goals and interests, so some colleges awarded this degree to students who successfully completed at least 60 credits of coursework.

In AY 1993, a pilot program for an Associate of Science Career Option (ASCO) was implemented. Later (November 12, 2012) the decision was made to phase out the program option and modify programs to accommodate this change. The steep decline of these awards is realized in AY 2016 data, which shows a drop from 347 (AY 2015) to 161 awards, noted in Figures 11 and 13.

Figure 12. Percent of Associate Degrees, AY 2016

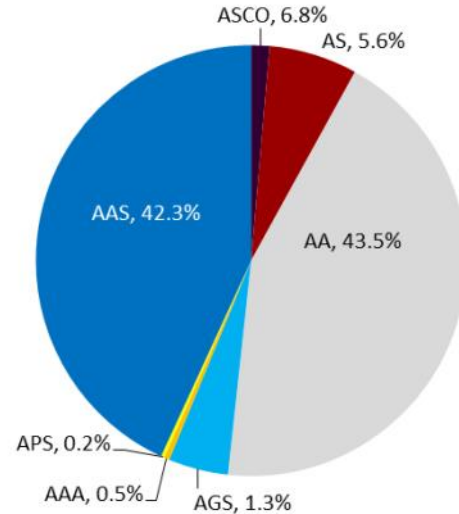


Figure 13. AY 2016 Associate Degrees by Two-Digit CIP

2-Digit CIP Code	Description	ASCO	AS	AA	AGS	AAA	AAS	APS	Total
24	Liberal Arts & Sciences, General Studies	-	773	5,094	524	-	-	-	6,391
51	Health Professions & Related	6	-	-	-	-	1,960	-	1,966
52	Business Management, Marketing & Related	56	-	-	-	-	512	18	586
47	Mechanics & Repairers, General	-	-	-	-	-	557	-	557
01	Agriculture	6	-	-	-	-	459	-	465
11	Computer and Information Sciences & Support Services	5	-	-	-	-	307	-	312
15	Engineering Technologies & Engineering Related	1	-	-	-	-	298	-	299
43	Homeland Security, Law Enforcement, Firefighting & Related Protective Services	34	-	-	-	-	162	10	206
12	Personal & Culinary Services	-	-	-	-	-	148	-	148
48	Precision Production Trades	-	-	-	-	-	122	-	122
10	Communications Technologies/Technicians & Support Services	-	-	-	-	14	106	-	120
19	Family and Consumer Sciences/Human Sciences	27	-	-	-	-	63	-	90
50	Visual & Performing Arts	-	-	-	-	20	65	-	85
46	Construction Trades	-	-	-	-	-	80	-	80
44	Human Services	11	-	-	-	-	45	1	57
30	Multi/Interdisciplinary Studies	-	-	-	-	-	35	-	35
03	Natural Resources & Conservation	2	-	-	-	-	32	-	34
22	Legal Professions & Studies	3	-	-	-	-	22	-	25
16	Foreign Languages, Literature & Linguistics	3	-	-	-	-	16	-	19
09	Communication, Journalism & Related Programs	1	-	-	-	13	4	-	18
31	Parks, Recreation, Leisure & Fitness Studies	2	-	-	-	-	8	-	10
26	Biological & Biomedical Sciences	4	-	-	-	-	4	-	8
41	Science Technologies/Technicians	-	-	-	-	-	8	-	8
14	Engineering	-	-	-	-	-	7	-	7
45	Social Sciences	-	-	-	-	-	3	-	3
49	Transportation & Materials Moving	-	-	-	-	-	3	-	3
13	Education	-	-	-	-	-	-	-	-
34	Health Related Knowledge & Skills	-	-	-	-	-	-	-	-
Total		161	773	5,094	524	47	5,026	29	11,654

Diplomas by CIP

In Iowa, diploma programs are designed to provide students with technical training and skill development leading to entry-level employment.

All 15 Iowa community colleges offer long-term diploma programs covering many different areas of study, with the majority in healthcare, skilled trades, engineering, and computer-related fields (Figure 14). Only one of Iowa's community colleges offered short-term diplomas during the five-year study period (total 88). Both long- and short-term diplomas have been combined in

Figure 14. The majority of short-term diplomas were awarded in the mechanics and repairers program (38), followed by computer information sciences and support services (27), health professions (20), and engineering technologies (3).

Throughout the five-year study period, the distribution of diplomas awarded has remained relatively the same.

Figure 14. AY 2012 to AY 2016 Diplomas Long-term and Short-term (LT and ST) by Two-Digit CIP

2-Digit CIP Code	Description	AY2012	AY2013	AY2014	AY2015	AY2016	Total Diploma
51	Health Professions & Related	1,664	1,706	1,320	1,768	1,499	7,957
48	Precision Production Trades	268	271	200	396	356	1,491
47	Mechanics & Repairers, General	257	266	156	292	338	1,309
52	Business Management, Marketing & Related	297	318	211	248	208	1,282
46	Construction Trades	194	208	157	228	236	1,023
19	Family and Consumer Sciences/Human Sciences	83	108	96	77	104	468
12	Personal & Culinary Services	61	74	82	100	132	449
15	Engineering Technologies & Engineering Related	86	57	73	127	91	434
01	Agriculture	76	87	63	95	79	400
11	Computer and Information Sciences & Support Services	68	51	39	30	74	262
50	Visual & Performing Arts	48	50	48	41	73	260
10	Communications Technologies/Technicians & Support Services	27	12	12	42	30	123
49	Transportation & Materials Moving	14	15	11	18	10	68
03	Natural Resources & Conservation	18	14	11	9	10	62
43	Homeland Security, Law Enforcement, Firefighting & Related Protective Services	7	12	5	7	11	42
13	Education	3	7	1	5	7	23
31	Parks, Recreation, Leisure & Fitness Studies	-	-	8	5	4	17
44	Human Services	-	-	-	1	10	11
09	Communication, Journalism & Related Programs	2	2	4	-	1	9
30	Multi/Interdisciplinary Studies	6	1	-	-	-	7
22	Legal Professions & Studies	-	1	4	-	1	6
34	Health Related Knowledge & Skills	5	-	-	-	-	5
26	Biological & Biomedical Sciences	-	-	-	-	2	2
14	Engineering	-	-	-	-	-	-
16	Foreign Languages, Literature & Linguistics	-	-	-	-	-	-
24	Liberal Arts & Sciences, General Studies	-	-	-	-	-	-
41	Science Technologies/Technicians	-	-	-	-	-	-
45	Social Sciences	-	-	-	-	-	-
Total		3,184	3,260	2,501	3,489	3,276	15,710

Certificates by CIP

Iowa community colleges design certificates to respond to business and industry workforce needs. These technical programs vary from 1 to 48 credits, classified as short-term (less than 22 credits) and long-term (22 credits or more).

There were a total of 14,077 certificates awarded over this study's five-year period (11,517 short-term and 2,560 long-term). The largest portion of these were awarded in the health professions (4,839) (Figure 15).

Note: Not all of Iowa's 15 community colleges offer certificate programs.



Figure 15. AY 2012 to AY 2016 Certificates (LT and ST) by Two-Digit CIP

2-Digit CIP Code	Description	AY2012	AY2013	AY2014	AY2015	AY2016	Total LT Certificate	Total ST Certificate	Total
51	Health Professions & Related	897	777	847	989	1,329	417	4,422	4,839
52	Business Management, Marketing & Related	481	542	540	509	366	677	1,761	2,438
48	Precision Production Trades	337	396	380	572	504	569	1,620	2,189
47	Mechanics & Repairers, General	83	169	172	256	287	281	686	967
15	Engineering Technologies & Engineering Related	81	144	127	115	231	278	420	698
11	Computer and Information Sciences & Support Services	89	129	106	110	227	155	506	661
49	Transportation & Materials Moving	151	125	25	78	84	-	463	463
19	Family and Consumer Sciences/Human Sciences	58	77	108	52	97	-	392	392
01	Agriculture	47	57	39	55	39	26	211	237
13	Education	5	58	60	56	54	-	233	233
12	Personal & Culinary Services	11	8	37	46	67	-	169	169
50	Visual & Performing Arts	34	21	22	41	51	-	169	169
46	Construction Trades	1	18	18	54	57	-	148	148
43	Homeland Security, Law Enforcement, Firefighting & Related Protective Services	6	27	21	34	53	44	97	141
22	Legal Professions & Studies	25	27	16	7	17	92	-	92
03	Natural Resources & Conservation	24	12	15	16	9	-	76	76
44	Human Services	24	9	9	6	5	6	47	53
10	Communications Technologies/Technicians & Support Services	14	4	7	10	8	5	38	43
31	Parks, Recreation, Leisure & Fitness	-	-	8	12	8	-	28	28
26	Biological & Biomedical Sciences	1	1	5	2	14	8	15	23
16	Foreign Languages, Literature & Linguistics	2	4	-	-	7	2	11	13
34	Health Related Knowledge & Skills	3	-	-	-	-	-	3	3
14	Engineering	1	-	1	-	-	-	2	2
09	Communication, Journalism & Related Programs	-	-	-	-	-	-	-	-
24	Liberal Arts & Sciences, General Studies	-	-	-	-	-	-	-	-
30	Multi/Interdisciplinary Studies	-	-	-	-	-	-	-	-
41	Science Technologies/Technicians	-	-	-	-	-	-	-	-
45	Social Sciences	-	-	-	-	-	-	-	-
Total		2,375	2,605	2,563	3,020	3,514	2,560	11,517	14,077

Short-Term Awards by CIP

Short-term, or preparatory awards, are credit programs designed to provide the specific skills and knowledge essential for successful entry into occupations requiring less than a baccalaureate degree or further education.

Figure 16 shows the number of short-term certificates and diplomas awarded by Iowa's community colleges over this study's five-year period. There were 4,297 short-term certificates and 20 short-term diplomas awarded to students in health professions, representing the largest group of awards.

Credit-program diplomas do not represent a large portion of the short-term awards received by students and have been decreasing over the five-year period, as most diploma programs consist of more than 22 credits.

Note: If there are two numbers listed for a CIP in the table below, the first number represents certificates and the second, diplomas. If there is only one number, there were no short-term diplomas awarded for the corresponding CIP.

Figure 16. AY 2012 to AY 2016 Short-Term Awards by Two-Digit CIP

2-Digit CIP Code	Description	AY 2012	AY 2013	AY 2014	AY 2015	AY 2016	Total	Total
		Cert/Dip	Cert/Dip	Cert/Dip	Cert/Dip	Cert/Dip	Short-Term Certificates	Short-Term Diplomas
51	Health Professions & Related	706/7	720/4	825/4	922/2	1,124/3	4,297	20
52	Business Management, Marketing & Related	375	358	351	405	132	1,621	-
48	Precision Production Trades	233	296	270	426	140	1,365	-
47	Mechanics & Repairers, General	73/15	145/7	144/8	161/6	64/1	587	37
49	Transportation & Materials Moving	151	125	25	78	84	463	-
19	Family and Consumer Sciences/Human Sciences	58	77	108	52	68	363	-
11	Computer and Information Sciences & Support Services	81/16	92	76	84/7	88/0	355	31
15	Engineering Technologies & Engineering Related	48	87	85	72/3	12	310	3
13	Education	5	58	60	56	47	226	-
01	Agriculture	40	48	35	50	12	185	-
50	Visual & Performing Arts	34	21	22	41	29	147	-
12	Personal & Culinary Services	11	8	37	46	29	131	-
46	Construction Trades	1	18	18	54	31	122	-
43	Homeland Security, Law Enforcement, Firefighting & Related Protective Services	3	15	5	23	46	92	-
03	Natural Resources & Conservation	24	12	15	16	6	73	-
44	Human Services	18	9	9	6	2	44	-
10	Communications Technologies/Technicians & Support Services	9	4	7	10	3	33	-
31	Parks, Recreation, Leisure & Fitness Studies	-	-	8	12	4	24	-
16	Foreign Languages, Literature & Linguistics	-	4	-	-	6	10	-
26	Biological & Biomedical Sciences	1	1	5	1	-	8	-
34	Health Related Knowledge & Skills	3	-	-	-	-	3	-
14	Engineering	1	-	1	0	0	2	-
09	Communication, Journalism & Related Programs	-	-	-	-	-	-	-
22	Legal Professions & Studies	-	-	-	-	-	-	-
24	Liberal Arts & Sciences, General Studies	-	-	-	-	-	-	-
30	Multi/Interdisciplinary Studies	-	-	-	-	-	-	-
41	Science Technologies/Technicians	-	-	-	-	-	-	-
45	Social Sciences	-	-	-	-	-	-	-
Total		1,875/38	2,098/11	2,106/12	2,515/18	1,927/4	10,461	91

Time-to-Degree

In order to measure the amount of time students took to earn their awards (i.e., time-to-degree), enrollment data were extracted from the MIS for the six years prior to completion for students that received awards between AY 2012 and AY 2016. (Example: For AY 2012 graduates, data were extracted from AY 2012, 2011, 2010, 2009, 2008, and 2007 to determine if students were enrolled in their degree programs) during these prior years.

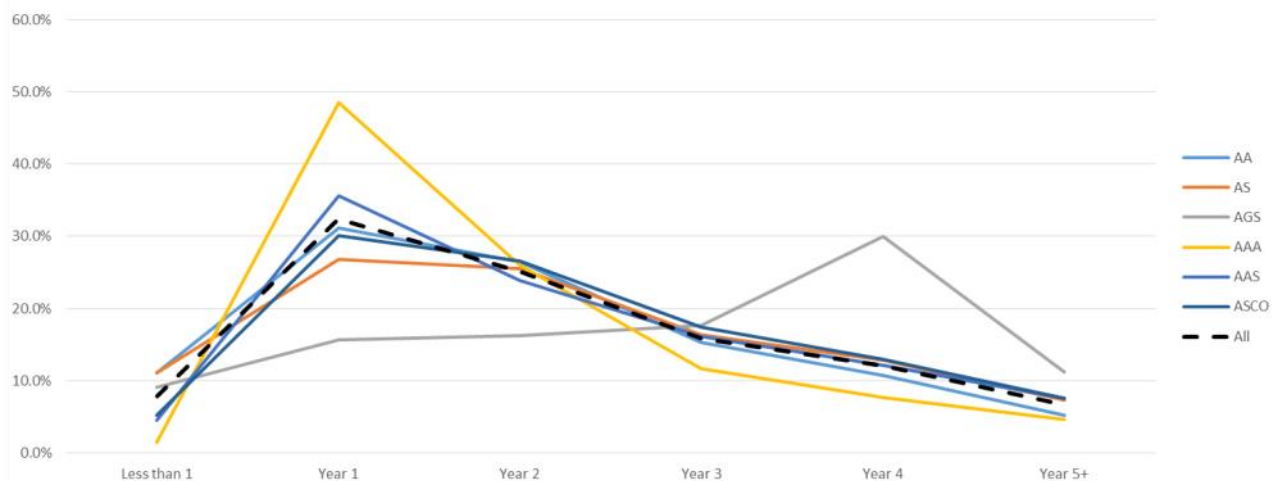
The following figures illustrate that there is a variance in completion time when looking at associate degrees independently. Figure 17 shows that three-fourths (75.0 percent) of students who received an associate of applied arts (AAA) degree received their award by the end of year two. In comparison, just over two-fifths (41.2 percent) of students finished their AGS degree within the same period of time.

Figure 17. AY 2012 to AY 2016 Time-to-Degree for Associate Degrees by Percent

Years	AA	AS	AGS	AAA	AAS	APS	ASCO	All
Less than 1	11.0%	11.1%	9.2%	1.5%	4.5%	4.5%	5.3%	7.9%
Year 1	31.1%	26.8%	15.7%	48.5%	35.6%	36.4%	30.1%	32.4%
Year 2	26.5%	25.5%	16.3%	26.0%	23.9%	43.9%	26.6%	25.1%
Year 3	15.3%	16.3%	17.6%	11.6%	16.1%	9.1%	17.4%	15.8%
Year 4	10.8%	12.8%	30.0%	7.7%	12.2%	1.5%	13.0%	12.1%
Year 5+	5.3%	7.4%	11.2%	4.7%	7.6%	4.5%	7.6%	6.7%

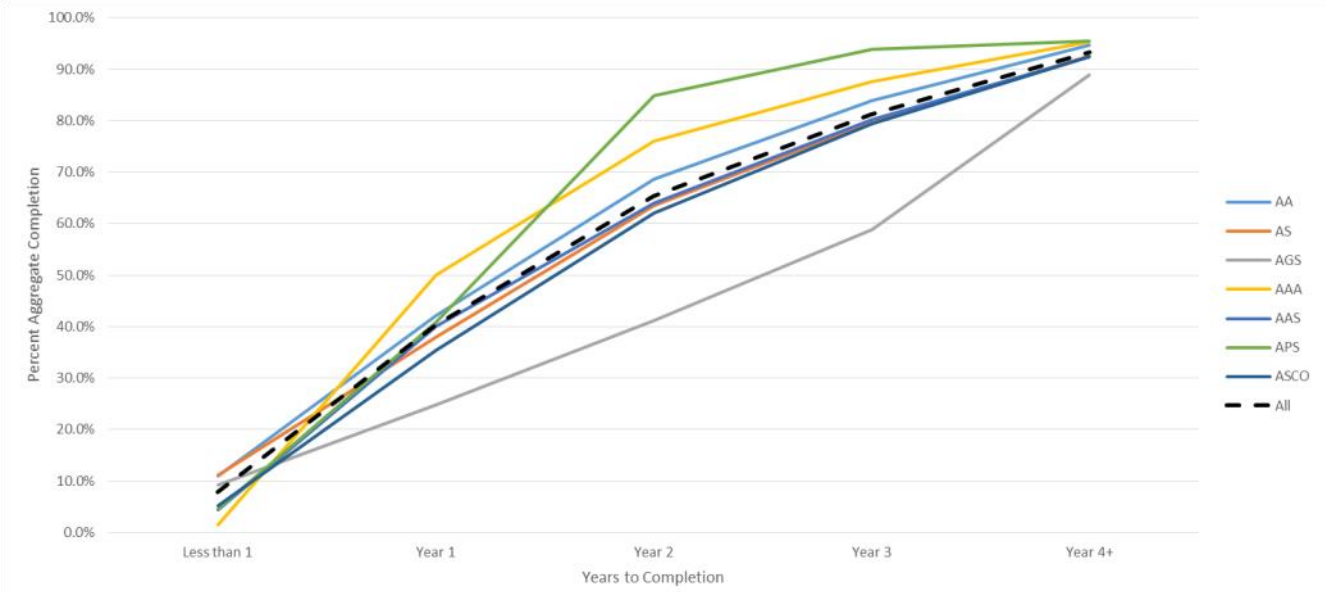
Figures 18 and 19 illustrate the distribution of time-to-degree in aggregate for associate degrees earned by students in aggregate by cohort. Figure 18 illustrates the percentage of cohort graduates, by the number of years they took to complete their programs. Figure 19 (on the following page) displays the time-to-degree in cumulative format, illustrating the total percentage of students that completed degrees in one to four years,

Figure 18. Time-to-Degree for Associate Degrees Earned, AY 2012 to AY 2016



Note: Annual cohorts include students who entered an Iowa community college in any term within an academic year (9/1-8/31).

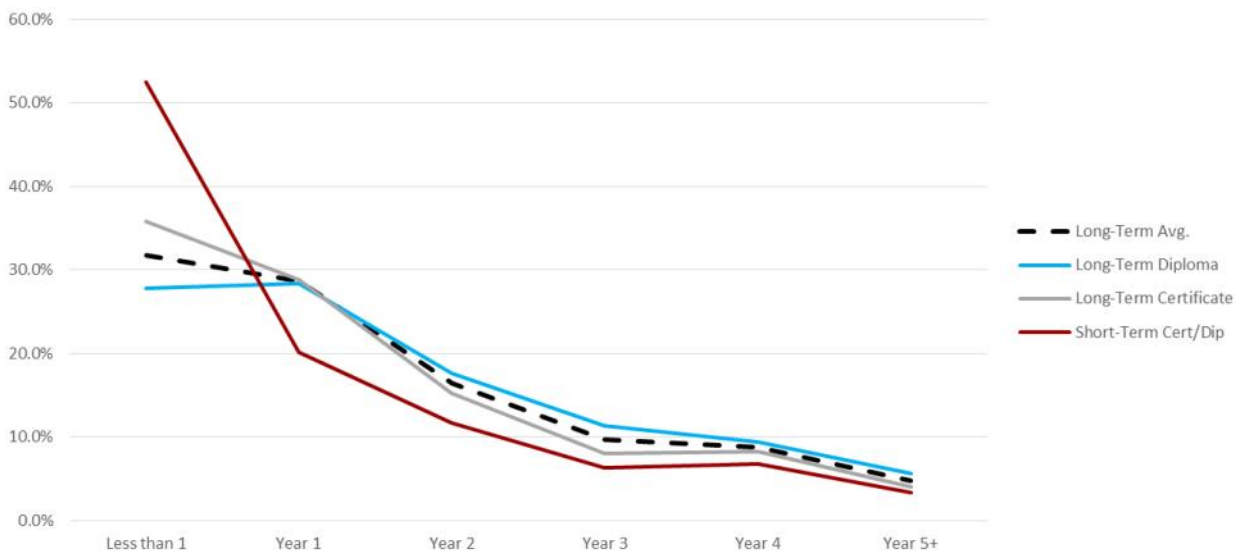
Figure 19. AY 2012 to AY 2016, Cumulative Time-to-Degree for Associate Degrees



In Figure 20, certificates and diplomas were divided into three groups, long-term (LT) diplomas, LT certificates and an aggregation of both short-term (ST) diplomas and certificates. Recall that a diploma requires at least 15 semester credits, of which three credits must be general education, while a certificate can range from 1 to 48 credits, with no general education requirement. Also long-term diploma and certificate programs are those that consist of 22 or more credits and short-term programs consist of less than 22 credits.

Figure 20 illustrates why the LT and ST awards must be reported separately. Because of fewer credits, 52.5 percent of ST diplomas and certificates were completed in less than one year, with another 20.1 percent completed by the end of year one (total 72.6 percent). In contrast, the majority of long-term certificates and diplomas were completed by year two (79.8 percent certificates and 73.8 percent diplomas).

Figure 20. AY 2012 to AY 2016, Time-to-Degree for Diploma and Certificate Awards



Joint Enrollment

Each year, tens-of-thousands of Iowa high school students jointly enroll in college credit coursework through Iowa's 15 community colleges, three public universities, and numerous private postsecondary institutions. The IDOE defines joint enrollment as a high school student enrolling in a postsecondary course.

Students may jointly enroll through contracted courses offered at the high school (concurrent enrollment) or at the college (postsecondary enrollment options). In addition, they may enroll in non-contracted courses as a tuition-paying student.

Because this section focuses on program completion, the students represented are only those who were jointly enrolled while in high school and continued their education at one of

Iowa's community colleges, completing a degree, diploma, or certificate during academic years 2012 to 2016.

Over the five-year study period, there were a total of 17,086 credentials awarded to students who earned an average of 13.8 college credits during high school (Figures 21 and 22). Of the AY 2016 completers, 35.8 percent earned the Associate of Arts (AA) degrees and 19.6 percent earned associate of applied science (AAS) degrees in career and technical (CTE) programs. Another 36.4 percent earned diplomas and certificates.

Other reports produced by the IDOE specific to joint enrollment can be found at:

<https://www.educateiowa.gov/document-type/joint-enrollment>.

Figure 21. AY 2012 to AY 2016 Community College Awards Earned by Joint Enrollment (JE) Students

	AY2012	AY2013	AY2014	AY2015	AY2016	Total/ Average
Number of JE Students	2,986	3,134	3,265	3,431	4,270	17,086
Average Number of JE Years	1.4	1.4	1.4	1.4	1.4	1.4
Average Number of JE Credits	13.7	13.1	13.4	13.9	14.8	13.8

Note: The average number of JE years was calculated by counting the student as jointly enrolled if they appeared in the MIS any time during that academic year and were enrolled in a course through an Iowa community college.

Figure 22. AY 2016 Jointly-Enrolled Students by Long- and Short-Term Award Types

Award Type	Number of Students		Percent
	Long-Term	Short-Term	
AA	1,529	-	35.8%
AS	227	-	5.3%
AGS	81	-	1.9%
AAA	8	-	0.2%
AAS	838	-	19.6%
APS	10	-	0.2%
ASCO	21	-	0.5%
Diploma	626	2	14.7%
Certificate	88	840	21.7%
Total	3,428	842	100%

Cohort Groups Defined

To study the different tracks community college students take after graduation, each cohort was split into three groups - those that continued their education in Iowa, those that continued out-of-state, and those that did not continue their education. Figure 23 represents the five cohorts of graduates, delineated into these three groups by colored sections of each bar.

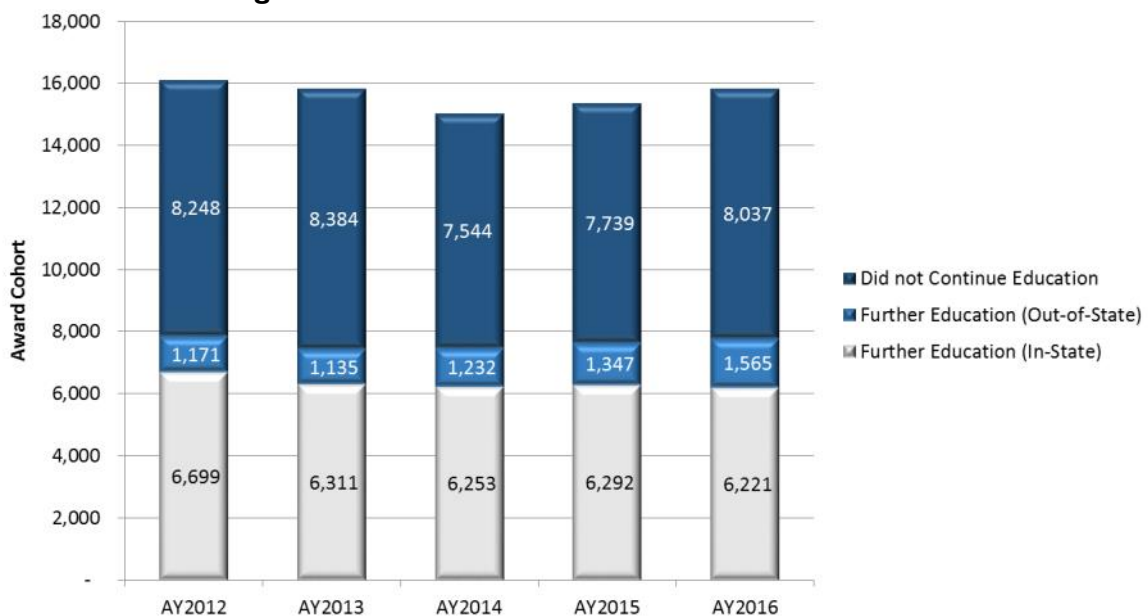
The majority of each cohort's graduates who continued their education did so within the state of Iowa, while a small portion transferred out-of-state. The remainder did not continue their education and were analyzed regarding in- and out-of-state employment as reported later in this report.

In order to identify these three groups within each student cohort, MIS data (individual student records) were matched with the National Student Clearinghouse (NSC) database to identify the students' participation in two- or four-year, in- or out-of-state, and public or private institutions during the year following the completion of their community college program. If a graduate was matched (i.e., found) within the NSC database, they were placed into the "Pursuing Further

Education" cohort for further analysis. If they were not matched within the NSC database, they were placed into the "Workforce" cohort. All of the student records had to contain a SSN in order to be used for the workforce cohort, therefore the number of students will vary from previous portions of the report due to insufficient data. Furthermore, each of those who entered the workforce the year following their award were re-matched to the NSC database to ascertain whether they entered a postsecondary institution in subsequent years.

As illustrated in Figure 23, of the 15,823 students (unduplicated count) who received an award in AY 2016, 6,221 went on to further their education within Iowa and 1,565 left Iowa to continue their education, in the year following their award.

Figure 23. Status of Graduates First Year After Award



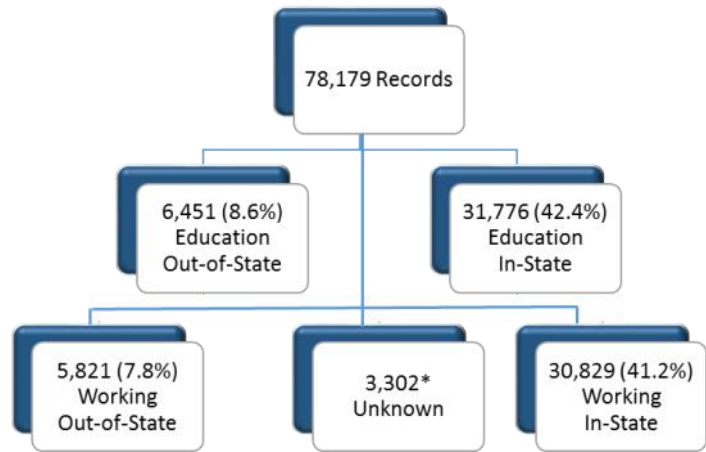
Retention and Migration

The vast majority of Iowa community college graduates remained in Iowa after completing their programs (83.6 percent) (see Figure 24). Over half (51.0 percent) continued their education following completion of a community college award, with most students remaining in Iowa (42.4 percent). Of those students that continued their education at an institution outside of Iowa, most enrolled in one of Iowa's contiguous states such as Nebraska and Illinois. For those that ventured farther away, the highest concentrations of graduates enrolled at institutions in Arizona (294), Utah (213), or Texas (213) within one year after graduation.

Figure 25 represents aggregate numbers for those who continued their education either in- or out-of-state one year after their award (AY 2012 to AY 2016). *If students were enrolled in different colleges at the same time, the college with the most recent attendance date within that year was used.*

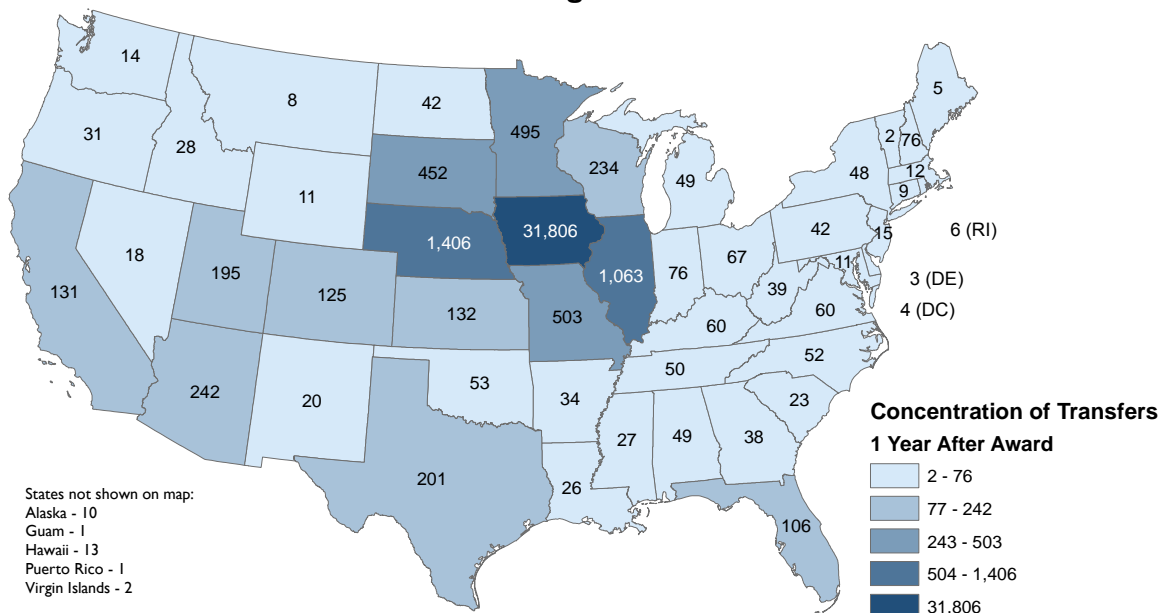
When looking at migration patterns, whether it be students who transferred to an out-of-state college or sought employment outside of Iowa, percentages are relatively small (8.6 percent and 7.8 percent respectively). Each of these groups are studied in more detail in the subsequent sections of this report.

Figure 24. AY 2012 to AY 2016 Retention and Migration, First Year Following Award



*The "unknown" students have been removed from the totals above when calculating the percentages.

Figure 25. AY 2012 to AY 2016 Cohorts Educational Migration, First Year Following Award



Pursuing Further Education Cohort

Using the NSC database, the IDOE was able to identify whether an Iowa community college graduate transferred to a postsecondary institution that was in- or out-of-state, two- or four-year, or private or public. Figure 26 illustrates the distribution of these graduates based on their transfer institution types (transferred the first year after their graduation).

Using the AY 2012 cohort as an example, 6,699 students continued their education at an in-state institution the academic year after

graduation, whereas, 1,171 students continued their education at an out-of-state institution. Of those that continued their education in-state, 43.6 percent continued their education at a two-year public college and 22.5 percent transferred to an in-state four-year public college.

The number of students who have chosen to continue their education out-of-state has been growing steadily over the past five years, 1,171 (2013 cohort) to 1,565 (2016 cohort).

Figure 26. AY 2012 to AY 2016 Further Education, First Year Following Award

Year Following Award at Community College	Characteristics of Institution		Continued Education In-State		Continued Education Out-of-State	
	2yr / 4yr	Public/Private	#	%	#	%
2012 Cohort						
2013	2	Private	12	0.2%	7	0.1%
		Public	3,431	43.6%	118	1.5%
	4	Private	1,489	18.9%	410	5.2%
		Public	1,767	22.5%	636	8.1%
Total 2012 Cohort			6,699	85.1%	1,171	14.9%
2013 Cohort						
2014	2	Private	12	0.2%	0	0.0%
		Public	3,222	43.3%	89	1.2%
	4	Private	1,371	18.4%	413	5.5%
		Public	1,706	22.9%	633	8.5%
Total 2013 Cohort			6,311	84.8%	1,135	15.2%
2014 Cohort						
2015	2	Private	10	0.1%	3	0.0%
		Public	3,153	42.1%	93	1.2%
	4	Private	1,347	18.0%	466	6.2%
		Public	1,743	23.3%	670	9.0%
Total 2014 Cohort			6,253	83.5%	1,232	16.5%
2015 Cohort						
2016	2	Private	0	0.0%	1	0.0%
		Public	2,916	38.2%	122	1.6%
	4	Private	1,093	14.3%	429	5.6%
		Public	2,283	29.9%	795	10.4%
Total 2015 Cohort			6,292	82.4%	1,347	17.6%
2016 Cohort						
2017	2	Private	0	0.0%	2	0.0%
		Public	2,891	37.1%	105	1.3%
	4	Private	1,131	14.5%	481	6.2%
		Public	2,199	28.2%	977	12.5%
Total 2016 Cohort			6,221	79.9%	1,565	20.1%

Workforce Cohort

After analyzing the data regarding the Iowa community college graduates who continued their education, the following sections of the report analyze the annual employment and wage trends of the graduates who did not continue their education.

Both in- and out-of-state employment data were gathered using the Iowa Unemployment Insurance (UI) database and the Wage Record Interchange System (WRIS). Unfortunately, out-of-state wage data is not available for awards with less than 22 credits and a small number of other awardees prior to the third quarter of 2013 (July-September 2013) due to the timing of the initial study. WRIS records are only available for up to two years. However, Iowa UI records were available to identify in-state employment for all periods of time.

Out-of-state employment is measured using the WRIS. The number of unmatched records encompasses graduates employed by an employer that does not pay UI tax or were unemployed for the described periods of time.

Due to the availability of five years of wage data for the AY 2012 cohort, it is used as an example in Figure 27. This table illustrates the aggregate employment and wages for the AY 2012 cohort in the first five years of data available after graduation.

The data show that, in 2013 (October 1, 2012, to September 30, 2013), there were 8,248 graduates who did not continue their education. Of those, 7,551 were matched to wage records, representing 91.5 percent of this sub-cohort. In order to compare wages from 2013 to current wages (2017), a cost of living adjustment was applied

and documented in the *Adjusted Median Wage* column in Figures 27 and 28 (a detailed explanation is contained in the Employment and Wage Record Methodology section). This adjustment is used to standardize wages in order to determine whether “real” wages have increased over the study period.

Figure 28 shows employment and wage data from the first year following award for each of the most recent five cohorts. The adjusted median wage increased from \$27,832 for the AY 2012 cohort to \$30,920 for the AY 2016 cohort, which represents an 11.1 percent increase.

Figure 27. Five-Year Employment and Wage Trend for AY 2012 Cohort

Year of Employment ¹	% Matched to Employment	Adjusted Median Wage	% with Previous Degree ²	% Earning More than One Award ²
2013	91.5%	\$27,832	9.9%	11.2%
2014	90.5%	\$32,013	10.0%	11.1%
2015	89.6%	\$35,070	9.9%	11.2%
2016	88.3%	\$37,802	9.9%	11.4%
2017	87.3%	\$39,064	10.1%	11.6%

Figure 28. Each Cohort's Employment and Wages, First Year Following Award

Cohort Year	Year of Employment ¹	% Matched to Employment	Adjusted Median Wage	% with Previous Degree ²	% Earning More than One Award ²
2012	2013	91.5%	\$27,832	9.9%	11.2%
2013	2014	91.9%	\$28,132	9.4%	12.0%
2014	2015	91.9%	\$29,801	9.8%	12.2%
2015	2016	91.9%	\$30,697	6.1%	13.7%
2016	2017	91.5%	\$30,920	5.8%	12.6%

¹ Ex. 2017 defined as October 1, 2016, through September 30, 2017,

² Percentage calculated of those matching employment in that year.

Employment and Wages by State

The 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 worked (i.e. full- or part-time), overtime, or occupation, they do identify the number of graduates working in other states.

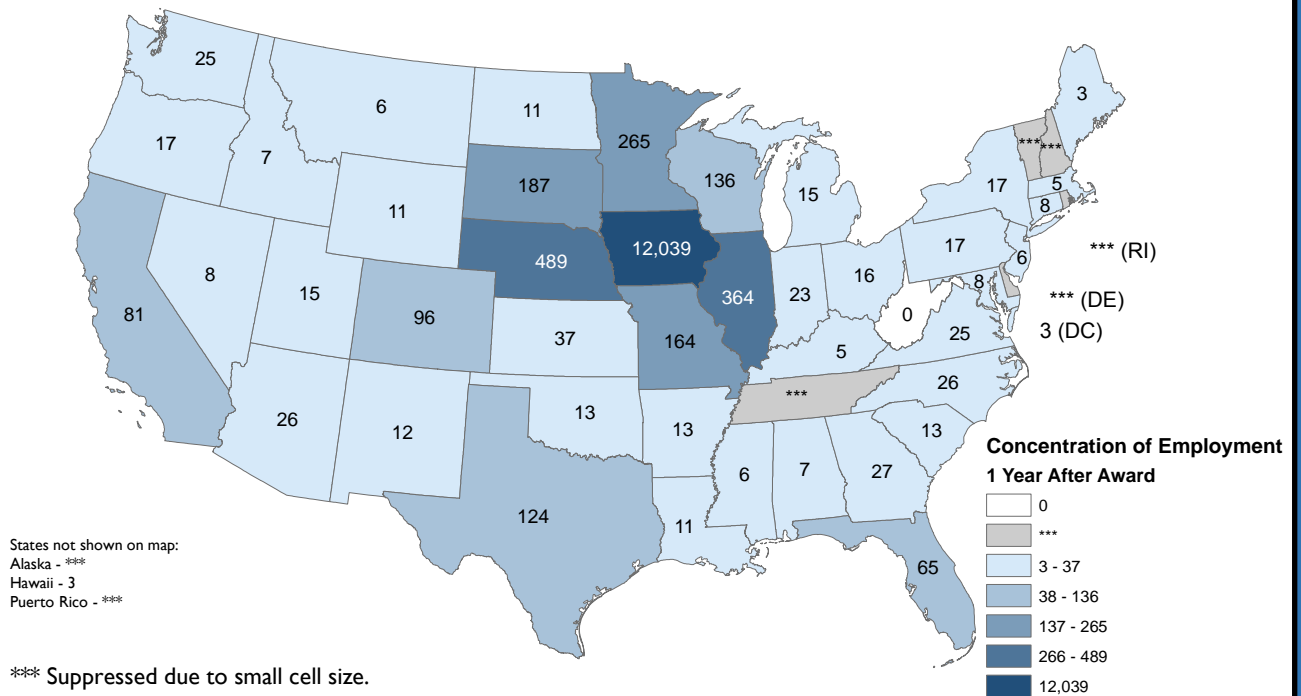
Figure 29 illustrates that the majority (83.2 percent) of those who received an award in AY 2015 and 2016, who matched to employment data in the first year following award, remained in Iowa. Similar to those who continued their education, most graduates that were employed outside of Iowa were employed in bordering states.

It is important to note that industry data are aggregated when analyzing out-of-state wages and not reported separately.

Some industries (e.g., manufacturing) pay higher wages than others; therefore, if a state has a higher concentration of manufacturing jobs, it would likely show higher wages. Conversely, if a state has a high number of retail establishments, the median wage may be lower. For example, the median annual wage for AY 2016 graduates in the year following earning an award in Iowa's manufacturing industry sector was \$38,839. The median annual wage in the healthcare industry sector in Iowa was \$35,279. The median annual wage in the retail trade industry sector in Iowa, however, was \$23,116.

Detailed employment and wage information relating to all cohorts can be found using the link provided in Appendix A on page 42.

Figure 29. AY 2015 to AY 2016 Cohorts, Primary Employment by State, First Year Following Award



Employment and Wages by Award Type

Figures 30 and 31 reflect the employment and wages, in aggregate, for those in the AY 2016 cohort that were employed in the year following graduation (2017). For example, of the 3,864 AAS graduates of Iowa community colleges that did not continue their education the year after graduation, 93.3 percent matched employment records within that year and earned a median wage of \$36,101 (see AAS row in Figure 30). Though the percentage of AAS graduates who became employed within one year of graduation is among the highest of the award categories listed, all types exceeded 83 percent employed.

Figure 30. AY 2016 Cohort, 2017 Employment and Wages by Award Type

Award Type	Year of Employment ¹	# in Cohort (not enrolled)	Matched to Employment		Adjusted Median Wage	% with Previous Degree	% Earning More than One Award
			#	%			
AA	2017	1,466	1,301	88.7%	\$23,056	4.2%	5.8%
AS	2017	155	133	85.8%	\$28,864	3.8%	3.0%
ASCO	2017	105	89	84.8%	\$28,844	2.2%	12.4%
APS	2017	15	13	86.7%	\$27,877	0.0%	15.4%
AGS	2017	283	237	83.7%	\$33,425	1.7%	8.9%
AAA	2017	37	32	86.5%	\$19,942	6.2%	0.0%
AAS	2017	3,864	3,606	93.3%	\$36,101	7.5%	16.7%
Diploma (>= 22 cr.)	2017	1,137	1,049	92.3%	\$29,030	4.2%	11.2%
Certificate (>= 22 cr.)	2017	146	138	94.5%	\$29,769	10.1%	63.8%
Cert./Dipl. (< 22 cr.)	2017	829	753	90.8%	\$25,399	3.7%	1.2%

Comparatively, Figure 31 shows that all AY 2016 associate degree recipients had a 91.3 percent employment match in the first year after graduation. Long-term diploma and certificate recipients had a 92.5 percent employment match, while short-term diploma and certificate recipients had an 90.8 percent employment match. Though the AAS degree graduates has a significantly higher median wage when analyzed separately (Figure 30), the data in aggregate (Figure 31) shows that the associate degree median wage was only \$3,076 higher than the long-term certificate/diploma graduate's median wage in the first year after graduation.

Figure 31. AY 2016 Cohort, 2017 Employment and Wages by Award Type Aggregate

Award Type (Aggregated)	Year of Employment ¹	# in Cohort (not enrolled)	Matched to Employment		Adjusted Median Wage	% with Previous Degree	% Earning More than One Award
			#	%			
Certificate/Diploma (< 22 cr.)	2017	829	753	90.8%	\$25,399	3.7%	1.2%
Certificate/Diploma (>= 22 cr.)	2017	1,283	1,187	92.5%	\$29,052	4.9%	17.3%
Associate	2017	5,925	5,411	91.3%	\$32,128	6.2%	13.2%

¹ 2017 wages defined as October 1, 2016 through September 30, 2017

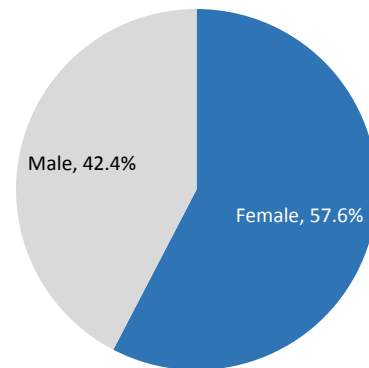
Employment and Wages by Gender

For the five cohorts in this study, there was a greater number of females receiving awards from Iowa community colleges than males. Of the 15,823 award recipients in the AY 2016 cohort, 57.6 percent were female (Figure 32). Furthermore, the distribution of awards and programs by gender varies significantly, but that information is not examined in this report (see Appendix A for a link to employment data by career cluster and gender).

Interestingly, a significantly higher percent of males in this cohort earned more than one award (16.1 percent to 9.8 percent). This fact along with their program of study may explain their higher median salary.

Figure 33 provides the employment and wages of AY 2016 award recipients who entered the workforce in the first year after graduation (i.e., did not continue their education). Females matched employment at a higher rate (92.6 percent) than males (90.1 percent), but their adjusted median wage was lower than that of males, \$29,021 to \$33,199, respectively.

Figure 32. Percent of Awards by Gender, AY 2016 Cohort



To do a more serious analysis of the gender wage gap among recent Iowa community college graduates, other factors would need to be controlled, such as program and award type. Similarly, factors such as age and previous education may also need to be taken into account.

Overall, 6.9 percent of female awardees that matched employment had an associate degree or higher prior to receiving the award, while only 4.3 percent of males had previously earned degrees.

Figure 33. AY 2016 Cohort, Employment and Wages by Gender, First Year Following Award

Gender	Year of Employment ¹	# in Cohort (not enrolled)	Matched to Employment		Adjusted Median Wage	% with Previous Degree	% Earning More than One Award
			#	%			
Female	2017	4,390	4,065	92.6%	\$29,021	6.9%	9.8%
Male	2017	3,647	3,286	90.1%	\$33,199	4.3%	16.1%

¹ 2017 defined as October 1, 2016 through September 30, 2017

Employment and Wages by Industry Sector

Figure 34 shows the employment and median wages by industry sector for the AY 2016 cohort in the first year after award completion. The industry sectors displayed are from the North American Industry Classification System (NAICS) code included in the Iowa UI and WRIS wage data.

Industry sectors are defined by the type of business that an employer engages in, not the occupation of an employee (defined by the day-to-day tasks the employee performs). The bars indicate the percentage of the cohort that matched employment records, and the dots represent the 2017 median annual wage. As an example, 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 and specific to their training, they are reported to be employed in the retail trade sector, earning a much lower median wage.

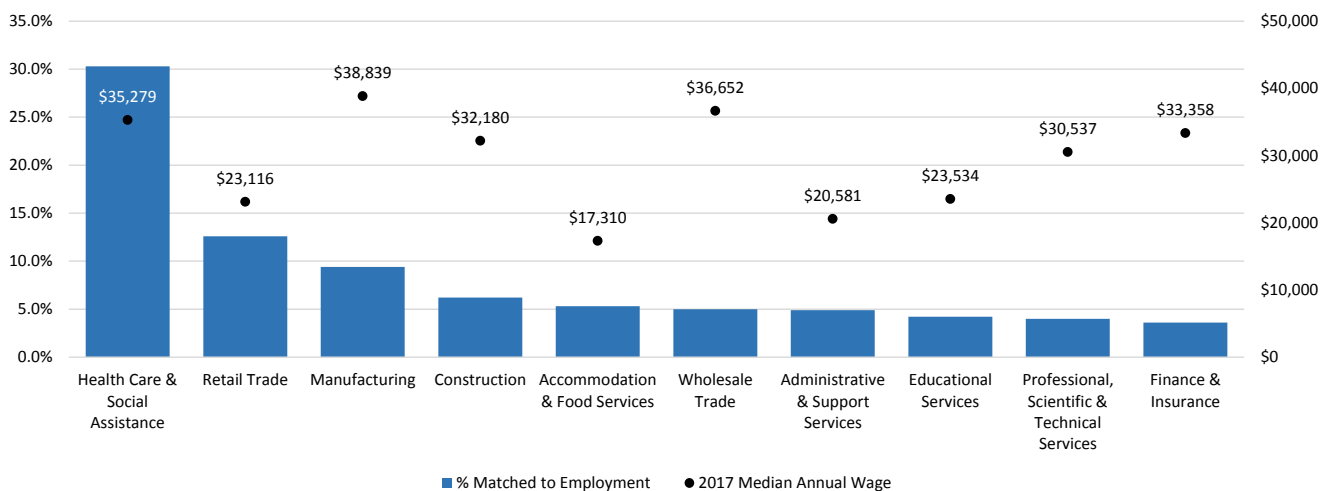
Figure 34 illustrates that employers in the health care and social assistance industry sector employ more than twice the number of AY 2016 Iowa community college graduates (30.3 percent) than

the next largest industry sector (retail trade at 12.6 percent). The next largest industry sector, by employment, is manufacturing (9.4 percent), with the remaining sectors accounting for less than seven percent each. As expected, these proportions tend to change over time. For instance, the order of the five largest industry sectors of employment for AY 2012 graduates in 2017 (i.e., five years after award completion) is slightly different, with health care and social assistance being the largest, but followed by manufacturing, retail trade, wholesale trade, and construction.

Among the industry sectors employing 250 or more AY 2016 graduates, those with the highest median wages in the year after award were manufacturing (\$38,839), wholesale trade (\$36,652), and health care and social assistance (\$35,279). However, it is important to note that wages vary widely depending on the type of program the graduates completed (see pages 33-34 for details).

Complete industry data for all cohorts and all years can be found in Appendix A.

Figure 34. AY 2016 Cohort, Median Wages by Industry, First Year Following Award (Top Ten Industries by Employment)



Employment and Wages by Award Type and Industry

Figure 35 shows the employment and median wages by industry sector for the AY 2016 cohort in the first year after graduation by award type. While only the top three industry sectors by employment are shown per award type, the complete data for all cohorts and all years can be found in Appendix A.

As illustrated below, wages vary substantially within the same industry sector across award types and vice versa. For instance, Associate of

Arts (AA) recipients employed in the health care and social assistance industry sector have a median wage of \$22,289, while those with Associate of Applied Sciences (AAS) degrees earned \$43,108. However, as noted on the previous page, wage levels vary widely by award program and occupations within industry sectors (see pages 33-34 for details).

Figure 35. AY 2016 Cohort, 2017 Industry Median Wages by Award Type

Award Type	Year of Employment ¹	Industry Sector of Employment	# Matched to Emp.	Adjusted Median Wage
AA	2017	Retail Trade	266	\$21,145
AA	2017	Health Care & Social Assistance	207	\$22,289
AA	2017	Accommodation & Food Services	139	\$15,993
AS	2017	Retail Trade	32	\$16,299
AS	2017	Health Care & Social Assistance	23	\$31,435
AS	2017	Manufacturing	15	\$39,942
ASCO	2017	Finance & Insurance	9	\$35,496
ASCO	2017	Administrative & Support Services	6	\$24,316
ASCO	2017	Retail Trade	6	\$10,243
AGS	2017	Health Care & Social Assistance	53	\$32,955
AGS	2017	Retail Trade	29	\$25,697
AGS	2017	Wholesale Trade	20	\$43,844
AAA	2017	Retail Trade	9	\$17,906
AAA	2017	Administrative & Support Services	4	\$18,835
AAA	2017	Information	3	\$23,652
AAS	2017	Health Care & Social Assistance	1,270	\$43,108
AAS	2017	Retail Trade	392	\$26,719
AAS	2017	Manufacturing	302	\$41,489
Diploma (>= 22 cr.)	2017	Health Care & Social Assistance	343	\$29,151
Diploma (>= 22 cr.)	2017	Construction	133	\$30,585
Diploma (>= 22 cr.)	2017	Manufacturing	133	\$38,675
Certificate (>= 22 cr.)	2017	Health Care & Social Assistance	34	\$39,338
Certificate (>= 22 cr.)	2017	Manufacturing	21	\$29,811
Certificate (>= 22 cr.)	2017	Retail Trade	21	\$18,925
Cert./Dipl. (< 22 cr.)	2017	Health Care & Social Assistance	281	\$25,098
Cert./Dipl. (< 22 cr.)	2017	Manufacturing	109	\$37,014
Cert./Dipl. (< 22 cr.)	2017	Retail Trade	72	\$15,398

¹ 2017 wages defined as October 1, 2016 through September 30, 2017

Employment and 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 are: (1) the wage data only represents employees of companies that pay UI tax; and (2) the number of hours worked are not reported within the data, making it impossible to identify part- versus full-time employment. The primary reason for utilizing the median annual wage for analysis is that it mitigates the effects of outliers to provide a more accurate representation of the typical employee's wages.

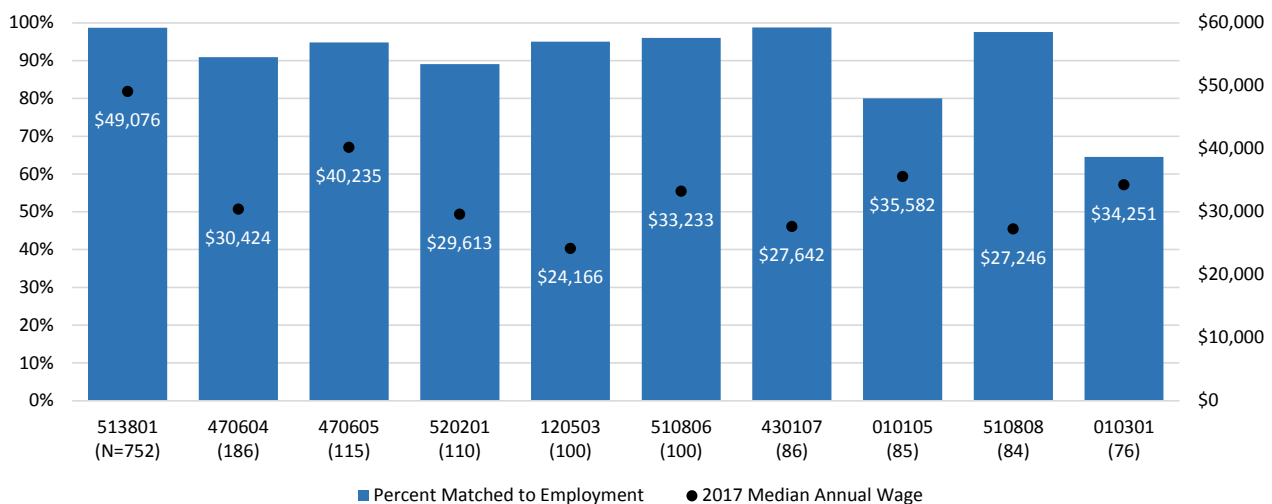
Using the AY 2016 cohort of students who did not continue their education in the year following their graduation, recipients were matched to Iowa UI and WRIS data to determine if they obtained employment within the first year after receiving their award. Figure 36 illustrates the

data for those graduates that earned an Associate of Applied Science (AAS) by CIP code. For example, 98.7 percent of students who received an AAS in the registered nurse program (CIP 513801) and did not continue their education, matched employment and earned a median annual wage of \$49,076 in 2017; while 90.9 percent of those in the automobile/automotive mechanics technology/technician AAS program (CIP 470604) matched employment and earned a median annual wage of \$30,424.

The programs with the most graduates not continuing their education in the first year after award are shown in Figure 36, while data for all other programs can be found in Appendix A.

Complete industry data for all cohorts and all years can be found in Appendix A.

Figure 36. AY 2016 Cohort, Employment and Wages by Associate of Applied Science (AAS) Degree, First Year Following Award



AAS Degree Legend:

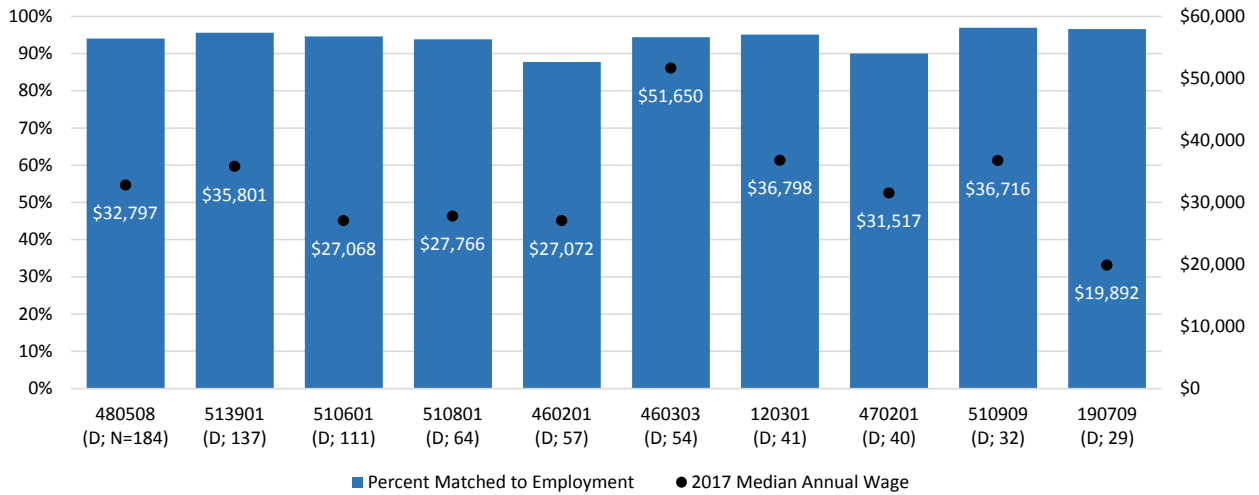
513801: Registered Nursing/Registered Nurse
 470604: Automobile/Automotive Mechanics Technology
 470605: Diesel Mechanics Technology/Technician
 520201: Business Administration and Management, General
 120503: Culinary Arts/Chef Training

510806: Physical Therapy Technician/Assistant
 430107: Criminal Justice/Police Science
 010105: Agricultural/Farm Supplies Retailing and Wholesaling
 510808: Veterinary/Animal Health Tech. and Veterinary Assistant
 010301: Agricultural Production Operations, General

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

Below are AY 2016 cohort outcomes for the largest certificate and diploma programs grouped by 22 or more credits or less than 22 program credits (Figures 37 and 38 respectively). Again, the employment match rates and 2017 median annual wages are provided. Appendix A contains data for other programs not shown here.

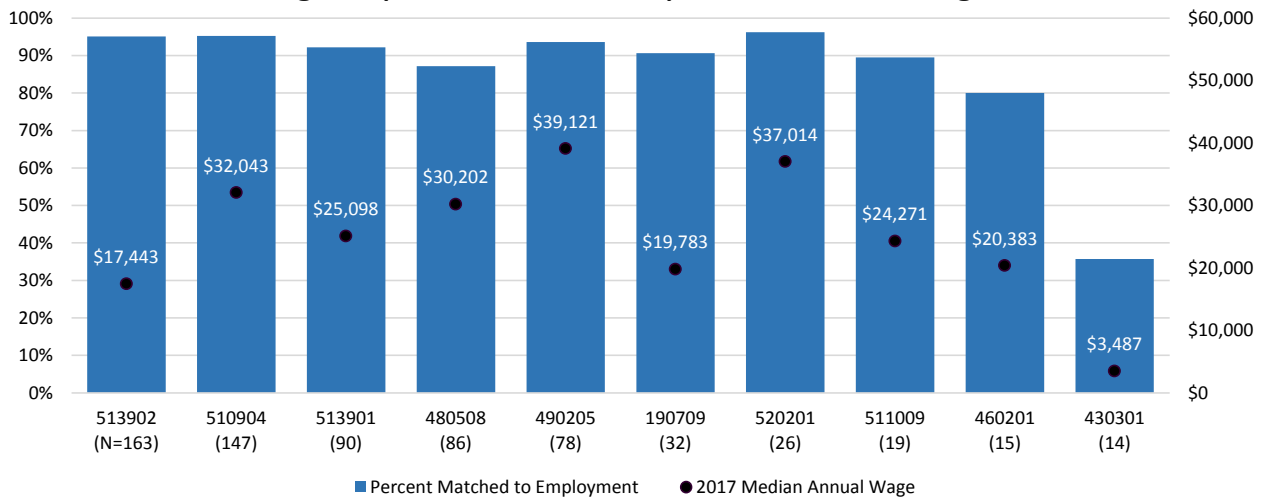
Figure 37. AY 2016 Cohort, Employment, and Wages by Certificate/Diploma Program (22 or More Credits), First Year Following Award



Certificate (C)/Diploma (D) (22 or more credits) Programs Legend:

- 480508: Welding Technology/Welder
- 513901: Licensed Practical/Vocational Nurse Training
- 510601: Dental Assisting/Assistant
- 510801: Medical/Clinical Assistant
- 460201: Carpentry/Carpenter
- 460303: Lineworker
- 120301: Funeral Service and Mortuary Science, General
- 470201: HVAC/R Maintenance Technology/Technician
- 510909: Surgical Technology/Technologist
- 190709: Child Care Provider/Assistant

Figure 38. AY 2016 Cohort, Employment, and Wages by Certificate/Diploma Program (Less than 22 Credits), First Year Following Award



Certificate/Diploma (Less than 22 credits) Programs Legend:

- 513902: Nursing Assistant/Aide and Patient Care Assistant/Aide
- 510904: Emergency Medical Technology/Technician (EMT Paramedic)
- 513901: Licensed Practical/Vocational Nurse Training
- 480508: Welding Technology/Welder
- 490205: Truck/Bus Driver/Commercial Vehicle Operator/Instructor
- 190709: Child Care Provider/Assistant
- 520201: Business Administration and Management, General
- 511009: Phlebotomy Technician/Phlebotomist
- 460201: Carpentry/Carpenter
- 430301: Homeland Security

Career Clusters

Career and technical education (CTE) in Iowa consists of educational programs offering courses designed to prepare individuals for immediate 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 16 career clusters and related career pathways provide an important organizing tool for schools to develop more effective programs of study and curriculum:

Agriculture, Food, and Natural Resources

Producing, processing, marketing, distribution, financing, and development of agricultural commodities and resources.

Architecture and Construction

Designing, planning, managing, building, and maintaining the built environment.

Arts, A/V Technology, and Communications

Designing, producing, exhibiting, performing, writing, and publishing multimedia content.

Business, Management, and Administration

Planning, organizing, directing, and evaluating business functions essential to efficient and productive business operations.

Education and Training

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

Finance

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

Government and Public Administration

Planning and executing government functions at the local, state, and federal levels.

Health Science

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

Hospitality and 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 (IT)

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, and 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, and Mathematics (STEM)

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

Transportation, Distribution, and Logistics

Planning, managing, and moving people, materials, and goods by road, pipeline, air, rail, and water, and related professional and technical support services such as transportation infrastructure planning, management, logistics services, mobile equipment, and facility maintenance.

Awards by Career Cluster

Career clusters represent groupings of occupational programs designed to prepare students for success in their areas of interest by concentrating on developing particular skill sets that will help them attain meaningful employment. However, when researching career clusters, it is important to note that each cluster represents multiple industries and a variety of occupations.

Figure 39 illustrates the number of awards earned by Iowa community college students by career cluster from AY 2012 to AY 2016. The list also includes awards earned by students in the college parallel/liberal arts (AA and AS degrees) programs. Although some of these AA and AS degree programs focus somewhat on specific fields, such as Criminal Justice or Business, the courses are not focused on direct employment skill development like the courses in Career and Technical Education (CTE) programs.

College parallel/liberal arts and the health science career cluster account for the majority of awards earned at Iowa's community colleges. As previously discussed, most students in college parallel/liberal arts programs will transfer to continue their education; therefore, this category has been separated from the CTE clusters for this analysis. Most of the CTE career cluster graduates move directly into the workforce, so are the focus of the employment and wage research conducted for this report.

Note: Only 15 of the 16 career clusters are listed in Figure 38 because data was not available for the Government and Public Administration career cluster.

Figure 39. AY 2012 - AY 2016 Awards by Career Cluster

Cluster Name	2012 Awards	2013 Awards	2014 Awards	2015 Awards	2016 Awards	Total Awards
College Parallel/Liberal Arts	6,481	6,296	6,090	6,070	6,391	31,328
Health Science Cluster	4,698	4,565	4,315	4,854	4,804	23,236
Manufacturing Career Cluster	1,205	1,197	1,215	1,581	1,515	6,713
Business, Management and Administration Cluster	942	1,103	951	838	637	4,471
Transportation, Distribution, and Logistics Cluster	800	861	726	935	1,023	4,345
Architecture and Construction Cluster	709	754	622	719	696	3,500
Agriculture, Food and Natural Resource Cluster	646	668	608	773	659	3,354
Information Technology Cluster	504	527	489	455	613	2,588
Human Service Cluster	435	446	458	338	429	2,106
Law, Public Safety, Corrections and Security Cluster	408	347	312	376	313	1,756
Finance Cluster	425	354	301	326	308	1,714
Arts, Audio/Video Technology and Communications Cluster	318	251	315	363	387	1,634
Hospitality and Tourism Cluster	237	242	254	248	327	1,308
Marketing Sales and Service Cluster	213	202	176	176	134	901
Science, Technology, Engineering and Mathematics Cluster	119	90	84	81	109	483
Education and Training Cluster	45	93	108	98	99	443
Total	18,185	17,996	17,024	18,231	18,444	89,880

Employment by Career Cluster

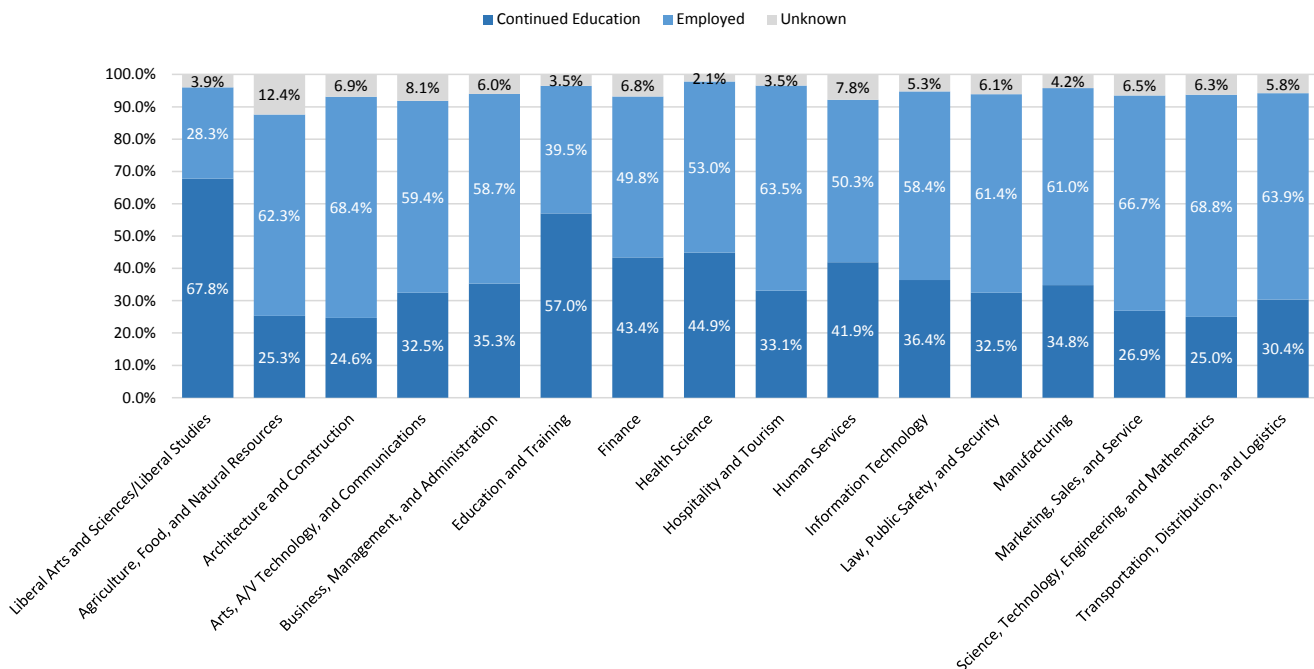
By analyzing and charting each career cluster based on the percentage of students that continued their education versus those that became employed, it is evident which clusters are targeted toward direct employment.

Analyzing the AY 2016 cohort, Figure 40 illustrates that within the first year following award completion, 53.0 percent of the health science graduates became employed, while 44.9 percent continued their education. A small percentage of completers (2.1 percent) could not be found in either the NSC or the UI wage records. These award completers are denoted as "Unknown" in Figure 40.

In contrast, and not surprisingly, the liberal arts and sciences cluster, which is designed for transfer to a four-year institution, has the highest rate of graduates continuing their education (67.8 percent). Naturally, this is accompanied by a lower rate of graduates entering employment after graduation.

Similar data were analyzed for other cohorts and is available in Appendix A.

Figure 40. AY 2016 Cohort, Enrollment, and Employment Status by Career Cluster, First Year Following Award



Transition into the Workforce

In the previous sections, career clusters and primary industry sectors of employment were analyzed independently. However, of particular interest is the cross-tabulation of these two variables, accomplished by tracking completers within each career cluster to the industry sectors in which they secure employment.

Figure 41 provides a visualization of a tool used to relate these two variables. Circos, a software that uses polar coordinate mapping to illustrate data relationships, maps the career clusters to primary industry information for each graduate in this study.

The colored bars on the left side of the circle represent the career clusters, including college parallel/liberal arts, in which students earned awards. Each colored bar corresponds to one of the 17 career clusters listed on the left. The gray bars on the right side represent the industry sectors in which the graduates became employed. Each gray bar corresponds to one of the 20 aggregate industry sectors listed on the right.

Figure 42, on the next page, illustrates the relationship between career clusters and industry sectors for AY 2012 through AY 2016 cohorts via hundreds of ribbons connecting the career cluster graduates (left bars) to their industry sector of employment (right bars). The width of the bars on both sides illustrate the size of the overall number of graduates in each cluster and those employed within each sector. It is important to note that bars/ribbons representing data that were suppressed due to low numbers were removed from Figure 42, resulting in less colored and gray bars.

Another important thing to consider is that this data show the industry sectors in which completers are primarily employed, not their actual occupations. For instance, health science graduates may be a pharmaceutical technician employed by the pharmacy at a large retail store. While they are doing work related to the health care field, they are reported as employed in the retail trade sector. This distinction between occupation and industry sector is important to note when analyzing the flow from education to industry as illustrated in Figures 42 and 43 on the following pages.

Career Cluster

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

Figure 41. Circos Visualization



Industry Sector

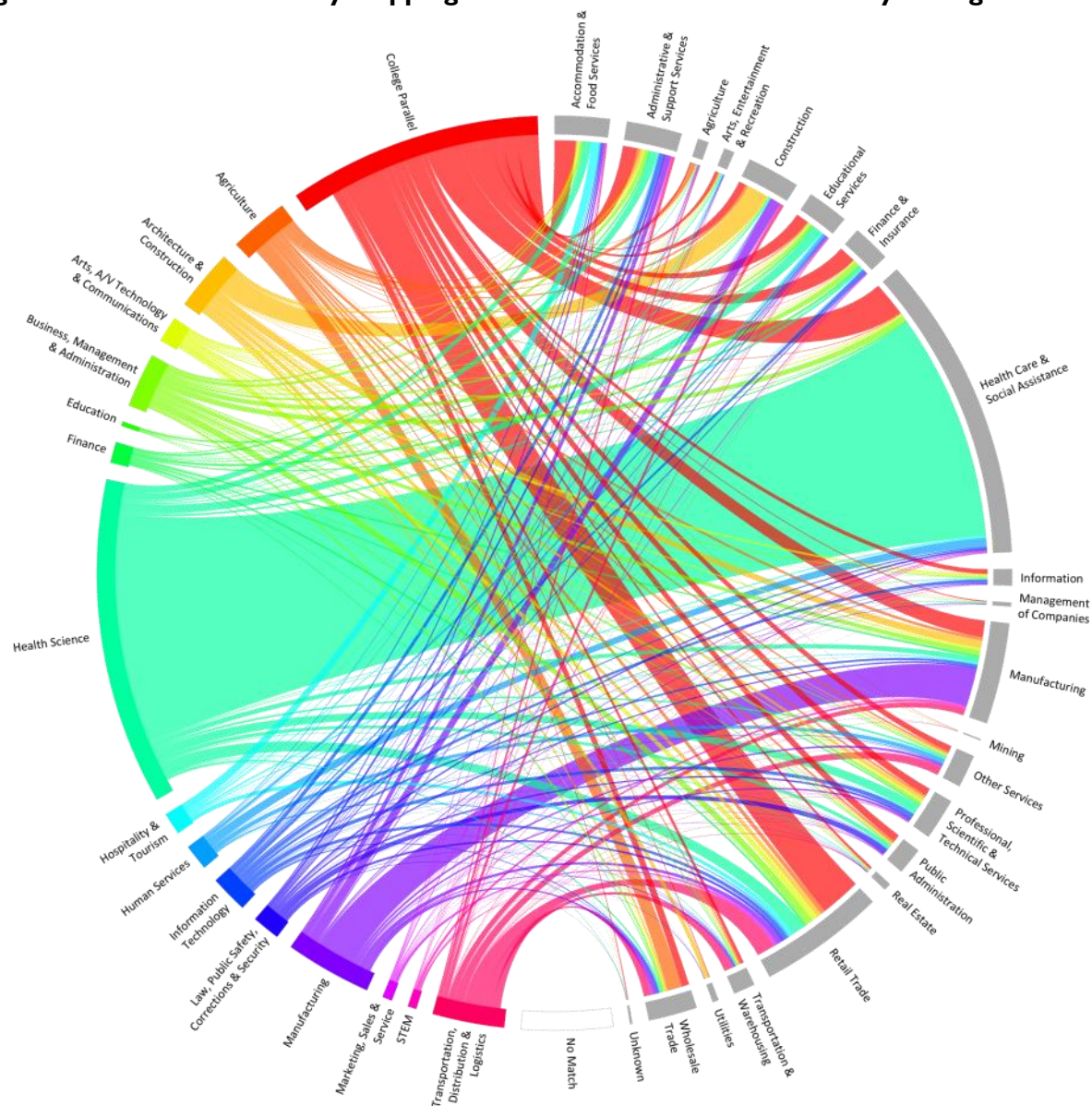
- Accommodation and Food Services
- Admin. Support, Waste Mgmt. and Remediation
- Agriculture, Forestry, Fishing and Hunting
- Arts, Entertainment and Recreation
- Construction
- Educational Services
- Finance and Insurance
- Health Care and Social Assistance
- Information Technology
- Management of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

Cluster to Industry

As previously mentioned, students that chose the college parallel/liberal arts program of study and the health science career cluster represent the largest portion of AY 2012 to AY 2016 graduates, which explains why the red (top left) and green (mid left) sectors of Figure 42 are so wide. All graduates who did not continue their education within one year of graduation are graphically represented in this figure, with the “No Match” (mid-bottom) section corresponding to

those graduates who did not match UI wage records. This diagram illustrates that the majority of health science completers obtained employment within the health care and social assistance industry; however, this career cluster provided workers in nearly every industry. The college parallel completers were largely disbursed as well, with their largest industry sectors of employment being retail trade, health care and social assistance, and accommodation and food services.

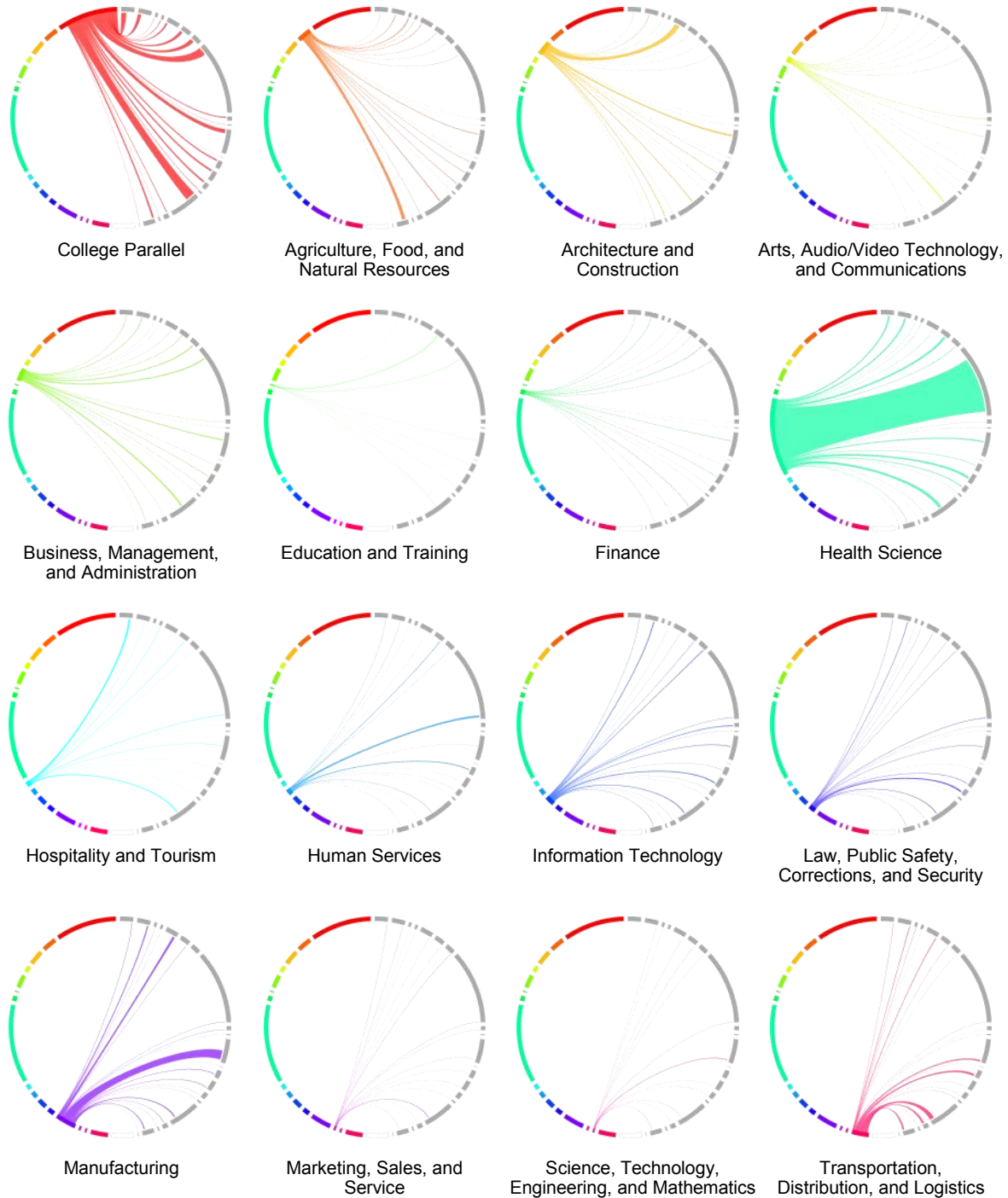
Figure 42. Cluster to Industry Mapping for AY 2012-AY 2016 Community College Graduates



Note: Ribbons representing cells that are suppressed in the data are not shown in this visualization.

The circular graphics in Figure 43 illustrate each award category (i.e., career clusters and college parallel program) on the left side of the circle aligning with the industry in which each graduate gained employment. This is simply Figure 42 separated into 16 individual graphics for each career cluster to make it easier to distinguish industry patterns within a cluster.

Figure 43. Industry Mapping by Cluster, AY 2012-AY 2016, Community College Graduates



Note: Ribbons representing cells that are suppressed in the data are not shown in this visualization

Employment and 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 academic year 2017 (October 2016 - September 2017) levels (CPI-u=243.8411) 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 (AY 2017), 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 academic year (using academic 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 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. If the sum of employed individuals across all suppressed subgroups is less than three, suppress the next smallest subgroup (to ensure the number of suppressed individuals is three or greater).

References

Krzywinski, M. et al. “Circos: an Information Aesthetic for Comparative Genomics.”,
<http://www.circos.ca/>

Institute of Educational Sciences, National Center for Education Statistics, “Classification of Instructional Programs”, <http://nces.ed.gov/>

Appendix A – Contents

Below is a list of the detailed data tables for this report. There are separate Excel spreadsheets for each cohort (AY 2012, AY 2013, AY 2014, AY 2015, and AY 2016) which can be accessed at: <https://www.educateiowa.gov/iowa-community-college-program-outcomes>.

Table 1: Overall Employment and Wages

Table 2: Overall Employment and Wages by State of Employment

Table 3: Overall Employment and Wages by Industry Sector of Employment

Table 4: Overall Employment and Wages by State and Industry Sector of Employment

Table 5: Employment and Wages by Gender

Table 6: Employment and Wages by Award Type (Aggregated)

Table 7: Employment and Wages by Award Type (Aggregated) by State of Employment

Table 8: Employment and Wages by Award Type (Aggregated) by Industry Sector of Employment

Table 9: Employment and Wages by Award Type (Aggregated) by State and Industry Sector of Employment

Table 10: Employment and Wages by Specific Award Type

Table 11: Employment and Wages by Specific Award Type and State of Employment

Table 12: Employment and Wages by Specific Award Type and Industry Sector of Employment

Table 13: Employment and Wages by Specific Award Type, State and Industry Sector of Employment

Table 14: Employment and Wages by Program (CIP) and Specific Award Type

Table 15: Employment and Wages by Program (CIP), Specific Award Type and State of Employment

Table 16: Employment and Wages by Program (CIP), Specific Award Type and Industry Sector of Employment

Table 17: Employment and Wages by Career Cluster

Table 18: Employment and Wages by Career Cluster by Gender

This page was intentionally left blank



COMMUNITY COLLEGES & WORKFORCE PREPARATION

PROSPERITY THROUGH EDUCATION

www.educateiowa.gov/ccpublications

The Division of Community Colleges and Workforce Preparation within the Iowa Department of Education administers a variety of diverse programs that enhance Iowa's educational system and help to prepare a skilled and knowledgeable workforce. Divided between two bureaus — the Bureau of Community Colleges and the Bureau of Career and Technical Education — the division is committed to providing and supporting opportunities for lifelong learning. In addition to working with Iowa's 15 public community colleges on state accreditation, program approval, equity review, and data reporting, guidance is also provided in the areas of career and technical education, workforce training and economic development, adult education and literacy, military education, the state mandated OWI education program, the GAP Tuition and PACE programs, Senior Year Plus, the National Crosswalk Service Center, and the Statewide Intermediary Network program.