

Iowa Community College Credit Program Outcomes

Certificate, Diploma and Associate Degree Programs
Academic Year 2020-2021

Released 2023



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-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, John C. Kluczynski Federal Building, 230 S. Dearborn Street, 37th Floor, Chicago, IL 60604-7204, telephone number: 312-730-1560, FAX number: 312-730-1576, TDD number: 800-877-8339, email: OCR.Chicago@ed.gov

Iowa Community Colleges Credit Program Outcomes: Certificate, Diploma and Associate Degree Programs

A statewide overview of education and employment outcomes of individuals enrolled in community college credit programs.

Prepared by:

**Iowa Department of Education
Division of Higher Education
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
Bureau Chief
515-281-8260
jeremy.varner@iowa.gov

Amy Gieseke
Section Chief,
Community Colleges
515-858-2234
amy.gieseke@iowa.gov

Paula Nissen
Administrative Consultant
Community Colleges
515-418-8273
paula.nissen2@iowa.gov

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



**DIVISION OF HIGHER
EDUCATION**

PROSPERITY THROUGH EDUCATION

Iowa Community College Credit Program Outcomes

Certificate, Diploma and Associate Degree Programs
Academic Year 2020/2021

Iowa's Community Colleges provide a wide array of educational options to students through community college certificate, diploma and associate degree programs. These programs are designed to meet state and regional economic needs of both the workforce and businesses. Annually student cohorts are established for research into education outcomes where students are followed into further education, training or employment. These outcomes inform students about wages and employment options, businesses with skilled worker supply and educators in program development and improvement.

Student Demographics

The majority of credit students are female, under age 25 and not racially diverse.



58.7% of credit students were female.



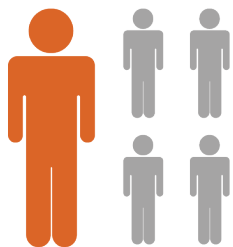
75.5% of credit students were younger than 25 years of age



21.2% of credit students who reported their race/ethnicity were of a racial or ethnic minority group.

Continue Education

Credit programs often lead to enrollment in further education and/ or transfer.



47.9% of students who completed their program in AY 2021 enrolled in further education.



76.0% of students who continued their education did so at an Iowa college or university.



92.9% of AY 2020-21 students did **not** have a previous degree.

Top 10 Credit Programs

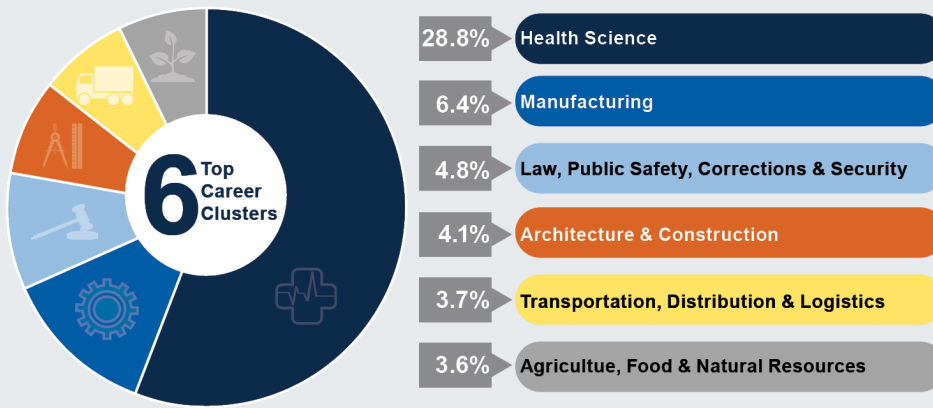


Liberals Arts & Sciences and programs in health care professions comprise the highest number of completions in AY2020-21.



Top Career Clusters

The National Career Clusters Framework organizes programs into 16 career clusters. Excluding college parallel/liberal arts (33.5%), the top career clusters by completion were health science and manufacturing.



Top Industries for Employment



Of the credits students who completed in AY 2020-21 and employed the year following program exit (2022), over one-fourth were employed in health care and social assistance.



Employment

The majority of students in community college credit programs stay in Iowa and are employed the first year following completion of their programs.



91.1% of credit students were employed in the first year following completion.



81.9% of credit students were employed in the state of Iowa.

Read the full report:

<https://educateiowa.gov/adult-career-community-college/community-colleges/program-outcomes-community-colleges>

Earnings

Earnings in the first year following program completion vary based on a variety of factors, including the duration or training, type of award and employer demand.

The following examples provide median annual wages by type of award; however, wages vary based on program.



Community Colleges & Workforce Preparation
Prosperity Through Education



Table of Contents

Introduction.....	1
Overview of Reporting.....	2
Credit Programs	3
Student Demographics	4
Awards and Programs by Gender	5
Awards and Programs by Age Group.....	6
Programs by Race/Ethnicity.....	7
Awards by Classification of Instructional Program	8
Associate Degrees by CIP—AY 2017 to AY 2021 Totals	9
Career and Technical Education (CTE) Diplomas by CIP	10
Certificates by CIP	11
Time-to-Degree	12
Joint Enrollment	15
Student Retention	16
Retention and Migration.....	17
Further Education Cohort.....	18
Workforce Cohort	19
Employment and Wages by State	20
Employment and Wages by Award Type	21
Employment and Wages by Gender	22
Employment and Wages by Race/Ethnicity	23
Employment and Wages by Industry Sector	24
Employment and Wages by Award Type and Industry	25
Employment and Wages by CIP.....	26
Career Clusters	29
Awards by Career Cluster.....	30
Employment and Education by Career Cluster	31
Transition into the Workforce.....	32
Cluster to Industry	33
Employment and Wage Record Methodology.....	35
References	36
Appendix A	37

Introduction

The Iowa Community Colleges Credit Program Outcomes: Certificate, Diploma and Associate Degree Programs Report, published annually, analyzes 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 significant impact education and training provided by Iowa's community colleges have on the economy. Programs and award levels are analyzed separately in order to assess 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 data analysis in this report.

Coinciding with the programs, five annualized cohorts of student award recipients were studied regarding their subsequent employment and wages (academic years (AY) 2017, 2018, 2019, 2020 and 2021). These cohorts will be studied longitudinally for 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 (Department) 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.

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

CREDIT-BEARING PROGRAMS

Credit programs offered by Iowa's 15 community colleges lead to a certificate, diploma or associate degree and are designed to prepare students for immediate employment in occupations requiring less than a four-year degree or to transfer and satisfy credits toward a bachelor's degree at a four-year institution.



DATA ANALYSIS

Program and award levels were analyzed separately to assess the benefits of each. To ensure a uniform approach to 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).

AGENCY PARTNERSHIP

The Iowa Department of Education and Iowa Workforce Development partnered to evaluate and report education, employment and wage outcomes for individuals in certificate, diploma, and associate degree programs. Research objectives are clearly stated in data-sharing agreements and limited staff have access to the data. In addition, staff from both agencies signed confidentiality agreements pertaining to the reporting and use of student records.

Overview of Reporting

To properly conduct research for this report, data criteria were established based on less than 22 credit hours (“short-term”) or 22 or more credit hours (“long-term”) for associate, diploma, and certificate awards. All data were extracted from the Department’s Community College Management Information System (MIS) and grouped based on this threshold, along with each credential’s award date. The award date is referenced throughout this report as academic year (i.e., grouped September 1, 2020, to August 31, 2021, is AY 2021). Students who received awards in AY 2017, 2018, 2019, 2020 or 2021 were analyzed.

Once extracted from the MIS, data were sent by annual cohort to the National Student Clearinghouse (NSC) to identify which students continued their education after receiving a 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).

Students with multiple awards were flagged before tracking them into the workforce, and then unduplicated, so they 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 (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* was conducted using SSNs.

The data were then sent via secure file transfer to IWD 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 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 the community colleges’ academic year.

Due to the confidentiality of the wage record data, IWD processed the records and returned aggregate data for the Department to analyze and use in this report. Data was thoroughly scrutinized and all rules, regulations and restrictions for each of the data sources were strictly followed. Additionally, data-sharing agreements went through a comprehensive legal review.

** The UI wage records do not cover 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.*

Credit Programs

Statewide Total Awards

For this portion of the report, an aggregate analysis was conducted on 74,014 short- and long-term credit awards received by Iowa community college graduates from AY 2017 through AY 2021. Though each college yielded a different number of total awards, in aggregate there were 50,880 associate degrees, 11,890 diplomas, 2,047 long-term certificates and 9,197 short-term certificates. Figure 1 illustrates the awards at each of the community colleges during the noted timeframe.

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 hierarchal order: AAS-AAA-APS-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.

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

FIGURE 1. AY 2017 TO AY 2021 TOTAL SHORT- AND LONG-TERM AWARDS

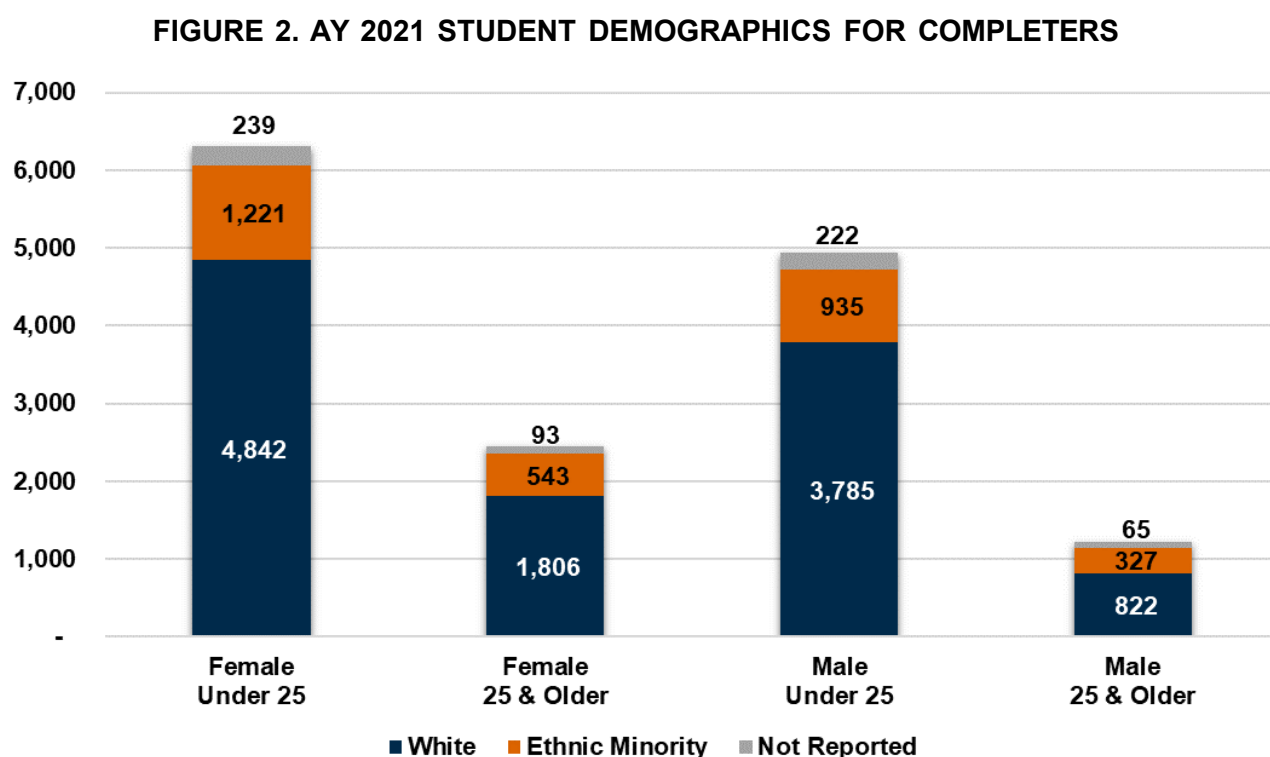
College #	Community College	Long	Short	Total Awards
11	Des Moines Area	12,052	2,707	14,759
10	Kirkwood	9,853	428	10,281
12	Western Iowa Tech	4,476	2,894	7,370
9	Eastern Iowa	5,002	545	5,547
13	Iowa Western	5,019	430	5,449
7	Hawkeye	4,377	162	4,539
5	Iowa Central	4,348	179	4,527
2	North Iowa Area	2,699	1,180	3,879
15	Indian Hills	3,641	101	3,742
1	Northeast Iowa	3,332	44	3,376
16	Southeastern	2,652	114	2,766
6	Iowa Valley	2,262	117	2,379
14	Southwestern	1,570	332	1,902
4	Northwest	1,755	4	1,759
3	Iowa Lakes	1,739	-	1,739
Total		64,777	9,237	74,014

Student Demographics

In AY 2017, demographics were added to the dataset in order to study students by gender, race/ethnicity and age. Gender was defined as either male or female. Age groups were then aggregated by those under 25 years of age and those age 25 years and older. Race/ethnicity was grouped into two categories: white and racial/ethnic minority.

In AY 2021, there were a total of 8,825 female students, 6,205 male students and one student with unknown gender. The majority of students in AY 2021 were under the age of 25 (11,356) and of those, 11,256 were white. However, there was a greater percentage of ethnic minority male students who were 25 years of age and older (28.5 percent), compared to those under 25 (19.8 percent). Ethnic minority female students also represented a greater percentage of those 25 years of age or older (23.1 compared to 20.1 percent).

Figure 2 below illustrates the Iowa community college student completer population demographics in AY 2021.



Awards and Programs by Gender

More female than male community college students received awards in AY 2021 (58.7 percent of all awards). Female students also represented higher percentages of those who earned associate degrees (58.7 percent), diplomas (59.1 percent) and certificates (58.5 percent). However, if each two-digit Classification of Instructional Program (CIP) is analyzed separately, there is a deviation from this continuum, shown in the Figure 3 below.

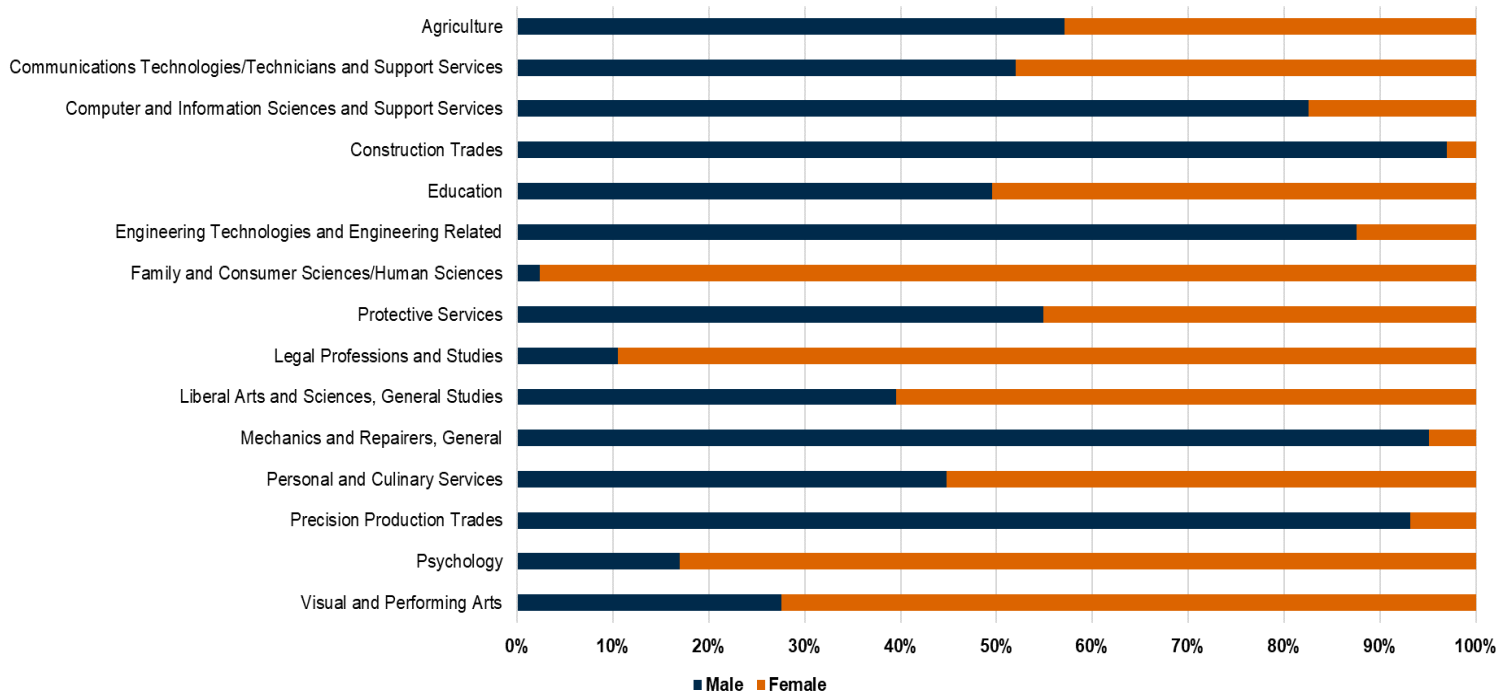
Long-held views about the particular strengths, weaknesses and responsibilities of each gender have affected how people look for a job, train for a job and ultimately gain employment in a particular job. Though it is not something that holds true for every person, gender division still applies by occupation. Historically, females have held jobs in health care, administrative and human services-related occupations, whereas male students have been more apt to attain employment in occupations relating to engineering, manufacturing, construction and transportation.

Figure 3 illustrates the percentage of male and female students for the top programs completed in AY 2021. Female students dominated the training completion in family and consumer sciences/human services, legal professions and studies, psychology and visual and performing arts. Male students far outnumbered female students in construction trades, mechanics and repairers, precision production trades, engineering and computer technology. All program completions by gender can also be found on the credit program outcomes interactive dashboard at:

https://iowastudentoutcomes.com/credit_program_outcomes.

Note: Wages by gender are addressed in latter portions of this report.

**FIGURE 3. TOP 15 PROGRAMS COMPLETED IN AY 2021
BY NUMBER OF AWARDS BY GENDER**



Awards and Programs by Age Group

As mentioned earlier in this report, students were separated into two age categories: those under the age of 25 and those 25 years of age and older. An analysis was conducted to see if there was a difference between the younger and older groups when it came to programs of study. Liberal arts and sciences were the most popular among the younger group (37.8 percent), whereas the older group predominately completed programs in health professions (38.4 percent). Interestingly, the second-largest percentages for each group were in the same two categories, yet transposed. Table 1 shows that 20.4 percent of students age 25 and older completed liberal arts and sciences programs, while 25.2 percent of students under the age of 25 completed health professions programs.

There are a few differences in younger to older student percentages by program type for the remainder of the top 10 program classes. Students age 25 and older did, however, represent higher percentages in precision production trades, business management, and homeland security/law enforcement.

Classification of Instructional Program (CIP)	Percent of Students Under Age 25	Percent of Students Age 25 and Over
Liberal Arts and Sciences, General Studies	37.8%	20.4%
Health Professions and Related	25.2%	38.4%
Business Management, Marketing and Related	4.7%	8.9%
Mechanics and Repairers, General	5.6%	3.7%
Precision Production Trades	2.7%	9.2%
Agriculture	4.2%	2.2%
Computer and Information Sciences and Support Services	4.4%	0.7%
Engineering Technologies and Engineering Related	3.3%	3.6%
Homeland Security, Law Enforcement, Firefighting and Related Protective Services	2.8%	4.8%
Construction Trades	2.1%	0.8%

Top 10 programs do not equal 100%, this is a representation of the percentage of students overall.

Intriguingly, there is no significant difference between age groups for the type of award earned through credit programming. Associate degrees reflected the highest percentage for both those under 25 and those age 25 and older, followed by certificate completion and diploma as noted in Table 2 below. However, adults, age 25 and over are more likely to earn short-term credentials.

TABLE 2. AWARD TYPE BY AGE GROUP, AY 2021

Type of Award	Percent of Students Under Age 25	Percent of Students Age 25 and Over
Associate Degree	69.7%	58.3%
Diploma	14.6%	19.8%
Certificate	15.7%	21.9%

Detailed program completion by age group information can be explored using the link provided in Appendix A to the detailed data tables.

Programs by Race/Ethnicity

Throughout this report, race/ethnicity groups are defined as “white” or “racial/ethnic minority,” aggregating all students who self-identified with a race or ethnicity other than white into one category. Over 3,026 students (20.3 percent) were in the racial/ethnic minority group, 11,256 students were white (75.5 percent) and the 619 students (4.2 percent) who did not report race/ethnicity were excluded from the analysis.

When analyzing the student population within the race/ethnicity categories, students in the racial/ethnic minority group predominately completed coursework in similar programs as white students. For example, within both groups, the largest percentage of students completed liberal arts and sciences and health professions programs. There was a higher percentage of minority students, however, who completed homeland security, law enforcement, firefighting and related protective services and computer and information sciences training, as compared to white students. Table 3 below outlines these distinctions.

TABLE 3. TOP 15 PROGRAMS BY TWO-DIGIT CIP BY RACE/ETHNICITY, AY 2021

Classification of Instructional Program (CIP)	White		Racial/Ethnic Minority	
	Number	Percent	Number	Percent
Liberal Arts and Sciences, General Studies	3,701	32.9%	1,074	35.5%
Health Professions and Related	3,151	28.0%	910	30.1%
Business Management, Marketing and Related	672	6.0%	152	5.0%
Mechanics and Repairers, General	606	5.4%	137	4.5%
Homeland Security, Law Enforcement, Firefighting and Related Protective Services	397	3.5%	208	6.9%
Precision Production Trades	439	3.9%	81	2.7%
Agriculture	476	4.2%	21	0.7%
Engineering Technologies and Engineering Related	394	3.5%	95	3.1%
Computer and Information Sciences and Support Services	360	3.2%	105	3.5%
Construction Trades	209	1.9%	44	1.5%
Personal and Culinary Services	172	1.5%	44	1.5%
Family and Consumer Sciences/Human Sciences	129	1.1%	34	1.1%
Visual and Performing Arts	110	1.0%	27	0.9%
Education	92	0.8%	13	0.4%
Communications Technologies/Technicians and Support Services	77	0.7%	17	0.6%
Total	10,985	97.6%	2,962	98.0%

Awards by Classification of Instructional Program

The CIP provides a taxonomic scheme that enables tracking, assessment and reporting of fields of study and program completion. This system was established by the U.S. Department of Education's National Center for Education Statistics in 1980. The data contained within this report are analyzed at the two- or six-digit CIP levels. Appendix A, the accompanying online tables and online dashboard, contain detailed information for six-digit program-level data. Table 4 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 2017 to 2021.

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

TABLE 4. AY 2017 TO AY 2021 STATEWIDE AWARDS BY TWO-DIGIT CIP

CIP	Description	AY2017	AY2018	AY2019	AY2020	AY2021	Total
24	Liberal Arts & Sciences, General Studies	5,448	5,274	5,328	5,228	5,041	26,319
51	Health Professions & Related	4,260	3,959	4,065	3,890	4,279	20,453
52	Business Management, Marketing & Related	851	785	867	774	859	4,136
47	Mechanics & Repairers, General	937	843	784	731	776	4,071
48	Precision Production Trades	581	553	565	513	649	1,864
01	Agriculture	586	484	469	494	557	2,769
11	Computer and Information Sciences & Support Services	510	535	490	490	524	2,557
15	Engineering Technologies & Engineering Related	432	470	470	480	506	2,358
43	Homeland Security, Law Enforcement, Firefighting & Related Protective Services	203	261	388	363	488	2,513
46	Construction Trades	320	313	302	293	264	1,492
12	Personal & Culinary Services	243	233	234	203	221	1,134
19	Family & Consumer Sciences/Human Sciences	233	202	194	163	170	962
50	Visual & Performing Arts	159	137	118	119	138	671
10	Communications Technologies/Technicians & Support Services	154	142	151	115	107	320
49	Transportation & Materials Moving	107	89	81	44	102	664
13	Education	43	28	71	71	76	294
22	Legal Professions & Studies	71	40	60	47	59	71
44	Human Services	65	63	67	43	51	289
03	Natural Resources & Conservation	62	59	58	58	50	287
09	Communication, Journalism & Related Programs	26	21	26	27	31	131
30	Multi/Interdisciplinary Studies	24	20	19	11	14	88
16	Foreign Languages, Literature & Linguistics	23	17	20	13	13	86
31	Parks, Recreation, Leisure & Fitness Studies	20	15	13	17	13	78
42	Psychology	-	-	-	12	13	334
26	Biological & Biomedical Sciences	5	6	2	0	12	25
41	Science Technologies/Technicians	6	6	1	4	5	22
45	Social Sciences	4	3	1	-	5	13
14	Engineering	2	1	-	2	4	9
34	Health Related Knowledge & Skills	-	-	-	-	4	4
Total		15,375	14,559	14,844	14,205	15,031	74,014

Associate Degrees by CIP - AY 2017 to AY 2021 Totals

During AY 2017 through AY 2021, Iowa community colleges awarded seven types of associate degrees. 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)
- Transfer Majors (TM)

Table 5 below contains an aggregation of all associate degrees awarded in AY 2017 through AY 2021. Liberal arts and science degrees consistently account for slightly more than 50 percent of all such degrees awarded (51.3 percent in AY 2017, 52.0 percent in AY 2018, 52.3 percent in AY 2019, 53.0 percent in AY 2020 and 50.1 percent in AY 2021). Each award type has been analyzed separately and is available using the online interactive dashboard and accompanying tables at www.IowaStudentOutcomes.com.

TABLE 5. AY 2017 TO AY 2021 ASSOCIATE DEGREES BY TWO-DIGIT CIP

CIP	Description	AY2017	AY2018	AY2019	AY2020	AY2021	Total
24	Liberal Arts & Sciences, General Studies	5,448	5,274	5,328	5,228	5,041	26,319
51	Health Professions & Related	1,840	1,860	1,877	1,792	1,857	9,226
52	Business Management, Marketing & Related	586	465	554	521	594	2,720
47	Mechanics & Repairers, General	562	500	471	436	410	2,379
01	Agriculture	515	414	399	418	455	2,201
11	Computer & Information Sciences & Support Services	337	308	303	311	330	1,589
15	Engineering Technologies & Engineering Related	283	312	295	325	325	1,540
43	Homeland Security, Law Enforcement, Firefighting & Related Protective Services	149	160	145	159	209	822
12	Personal & Culinary Services	135	126	114	83	115	573
10	Communications Technologies/Technicians & Support Services	135	121	126	92	90	564
48	Precision Production Trades	126	116	100	93	98	533
50	Visual & Performing Arts	87	87	76	75	95	420
19	Family & Consumer Sciences/Human Sciences	95	80	82	55	65	377
46	Construction Trades	76	82	82	72	58	370
44	Humans Services	60	61	65	42	49	277
22	Legal Professions & Studies	52	29	49	32	48	210
03	Natural Resources & Conservation	33	46	47	41	35	202
09	Communication, Journalism & Related Programs	26	20	23	26	32	127
49	Transportation & Materials Moving	11	25	21	20	12	89
30	Multi/Interdisciplinary Studies	24	20	19	11	14	88
42	Psychology	-	-	-	12	59	71
31	Parks, Recreation, Leisure & Fitness Studies	12	10	9	11	11	53
16	Foreign Languages, Literatures & Linguistics	14	8	8	8	5	43
13	Education	-	-	-	-	31	31
41	Science Technologies/Technicians	6	6	1	-	6	19
26	Biological & Biomedical Sciences	1	3	1	-	12	17
45	Social Sciences	4	3	1	-	5	13
14	Engineering	2	1	-	2	2	7
Total		10,619	10,137	10,196	9,865	10,063	50,880

Career and Technical Education 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 of Iowa's community colleges offer long-term Career and Technical Education (CTE) diploma programs covering many different areas of study, with the majority in health care, skilled trades, engineering and computer-related fields. Since only four of Iowa's community colleges offered short-term diplomas during the five-year study period, both long- and short-term diplomas were combined in Table 6 below. The majority of CTE diplomas were awarded in health professions, followed by precision production trades and mechanics and repairers training. Health professions continue to surpass all other diploma programs, making up 49.3 percent of all diplomas awarded in AY 2021.

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

TABLE 6. AY 2017 TO AY 2021 LONG-TERM AND SHORT-TERM DIPLOMAS BY TWO-DIGIT CIP

CIP	Description	AY2017	AY2018	AY2019	AY2020	AY2021	Total
51	Health Professions & Related	1,142	1,210	1,157	1,193	1,175	5,877
48	Precision Production Trades	294	263	266	188	249	1,260
47	Mechanics & Repairers, General	238	259	201	178	238	1,114
46	Construction Trades	206	194	166	168	170	904
52	Business Management, Marketing & Related	107	155	145	114	129	650
15	Engineering Technologies & Engineering Related	78	85	112	98	123	496
12	Personal & Culinary Services	75	89	100	97	82	443
01	Agriculture	63	59	54	43	52	271
11	Computer and Information Sciences & Support Services	29	62	58	55	67	271
19	Family and Consumer Sciences/Human Sciences	58	53	58	47	39	255
50	Visual & Performing Arts	40	38	20	24	25	147
10	Communications Technologies/Technicians & Support Services	18	19	23	22	10	92
43	Homeland Security, Law Enforcement, Firefighting & Related Protective Services	9	13	8	10	17	57
13	Education	2	2	4	1	3	12
22	Legal Professions & Studies	1	3	1	3	3	11
31	Parks, Recreation, Leisure & Fitness Studies	-	3	3	3	2	11
44	Human Services	5	2	1	-	1	9
49	Transportation & Materials Moving	8	-	-	-	-	8
03	Natural Resources & Conservation	1	-	-	-	-	1
09	Communication, Journalism & Related Programs	-	-	-	1	-	1
Total		2,374	2,509	2,377	2,245	2,385	11,890

Certificates by CIP

Iowa community colleges design certificates to respond to business and industry workforce needs. These technical programs, classified as short-term (less than 22 credits) and long-term (22 credits or more), vary from one to 48 credits. As illustrated in Table 7, there were a total of 11,244 certificates awarded over the five-year study period (9,197 short-term and 2,047 long-term). The largest portion of these were awarded in the health professions (5,350). Notably, certificates awarded through homeland security, law enforcement, firefighting and related protective services programs grew dramatically in AY 2021.

Iowa's community colleges also award noncredit certificates, which are analyzed in a separate report. Short-term career training opportunities, both credit and noncredit, have a significant impact on the skills workers need to be competitive in the workforce.

Note: Noncredit CTE employment outcomes and data can be found at: <https://educateiowa.gov/adult-career-comm-college/community-colleges/iowa-community-college-program-outcomes>

TABLE 7. AY 2017 TO AY 2021 CERTIFICATES LONG- AND SHORT-TERM (LT AND ST) BY TWO-DIGIT CIP

CIP	Description	AY2017	AY2018	AY2019	AY2020	AY2021	Total LT	Total ST	Total
51	Health Professions & Related	1,278	889	1,031	905	1,247	4,703	647	5,350
43	Homeland Security, Law Enforcement, Firefighting & Related Protective Services	45	88	235	194	423	938	47	985
48	Precision Production Trades	161	174	199	232	210	726	250	976
52	Business Management, Marketing & Related	158	165	168	139	138	613	155	768
11	Computer and Information Sciences & Support Services	144	165	129	124	91	388	265	653
47	Mechanics & Repairers, General	137	84	112	117	125	280	295	575
19	Family and Consumer Sciences/Human Sciences	80	69	54	61	66	323	7	330
15	Engineering Technologies & Engineering Related	71	73	63	57	58	87	235	322
13	Education	41	26	67	70	73	277	-	277
49	Transportation & Materials Moving	88	64	60	24	1	237	-	237
46	Construction Trades	38	37	54	53	36	218	-	218
12	Personal & Culinary Services	33	18	20	23	24	107	11	118
50	Visual & Performing Arts	32	12	22	20	18	104	-	104
01	Agriculture	8	11	16	33	17	47	38	85
03	Natural Resources & Conservation	28	13	11	17	15	84	-	84
22	Legal Professions & Studies	18	8	10	12	25	-	73	73
16	Foreign Languages, Literature & Linguistics	9	9	12	5	8	35	8	43
31	Parks, Recreation, Leisure & Fitness	8	2	1	3	-	14	-	14
26	Biological & Biomedical Sciences	4	3	1	-	-	-	8	8
10	Communications Technologies/Technicians & Support Services	1	2	2	-	2	8	-	8
41	Science Technologies/Technicians	-	-	-	4	3	-	7	7
09	Communication, Journalism & Related Programs	-	1	3	1	2	6	-	6
44	Human Services	-	-	1	1	1	2	1	3
Total		2,382	1,913	2,271	2,095	2,583	9,197	2,047	11,244

Time-to-Degree

To measure the amount of time it took students to earn their awards (e.g., time-to-degree), enrollment data were extracted from the MIS for the six years prior to completion for students who received awards between AY 2017 and AY 2021. For example, data for AY 2017 graduates were extracted from AY 2016, 2015, 2014, 2013 and 2012 to determine if they were enrolled in their degree programs during these prior years.

There is a variance in completion time when looking at associate degrees independently. Table 8 below shows nearly three-fourths (73.3 percent) of students who received an AAA degree received their award by the end of year two. In comparison, just nearly two-thirds (63.8 percent) of students finished their AAS degree within the same period of time.

Figure 4, on the following page, represents the distribution of time-to-degree for each associate degree type. Figure 5 displays the time-to-degree in cumulative format, illustrating the total percentage of students who completed degrees in one to four years.

TABLE 8. AY 2017 TO AY 2021 TIME-TO-DEGREE FOR ASSOCIATE DEGREES BY PERCENT

Years	AA	AS	AGS	AAA	AAS	APS	All
Less than 1	11.8%	10.4%	18.9%	1.8%	4.2%	13.3%	8.2%
Year 1	30.5%	26.4%	23.6%	52.5%	36.3%	39.9%	33.0%
Year 2	26.9%	25.4%	17.0%	18.9%	23.3%	20.2%	24.9%
Year 3	20.1%	23.5%	22.3%	18.9%	20.0%	16.5%	20.2%
Year 4	10.7%	14.4%	18.2%	7.8%	16.2%	10.1%	13.6%
Total	100%	100%	100%	100%	100%	100%	100%
First 2 Years	69.2%	62.1%	59.5%	73.3%	63.8%	73.4%	66.1%

Totals may vary due to rounding

FIGURE 4. TIME-TO-DEGREE FOR ASSOCIATE DEGREES EARNED, AY 2017 TO AY 2021

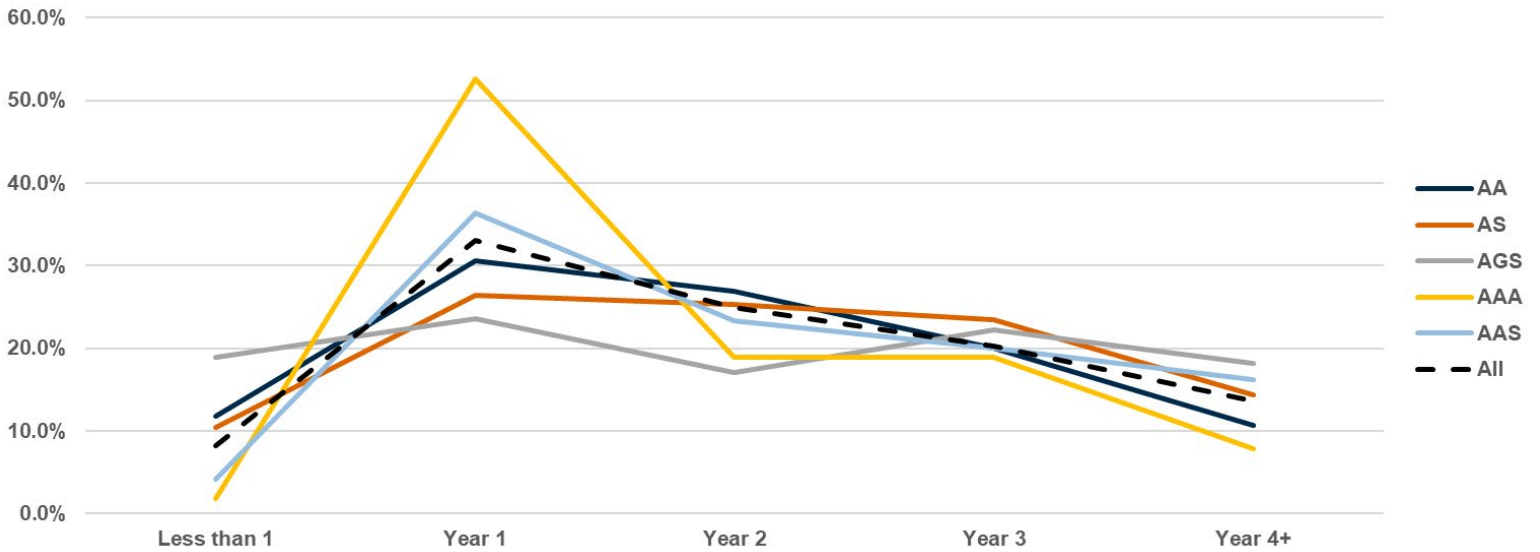
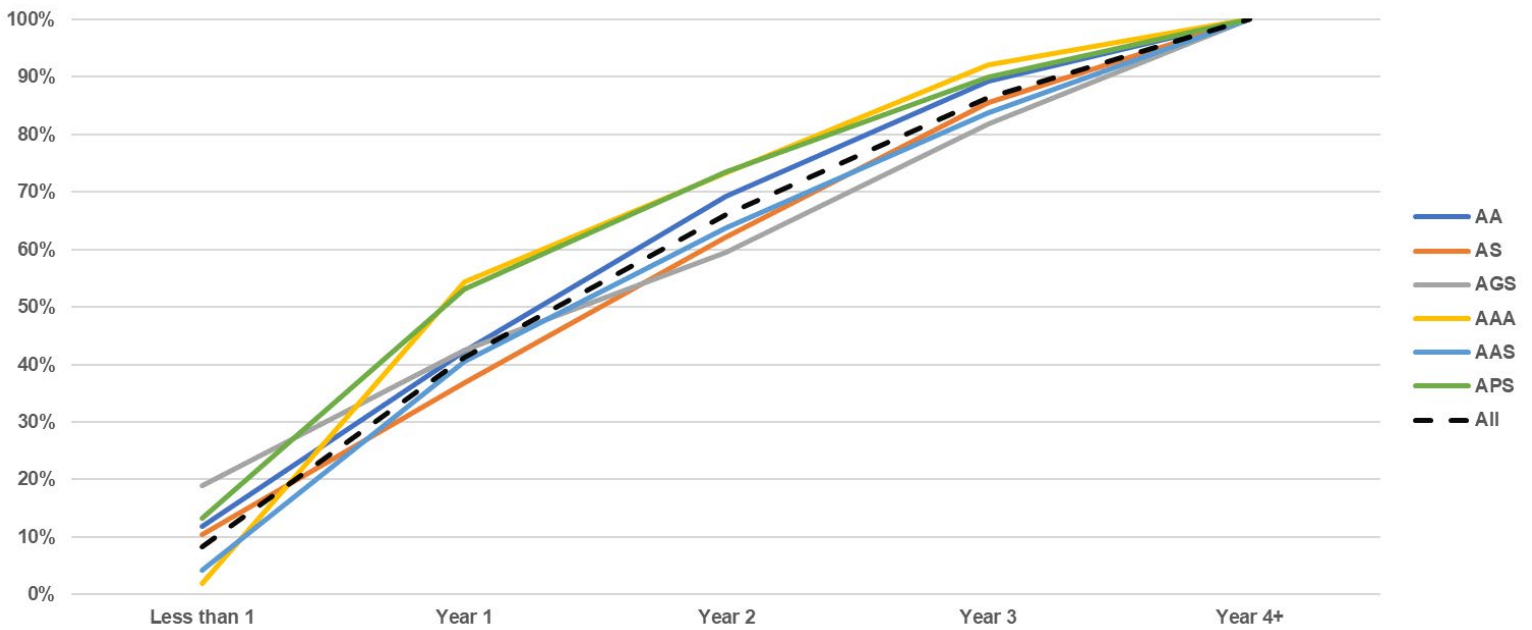


FIGURE 5. CUMULATIVE TIME-TO-DEGREE FOR ASSOCIATE DEGREES, AY 2017 TO AY 2021



Note: Annual cohorts include students who entered an Iowa community college, in any term, within an academic year.

In Figure 6 below, 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. 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. Long-term diploma and certificate programs consist of 22 or more credits, while short-term programs consist of less than 22 credits.

Table 9 illustrates why the LT and ST awards must be reported separately. Due to the acquisition of fewer credits, most (66.0 percent) ST diplomas and certificates were completed in less than one year, with another 17.0 percent completed by the end of year one (total 83.0 percent). In contrast, the majority of long-term certificates and diplomas were completed by year two (84.5 percent for certificates and 76.2 percent for diplomas).

FIGURE 6. TIME-TO-DEGREE FOR DIPLOMA AND CERTIFICATE AWARDS, AY 2017 TO AY 2021

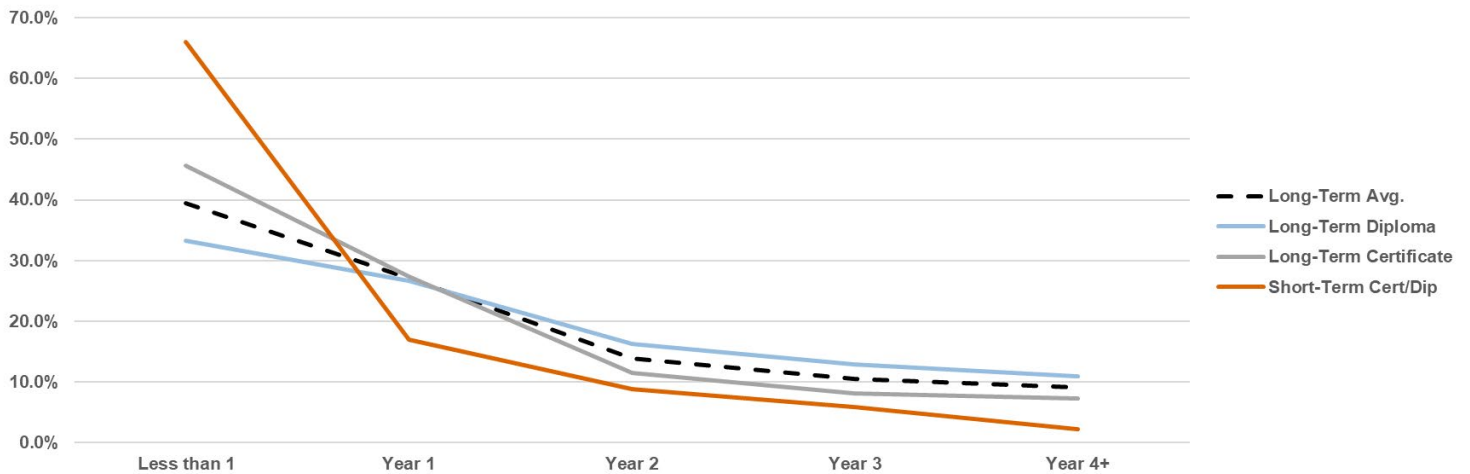


TABLE 9. TIME-TO-DEGREE FOR DIPLOMA AND CERTIFICATE AWARDS BY PERCENT, AY 2017 TO AY 2021

Years	Long-Term Avg.	Long-Term Dip.	Long-Term Cert.	Short-Term Cert./Dip.
Less than 1	39.4%	33.2%	45.6%	66.0%
Year 1	27.0%	26.7%	27.4%	17.0%
Year 2	13.9%	16.3%	11.5%	8.8%
Year 3	10.6%	12.9%	8.2%	5.9%
Year 4+	9.1%	10.9%	7.3%	2.3%

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 Department defines joint enrollment as a high school student enrolled 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). They may also enroll in non-contracted courses as a tuition-paying student. Since this section focuses on program completion, the students represented include only those who were jointly enrolled while in high school, continued their education at one of Iowa’s community colleges and completed a degree, diploma or certificate during AY 2017 to AY 2021. Over the five-year study period, a total of 22,400 students earned an average of 18.1 college credits during high school. Additionally, AY 2021 saw a pronounced increase in jointly enrolled students, with an additional 533 students pursuing this option (Table 10).

TABLE 10. COMMUNITY COLLEGE AWARDS EARNED BY JOINT ENROLLMENT (JE) STUDENTS, AY 2017 TO AY 2021

	AY2017	AY2018	AY2019	AY2020	AY2021	Total/ Average
Number of Students	3,916	4,308	4,479	4,582	5,115	22,400
Average Number of JE Years	1.4	1.7	1.7	1.7	1.7	1.6
Average Number of JE Credits	15.7	18.0	18.4	19.0	19.6	18.1

Note: The average number of JE years was calculated by counting students 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.

Of the AY 2021 completers, many earned a short- or long-term award prior to graduation. For example, over one-third (36.2 percent) earned an AA degree and 22.5 percent earned an AAS degree in CTE programs. Another 34.9 percent earned diplomas and certificates (Table 11).

Other reports produced by the Department specific to joint enrollment can be found at: <https://www.educateiowa.gov/document-type/joint-enrollment>.

TABLE 11. AY 2021 JOINTLY ENROLLED STUDENTS BY LONG- AND SHORT-TERM AWARD TYPES

Award Type	Number of Long- Term Students	Number of Short- Term Students	Percent
AA	1,851	-	36.2%
AS	258	-	5.0%
AGS	43	-	0.8%
AAA	12	-	0.2%
AAS	1,153	-	22.5%
APS	9	-	0.2%
Diploma	626	15	12.5%
Certificate	97	1,051	22.4%
Total	4,049	1,066	100%

Totals may vary due to rounding

Student Retention

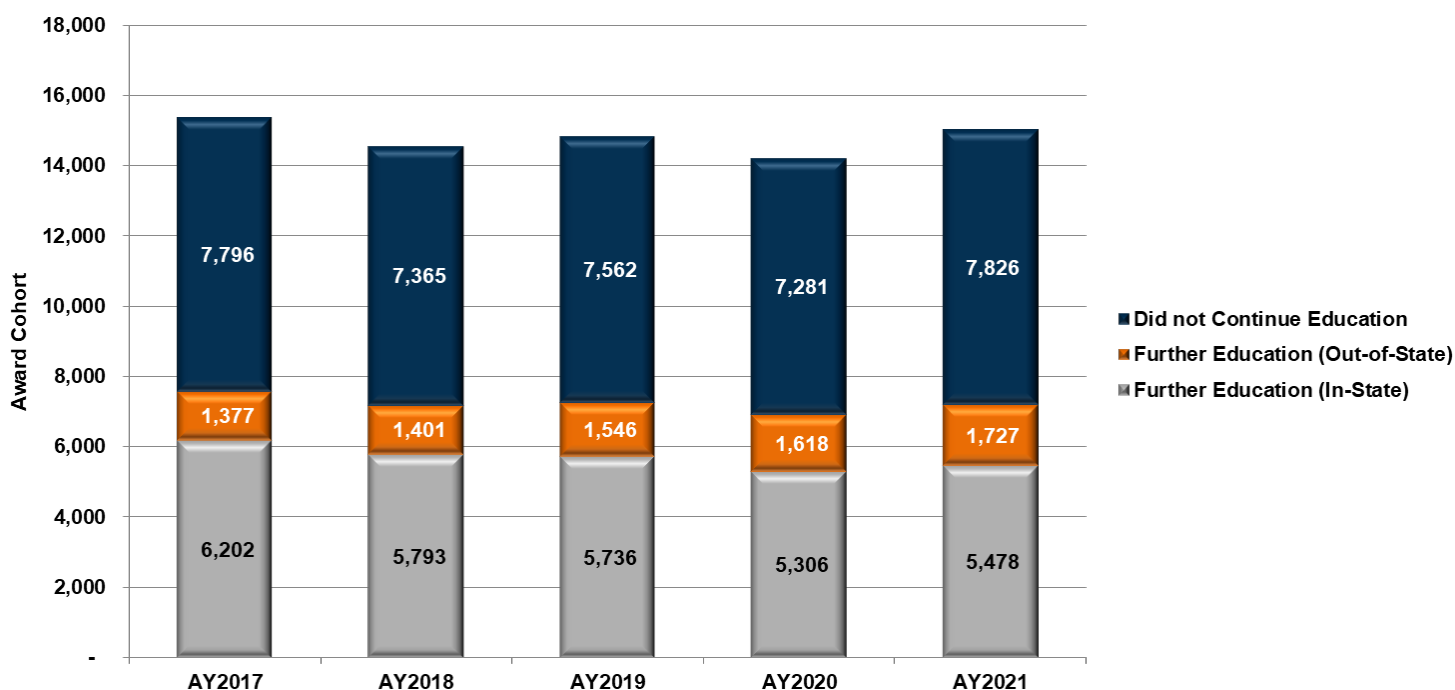
To study the various tracks community college students take after graduation, each cohort was split into three groups: 1) those who continued their education in Iowa, 2) those who continued out-of-state and 3) those who did not continue their education. Figure 7 below represents the five cohorts of graduates, 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 noted 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 student participation in two- or four-year, in- or out-of-state and public or private institutions during the year following the completion of a community college program. If a graduate was matched (e.g., found) within the NSC database, he or she was placed into the "Pursuing Further Education" cohort for further analysis. If a graduate was not matched within the NSC database, he or she was placed into the "Workforce" cohort. Since all of the student records had to contain an SSN in order to be used for the workforce cohort, 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 his or her award was re-matched to the NSC database to ascertain whether he or she entered a postsecondary institution in subsequent years.

As illustrated in Figure 7 below, of the 15,031 students (deduplicated count) who received an award in AY 2021, 5,478 of the 7,205 (76.0 percent) who continued their education the year following their award did so in Iowa; however, 1,727 (24.0 percent) left Iowa to continue their education.

FIGURE 7. STATUS OF GRADUATES FIRST YEAR AFTER AWARD, AY 2017 TO AY 2021



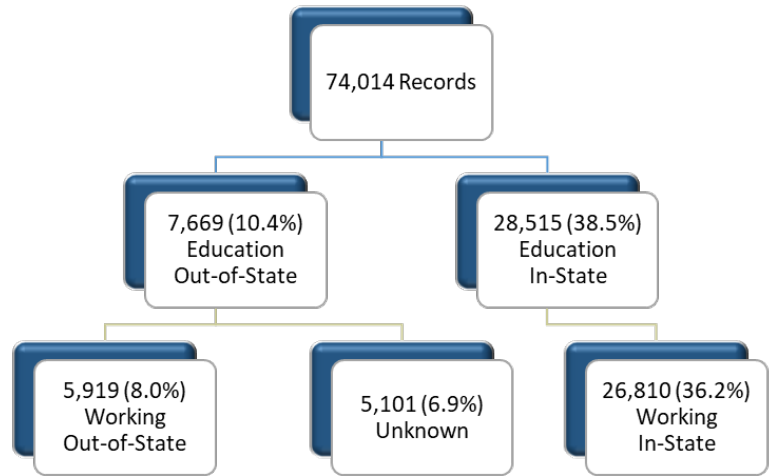
Retention and Migration

Retaining community college graduates is important to the Iowa economy, and the vast majority of Iowa community college graduates remain in-state after completing their programs (80.8 percent*), whether that be while continuing their education or becoming employed. Nearly half (48.9 percent) continued their education following completion of a community college award, with most students remaining in Iowa (38.5 percent). Of those students who continued their education at an institution outside Iowa, most enrolled in one of Iowa’s contiguous states, such as Nebraska (1,410), Illinois (1,039) or Minnesota (608). For those who ventured farther away, the highest concentrations enrolled at institutions in Utah (417), Arizona (262) or Texas (215) within one year after graduation. Students who were neither found in further education nor employment

were labeled as “unknown” for this report. When looking at migration patterns, whether it be students who transferred to an out-of-state college, or sought employment outside of Iowa, percentages were relatively small (10.4 percent and 8.0 percent, respectively). Each of these groups is studied in more detail in the subsequent sections of this report.

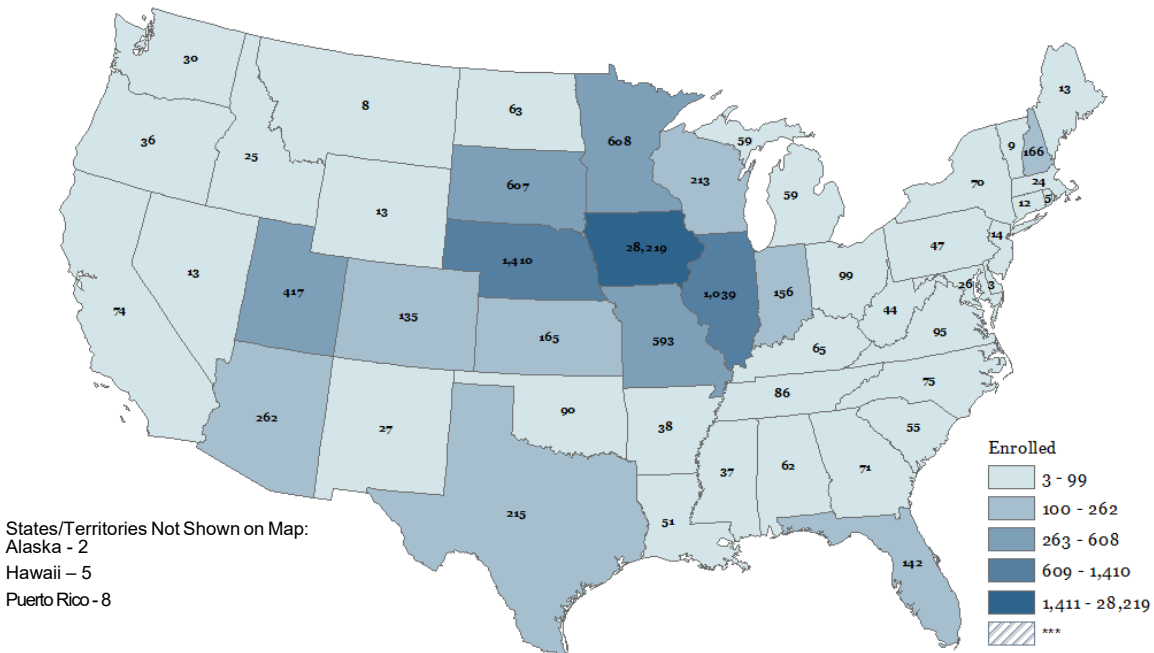
Figure 9 represents aggregate numbers by state for graduates who continued their education either in- or out-of-state one year after their award (AY 2017 to AY 2021). If students were enrolled in different colleges at the same time, the college with the most recent attendance date within that year was used.

FIGURE 8.



*Percent was calculated using the 5-year cumulative totals in Figure 8, and excluding “unknown”

FIGURE 9. COHORTS EDUCATIONAL MIGRATION, FIRST YEAR FOLLOWING AWARD, AY 2017 TO AY 2021



Further Education Cohort

Table 12 illustrates the distribution of these graduates based on their transfer institution types. Using the NSC database, the Department was able to identify Iowa community college graduates who transferred to other postsecondary institutions the first year after graduation.

Using the AY 2021 cohort as an example, 5,478 students continued their education at an in-state institution the academic year following graduation, whereas, 1,727 students continued their education at an out-of-state institution. Of those who continued their education in-state, 35.6 percent enrolled at a two-year public college, and 29.0 percent transferred to an in-state four-year public college.

TABLE 12. FURTHER EDUCATION FIRST YEAR FOLLOWING AWARD, AY 2017 TO AY 2021

Year Following Community College Award	Characteristics of Institution		Continued Education In-State		Continued Education Out-of-State	
	2-Year	4-Year	Number	Percent	Number	Percent
2017 Cohort						
2018	2-Year	Private	0	0.0%	0	0.0%
		Public	2,996	39.5%	117	1.5%
	4-Year	Private	985	13.0%	440	5.8%
		Public	2,221	29.3%	820	10.8%
Total			6,202	81.8%	1,377	18.2%
2018 Cohort						
2019	2-Year	Private	0	0.0%	3	0.0%
		Public	2,692	39.5%	72	1.1%
	4-Year	Private	915	13.4%	441	6.5%
		Public	1,890	27.7%	807	11.8%
Total			5,497	80.6%	1,323	19.4%
2019 Cohort						
2020	2-Year	Private	0	0.0%	1	0.0%
		Public	2,775	38.1%	93	1.3%
	4-Year	Private	866	11.9%	565	7.8%
		Public	2,095	28.8%	887	12.2%
Total			5,736	78.8%	1,546	21.2%
2020 Cohort						
2021	2-Year	Private	0	0.0%	2	0.0%
		Public	2,442	35.3%	114	1.6%
	4-Year	Private	857	12.4%	550	7.9%
		Public	2,007	29.0%	952	13.7%
Total			5,306	76.6%	1,618	23.4%
2021 Cohort						
2022	2-Year	Private	0	0.0%	0	0.0%
		Public	2,567	35.6%	102	1.4%
	4-Year	Private	819	11.4%	624	8.7%
		Public	2,092	29.0%	1,001	13.9%
Total			5,478	76.0%	1,727	24.0%

Workforce Cohort

The following sections of this report analyze the annual employment and wage trends of graduates who did not continue their education. Students with previous degrees prior to the AY, and those who received multiple awards within the same AY, were also identified. Previous degrees and multiple awards may play a part in not only employability, but also in higher wages, though further research will be needed to validate this theory.

Both in- and out-of-state employment data were gathered using the UI database and the State Wage Interchange System (SWIS). Out-of-state employment was measured using SWIS. The number of unmatched records may include graduates employed by an employer that does not pay UI tax, or who were unemployed for the reporting period.

Because five years of wage data is available for the AY 2017 cohort, it is used as an example in Table 13 below. This table illustrates the aggregate employment and wages for the AY 2017 cohort in the first five years after graduation.

For example, in employment year 2018 (October 1, 2017 to September 30, 2018), 91.2 percent of those who did not continue their education were employed the year following program completion. In order to compare wages from 2017 to 2022 (most current available), a cost of living adjustment was applied and documented in the Adjusted Median Wage column in Tables 13 and 14 (a detailed explanation is contained in the Employment and Wage Record Methodology section). This adjustment was used to standardize wages in order to determine whether “real” wages increased over the study period.

TABLE 13. FIVE-YEAR EMPLOYMENT AND WAGE TRENDS, AY 2017 COHORT

Year of Employment ¹	% Matched to Employment	Adjusted Median Wages
2018	91.2%	\$39,094
2019	90.2%	\$43,140
2020	89.7%	\$45,172
2021	87.6%	\$48,831
2022	87.2%	\$50,748

Note: These values are taken from the extrapolated tables (estimated values). Wages were adjusted to four quarters.

1. Ex. 2018 defined as October 1, 2017, through September 30, 2018,
2. Percentage calculated of those matching employment in that year.

Table 14 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 \$39,094 for the AY 2017 cohort (2018 wages), to \$42,814 for the AY 2021 cohort (2022 wages), representing a 9.5 percent increase.

TABLE 14. EMPLOYMENT AND WAGES BY COHORT FIRST YEAR FOLLOWING AWARD

Cohort Year	Year of Employment	% Matched to Employment	Adjusted Median Wages	% with Previous Degree	% Earning More than One Award
2017	2018	91.2%	\$39,094	5.9%	14.8%
2018	2019	91.9%	\$40,549	7.3%	13.8%
2019	2020	90.6%	\$39,434	8.1%	12.6%
2020	2021	91.2%	\$41,033	8.6%	11.7%
2021	2022	91.1%	\$42,814	8.9%	14.3%

Employment and Wages by State

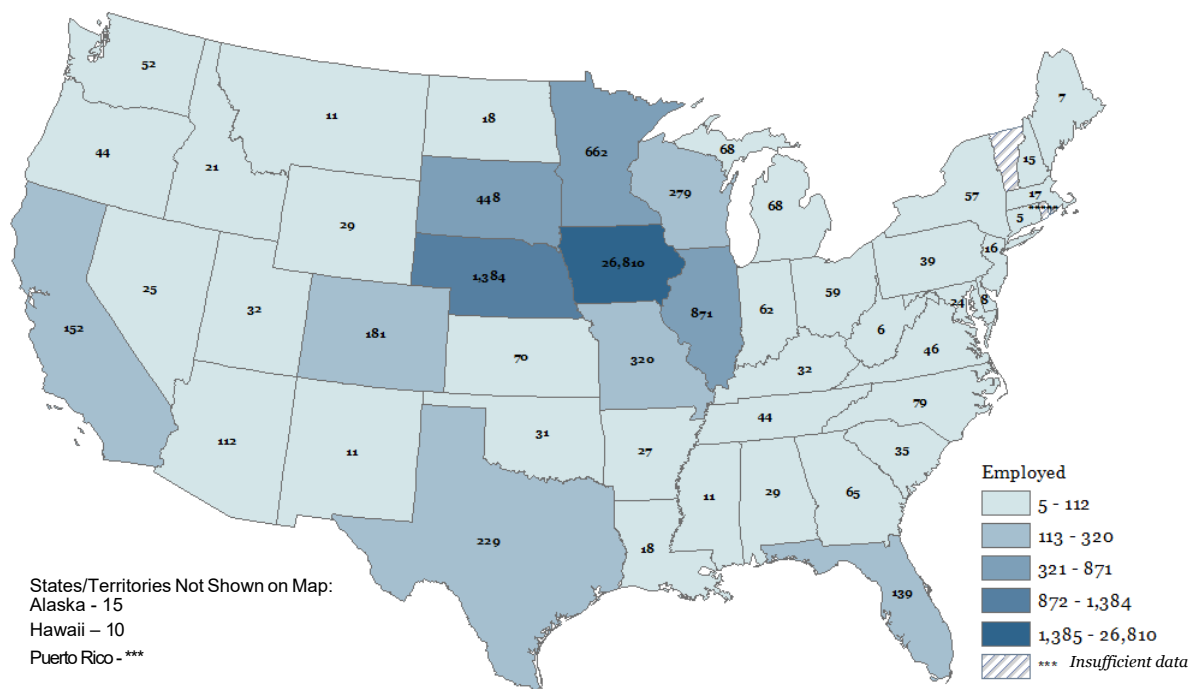
SWIS was used to identify individuals who were employed out-of-state the year following graduation based on primary employment. Though the records do not identify hours worked (i.e., full- or part-time), overtime, or occupation, they do identify the number of graduates working in other states.

Figure 10 illustrates that the majority (81.9 percent) of those who received an award in AY 2021, and who matched to employment data in the fourth quarter following the award (2022), remained in Iowa.

Similar to those who continued their education, most graduates who were employed outside of Iowa were employed in bordering states. The states that account for the most employment in the fourth quarter following award (other than Iowa) were Nebraska (1,384 matched employment), Illinois (871), Minnesota (662), South Dakota (448) and Missouri (320).

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

FIGURE 10. PRIMARY EMPLOYMENT BY STATE FIRST YEAR FOLLOWING AWARD, AY 2017 TO AY 2021 COHORTS



Employment and Wages by Award Type

Tables 15 and 16 reflect the employment and wages, in aggregate, for those in the AY 2021 cohort who were employed in the year following graduation (2022). For example, of the 3,787 AAS graduates who did not continue their education the year after graduation, 93.5 percent matched employment records within that year, and earned an annual median wage of \$48,795 (Table 15). Though the percentage of AAS graduates who matched employment within one year of graduation is among the highest of the award categories listed, most exceeded an 80 percent employment match.

TABLE 15. 2022 EMPLOYMENT AND WAGES BY AWARD TYPE, AY 2021 COHORT

Award Type	Year of Employment ¹	Number in Cohort (not Enrolled)	Matched to Employment		Adjusted Median Wage	Percent with Previous Degree	Percent Earning More than One Award
			#	%			
AA	2022	1,294	1,122	86.7%	\$33,272	3.4%	5.7%
AS	2022	135	120	88.9%	\$35,811	5.0%	4.2%
TM	2022	42	38	90.5%	\$28,154	10.5%	2.6%
APS	2022	21	19	90.5%	\$40,052	5.3%	10.5%
AGS	2022	78	65	83.3%	\$37,219	1.5%	24.6%
AAA	2022	31	30	96.8%	\$28,523	0.0%	0.0%
AAS	2022	3,787	3,541	93.5%	\$48,795	9.8%	20.7%
Diploma (>= 22 cr.)	2022	1,083	1,014	93.6%	\$40,369	7.5%	12.3%
Certificate (>= 22 cr.)	2022	174	160	92.0%	\$47,189	30.6%	0.6%
Cert./Dipl. (< 22 cr.)	2022	704	588	83.5%	\$35,520	12.9%	1.4%

Note: This table uses wage data calculated to four quarters.

In aggregate, Table 16 shows all AY 2021 associate degree recipients had an average 91.6 percent employment match in the first year after graduation. Long-term diploma and certificate recipients had a 93.4 percent employment match, while short-term diploma and certificate recipients had an 83.5 percent employment match. Though the AAS degree graduates had a significantly higher median wage when analyzed separately (Table 15), the data in Table 16 show the associate degree median wages in aggregate were \$2,896 higher than the median wage for long-term certificate/diploma graduates in the first year after graduation.

TABLE 16. 2022 EMPLOYMENT AND WAGES BY AWARD TYPE AGGREGATE, AY 2021 COHORT

Award Type	Year of Employment ¹	Number in Cohort (not Enrolled)	Matched to Employment		Adjusted Median Wage	Percent with Previous Degree	Percent Earning More than One Award
			#	%			
Certificate/Diploma (< 22 cr.)	2022	704	588	83.5%	\$35,520	12.9%	1.4%
Certificate/Diploma (>= 22 cr.)	2022	1,257	1,174	93.4%	\$41,197	10.6%	10.7%
Associate	2022	5,388	4,935	91.6%	\$44,093	8.0%	16.6%

1. 2022 wages defined as October 1, 2021 through September 30, 2022.

Employment and Wages by Gender

For the AY 2021 there were 7,349 students who had the necessary data elements (name, birthdate and SSN) to utilize for this portion of the report. There were more females (59.2 percent) than males (40.8 percent) who did not continue their education following completion of their award (Figure 11). Notably, the gender distribution by career cluster varied significantly, with a much higher number of females represented in health sciences, business, human services and finance. Males represented a much higher number in the manufacturing, construction, transportation, information technology and agriculture clusters. The gender distribution was very similar in the communications, education, hospitality, public safety and marketing career clusters (see Appendix A for a link to employment data by cluster and gender for more details).

Table 17 provides the employment and wages of AY 2021 award recipients who entered the workforce in the first year after graduation (e.g., did not continue their education) by gender. Female awardees of the cohort matched to employment at a slightly higher rate (91.9 percent) than their male counterparts (90.1 percent). The adjusted median wage of female awardees, however, was lower at \$40,378, compared to \$45,765 for males.

In order to do an 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, race/ethnicity, previous education and industry should be considered.

Overall, 10.7 percent of female awardees who matched employment had obtained a previous degree prior to receiving their award in AY 2021, while only 6.6 percent of male awardees had previously earned degrees.

However, twice the percentage of male awardees in this cohort earned multiple awards, compared to female awardees (20.1 percent and 9.7 percent, respectively).

FIGURE 11. PERCENT BY GENDER NOT ENROLLED, AY 2021 COHORT

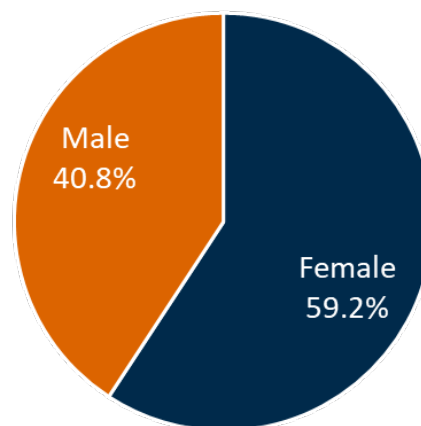


TABLE 17. 2022 EMPLOYMENT AND WAGES BY GENDER FIRST YEAR FOLLOWING AWARD, AY 2021 COHORT

Gender	Year of Employment ¹	Number in Cohort	Number in Cohort (not Enrolled)	Matched to Employment		Adjusted Median Wage	Percent with Previous Degree	Percent Earning More than One Award
				#	%			
Female	2022	8,443	4,085	3,755	91.9%	\$40,378	10.7%	9.7%
Male	2022	5,810	3,264	2,942	90.1%	\$45,765	6.6%	20.1%

1. 2022 wages defined as October 1, 2021 through September 30, 2022.

Employment and Wages by Race/Ethnicity

Of the 7,349 award recipients in the AY 2021 cohort who did not continue their education, 19.4 percent were of a minority racial/ethnic group, 76.1 percent were white/non-Hispanic and 4.5 percent did not report race or ethnicity (Figure 12).

Table 18 provides employment and wage data by race/ethnicity of the AY 2021 award recipients who entered the workforce in the first year after graduation (e.g., did not continue their education). Racial/ethnic minority graduates matched employment at a lower rate (88.7 percent) than white/non-Hispanic graduates (91.8 percent), and their adjusted median wage was also lower than that of white/non-Hispanic graduates (\$40,397 and \$43,145, respectively).

Similar to the gender wage gap, in order to do a thorough analysis of the racial/ethnic 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, race/ethnicity, previous education and industry should be considered.

FIGURE 12. PERCENT OF AWARDS BY RACE/ETHNICITY, AY 2021 COHORT

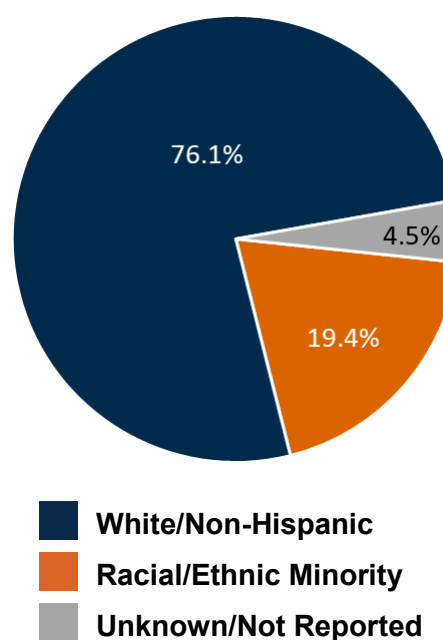


TABLE 18. 2022 EMPLOYMENT AND WAGES BY RACE/ETHNICITY FIRST YEAR FOLLOWING AWARD, AY 2021 COHORT

Race / Ethnicity	Year of Employment ¹	# in Cohort	# in Cohort (not enrolled)	Matched to Employment		Adjusted Median Wage ¹	% with Previous Degree	% Earning More than One Award
				#	%			
Racial/Ethnic Minority	2022	2,765	1,270	1,127	88.7%	\$40,397	9.8%	13.5%
White/Non-Hispanic	2022	10,854	5,788	5,314	91.8%	\$43,145	8.8%	14.5%
Unknown/Not Reported	2022	635	291	256	88.0%	\$40,972	6.6%	13.3%

1. AY 2022 wages defined as October 1, 2021 through September 30, 2022.

Employment and Wages by Industry Sector

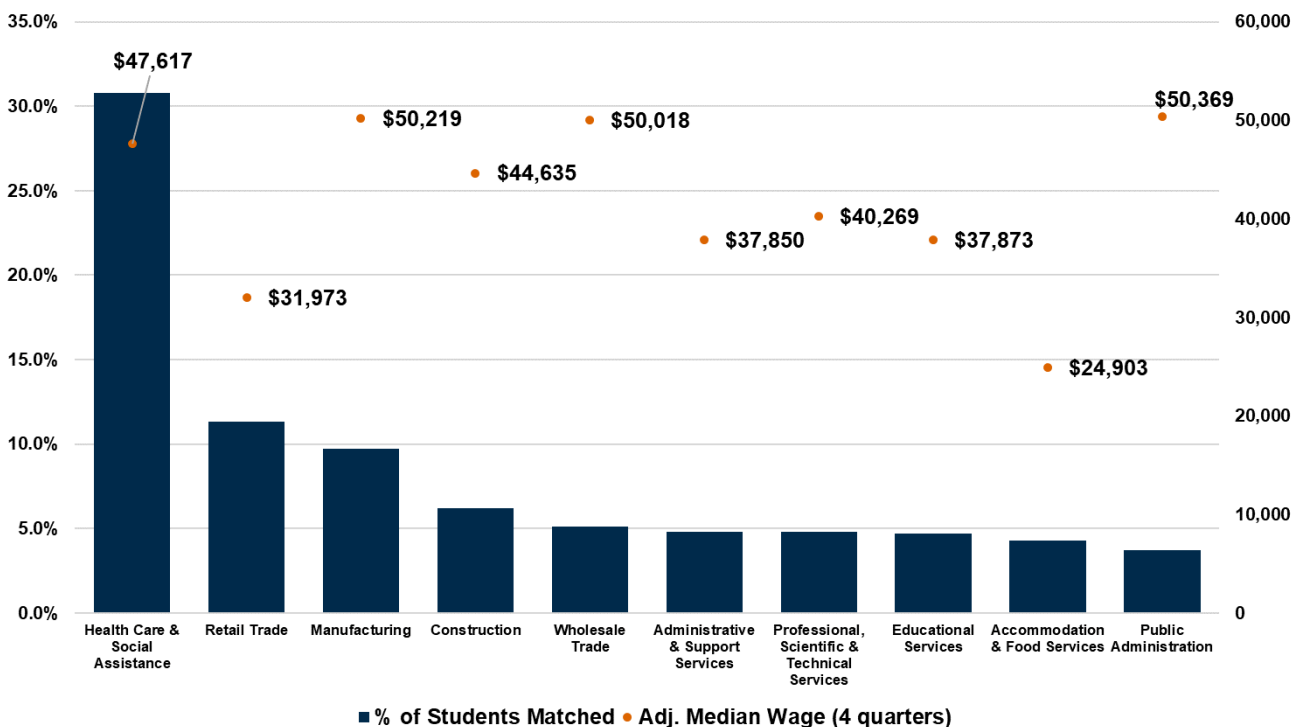
Figure 13 shows the employment and median wages by industry sector for the AY 2021 cohort in the first year after award completion (2022). The industry sectors are based on the North American Industry Classification System (NAICS) code included in the Iowa UI and SWIS wage data. The bars represent the percentage of the cohort that matched employment records, and the dots represent the 2022 median annual wage.

Industry sectors are defined by the type of business an employer engages in, not the occupation of an employee (defined by the day-to-day tasks the employee performs). As an example, a person who received a 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.

Figure 13 also illustrates that employers in the health care and social assistance industry sector employ more than twice the number of AY 2021 Iowa community college graduates (30.8 percent) followed by retail trade (11.3 percent). The next largest industry sectors, by employment, are manufacturing (9.7 percent) and construction (6.2 percent), with the remaining sectors accounting for less than six percent each. A complete list of the employment by industry for all cohorts by college, including all years (AY 2017 to AY 2021), can be found by accessing the link in Appendix A.

Among the industry sectors employing 250 or more of the AY 2021 graduates (Figure 13), the highest adjusted median wages in the year after award were in the industries of public administration (\$50,369), manufacturing (\$50,219), wholesale trade (\$50,018), and healthcare and social assistance (\$47,617). However, it is essential to note that wages vary widely depending on the type of program the graduates completed and jobs obtained within the industry.

FIGURE 13. 2022 MEDIAN WAGES BY INDUSTRY, FIRST YEAR FOLLOWING AWARD, AY 2021 COHORT (TOP TEN INDUSTRIES BY EMPLOYMENT)



Employment and Wages by Award Type and Industry

Table 19 shows the employment and median wages for the top three industry sectors who employ students in the AY 2021 cohort, 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 by accessing the link in Appendix A.

As illustrated below, wages vary substantially within the same industry sector across award types. For instance, the median annual wage for AA recipients employed in the health care and social assistance industry sector is \$32,978, compared to \$57,304 for those with AAS degrees in the same industry. However, as noted on the previous page, wage levels vary widely by program and occupations within industry sectors.

**TABLE 19. 2022 INDUSTRY MEDIAN WAGES
BY AWARD TYPE (TOP THREE), AY 2021 COHORT**

Award Type	Year of Employment ¹	Industry Sector of Employment	Matched to Employment		Adjusted Median Wage
			#	%	
AA	2022	Retail Trade	236	21.0%	\$28,068
AA	2022	Health Care & Social Assistance	178	15.9%	\$32,978
AA	2022	Accommodation & Food Services	88	7.8%	\$20,712
AS	2022	Health Care & Social Assistance	25	20.8%	\$35,566
AS	2022	Retail Trade	17	14.2%	\$30,540
AS	2022	Manufacturing	12	10.0%	\$38,074
AGS	2022	Health Care & Social Assistance	14	21.5%	\$37,515
AGS	2022	Retail Trade	10	15.4%	\$26,063
AGS	2022	Educational Services	7	10.8%	\$29,098
AAA	2022	Health Care & Social Assistance	5	16.7%	\$38,996
AAA	2022	Accommodation & Food Services	3	10.0%	\$34,337
AAS	2022	Health Care & Social Assistance	1,258	35.5%	\$57,304
AAS	2022	Manufacturing	337	9.5%	\$53,096
AAS	2022	Retail Trade	309	8.7%	\$36,629
Diploma (>= 22 cr.)	2022	Health Care & Social Assistance	337	33.2%	\$38,348
Diploma (>= 22 cr.)	2022	Construction	153	15.1%	\$43,085
Diploma (>= 22 cr.)	2022	Manufacturing	137	13.5%	\$49,428
Certificate (>= 22 cr.)	2022	Health Care & Social Assistance	30	18.8%	\$47,002
Certificate (>= 22 cr.)	2022	Manufacturing	20	12.5%	\$51,022
Certificate (>= 22 cr.)	2022	Public Administration	20	12.5%	\$61,992
Cert./Dipl. (< 22 cr.)	2022	Health Care & Social Assistance	208	35.4%	\$32,248
Cert./Dipl. (< 22 cr.)	2022	Retail Trade	64	10.9%	\$19,713
Cert./Dipl. (< 22 cr.)	2022	Manufacturing	54	9.2%	\$46,715

Employment and Wages by CIP

When analyzing wage and employment data, it is important to note the restrictions and limitations of the Iowa and SWIS 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 represent 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-time 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.

The programs with the most graduates not continuing their education in the first year after award are shown in Figures 14 to 16, while data for all other programs can be found by accessing the link found in Appendix A.

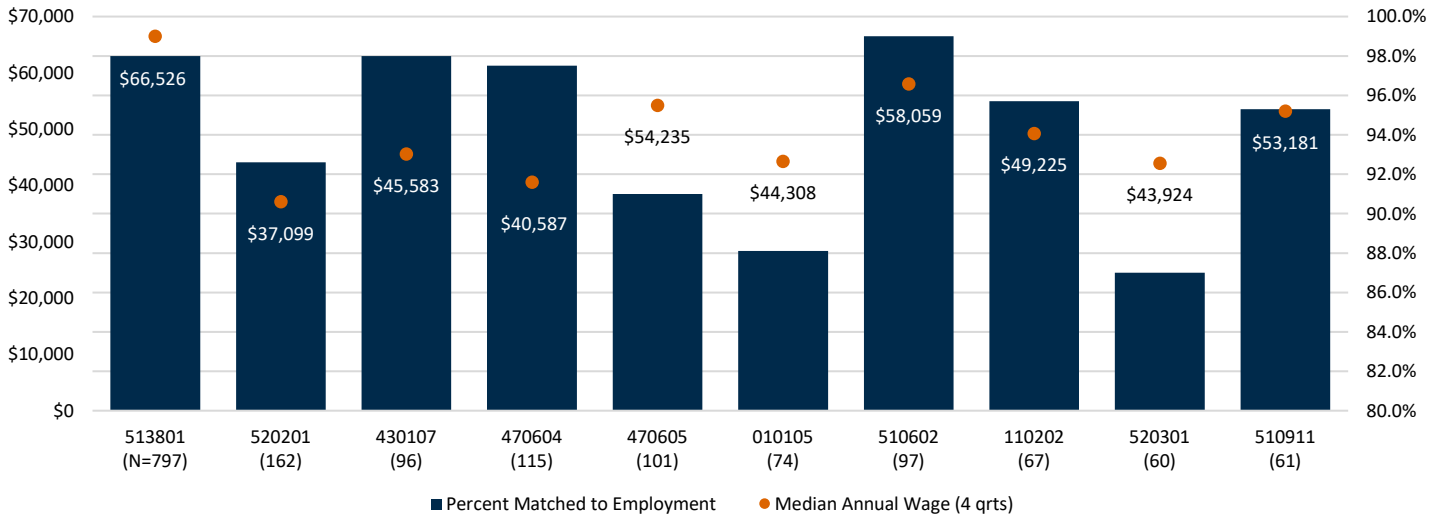
Using the AY 2021 cohort of students who did not continue their education in the year following their graduation, recipients were matched to Iowa UI and SWIS data to determine if they obtained employment within the first year after receiving their award. Figure 14 illustrates the data for those graduates who earned an AAS by CIP code. For example, 98.0 percent of students who received an AAS in the registered nursing program (CIP 513801), and did not continue their education, matched employment and earned a median annual wage of \$66,526 in 2022; while 97.5 percent of those in the automobile/automotive mechanics technology/ technician AAS program (CIP 470604) were matched to employment and earned a median annual wage of \$40,587.

Figures 15 and 16 show the AY 2021 cohort outcomes for the largest certificate and diploma programs, grouped by 22 or more credits or less than 22 program credits. Figure 15 illustrates the data for those graduates who earned a certificate or diploma requiring 22 or more credits by CIP code. For example, 91.2 percent of students who received a certificate or diploma in the nursing assistant program (CIP 513902), and who did not continue their education, matched employment and earned a median annual wage of \$27,147 in 2022.

Figure 16 illustrates the data for those graduates who earned a certificate or diploma requiring less than 22 credits by CIP code. For example, 90.7 percent of students who received a certificate or diploma in the welding technology program (CIP 480508), and who did not continue their education, matched employment and earned a median annual wage of \$48,260 in 2022.

Appendix A contains data for other programs not shown here.

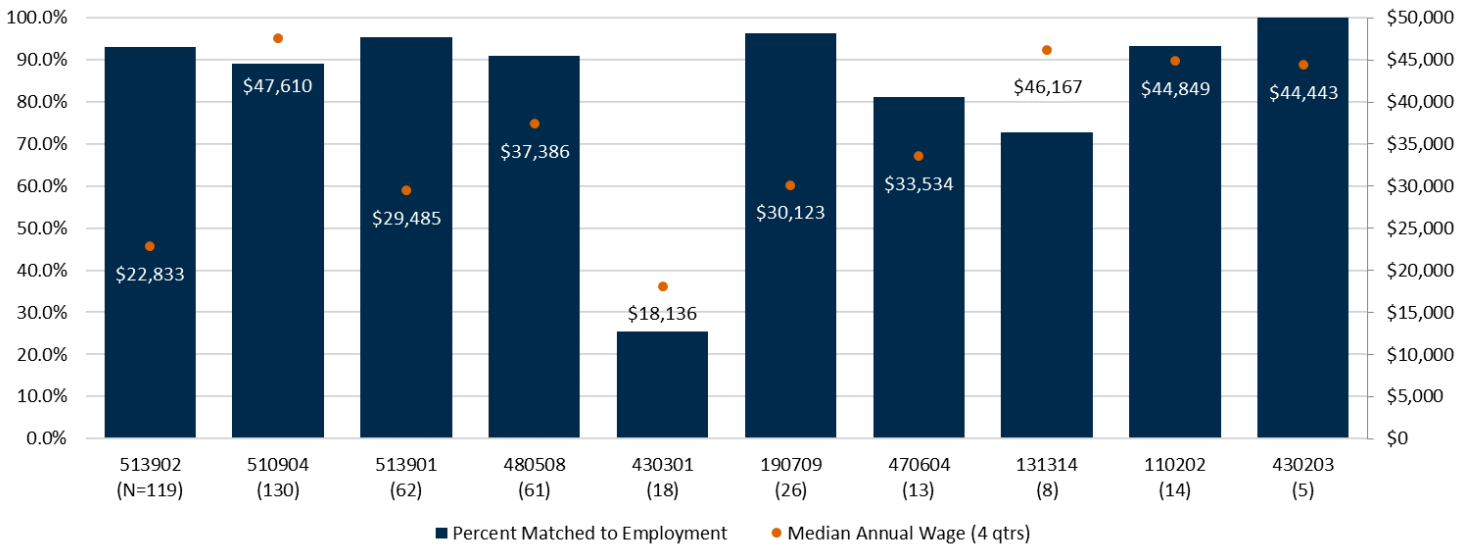
FIGURE 14. 2022 EMPLOYMENT AND WAGES BY IAAS, FIRST YEAR FOLLOWING AWARD, AY 2021 COHORT



Program Legend:

- 513801: Registered Nursing/Registered Nurse
 - 520201: Business Administration and Management, General
 - 430107: Criminal Justice/Police Science
 - 470604: Automobile/Automotive Mechanics Technology
 - 470605: Diesel Mechanics Technology/Technician
 - 010105: Agricultural/Farm Supplies Retailing and Wholesaling
 - 510602: Dental Hygiene/Hygienist
 - 110202: Computer Programming
 - 520301: Accounting
 - 510911: Radiologic Technology
- See Appendix A for other CIP codes not represented above.

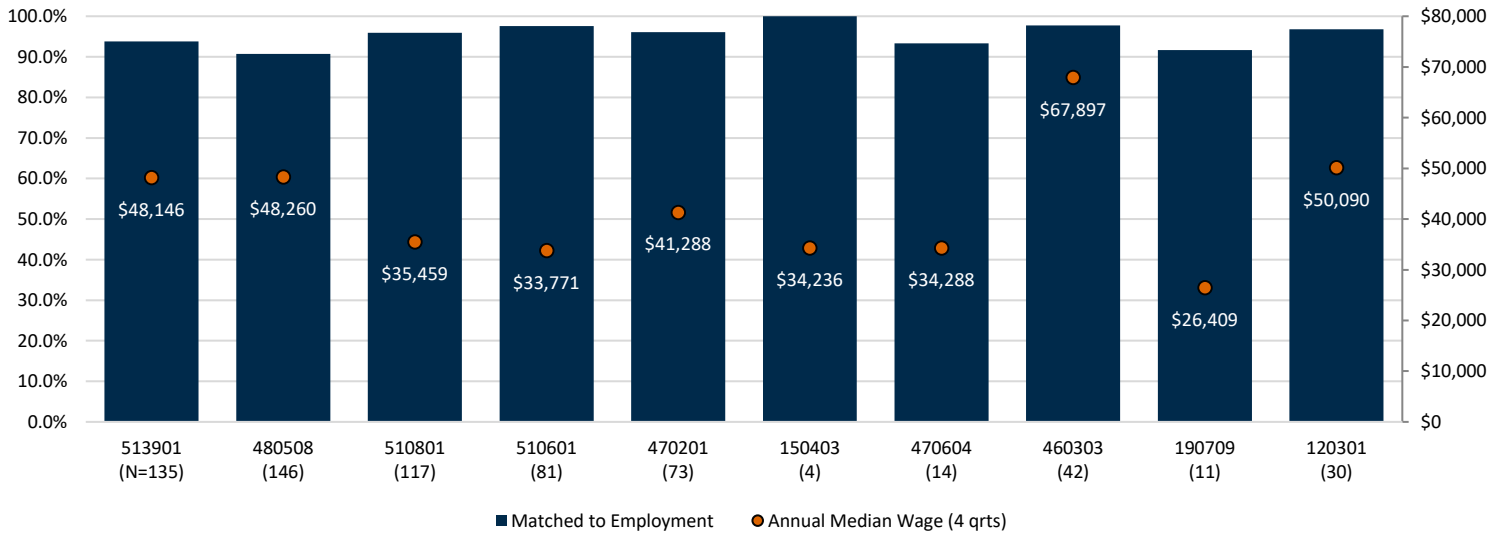
FIGURE 15. 2022 EMPLOYMENT AND WAGES BY CERTIFICATE/DIPLOMA PROGRAM (22 OR MORE CREDITS), FIRST YEAR FOLLOWING AWARD, AY 2021 COHORT



Program Legend:

- 513902: Nursing Assistant/Aide and Patient Care Assistant/Aide
 - 510904: Emergency Medical Technology/Technician
 - 513901: Licensed Practical/Vocational Nurse Training
 - 480508: Welding Technology/Welder
 - 430301: Homeland Security
 - 190709: Child Care Provider/Assistant
 - 470604: Automobile/Automotive Mechanics Technology
 - 131314: Physical Education Teaching/Coaching
 - 110202: Computer Programming, Specific Applications
 - 430203: Fire Science/Firefighting
- See Appendix A for other CIP codes not represented above.

FIGURE 16. 2022 EMPLOYMENT AND WAGES BY CERTIFICATE/DIPLOMA PROGRAM (LESS THAN 22 CREDITS), FIRST YEAR FOLLOWING AWARD, AY 2021 COHORT



Program Legend:

513901: Licensed Practical Nursing
 480508: Welding Technology
 510801: Medical Assisting
 510601: Dental Assisting/Assistant
 470201: HVAC
 150403: Electromechanical Tech

470604: Automotive Mechanic Tech
 460303: Lineworker
 190709: Child Care Provider/Assistant
 120301: Mortuary Science

See Appendix A for other CIP codes not represented above.

Career Clusters

CTE in Iowa consists of educational programs offering courses designed to prepare individuals for immediate employment in current or emerging occupations. These programs consist of competency-based, applied learning opportunities that contribute 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 can be presented as a part of 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, sales, research, merchandising, marketing and communications.

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 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 each cluster represents multiple industries and a variety of occupations.

Table 20 illustrates the number of awards earned by Iowa community college students by career cluster from AY 2017 to AY 2021. The list also includes awards earned by students in the college parallel/liberal arts (AA and AS) programs. Although some of these AA and AS 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 CTE programs.

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

Note: Only 15 of the 16 career clusters are listed in Figures and Tables due to insufficient data for the Government and Public Administration career cluster.

TABLE 20. AWARDS BY CAREER CLUSTER, AY 2017 - AY 2021

Cluster Name	2017 Awards	2018 Awards	2019 Awards	2020 Awards	2021 Awards	Total Awards	Increase/Decrease AY 2017 to AY 2021
College Parallel/Liberal Arts	5,448	5,274	5,328	5,052	5,041	26,143	-407
Agriculture, Food and Natural Resource	674	553	545	571	538	2,881	-136
Architecture and Construction	609	625	582	547	610	2,973	1
Arts, Audio/Video Technology and Communications	340	291	290	253	257	1,431	-83
Business, Management and Administration	477	395	433	392	478	2,175	1
Education and Training	83	57	102	79	135	456	52
Finance	202	208	246	223	206	1,085	4
Health Science	4,259	3,960	4,060	3,796	4,334	20,409	75
Hospitality and Tourism	232	206	222	156	193	1,009	-39
Human Service	343	322	314	279	288	1,546	-55
Information Technology	510	535	493	481	488	2,507	-22
Law, Public Safety, Corrections and Security	274	301	448	351	725	2,099	451
Manufacturing Career	929	960	966	827	957	4,639	28
Marketing Sales and Service	91	98	91	69	83	432	-8
Science, Technology, Engineering and Mathematics	89	81	70	85	147	472	58
Transportation, Distribution, and Logistics	815	693	654	566	551	3,279	-264
Total	15,375	14,559	14,844	13,727	15,031	73,536	-344

Employment and Education by Career Cluster

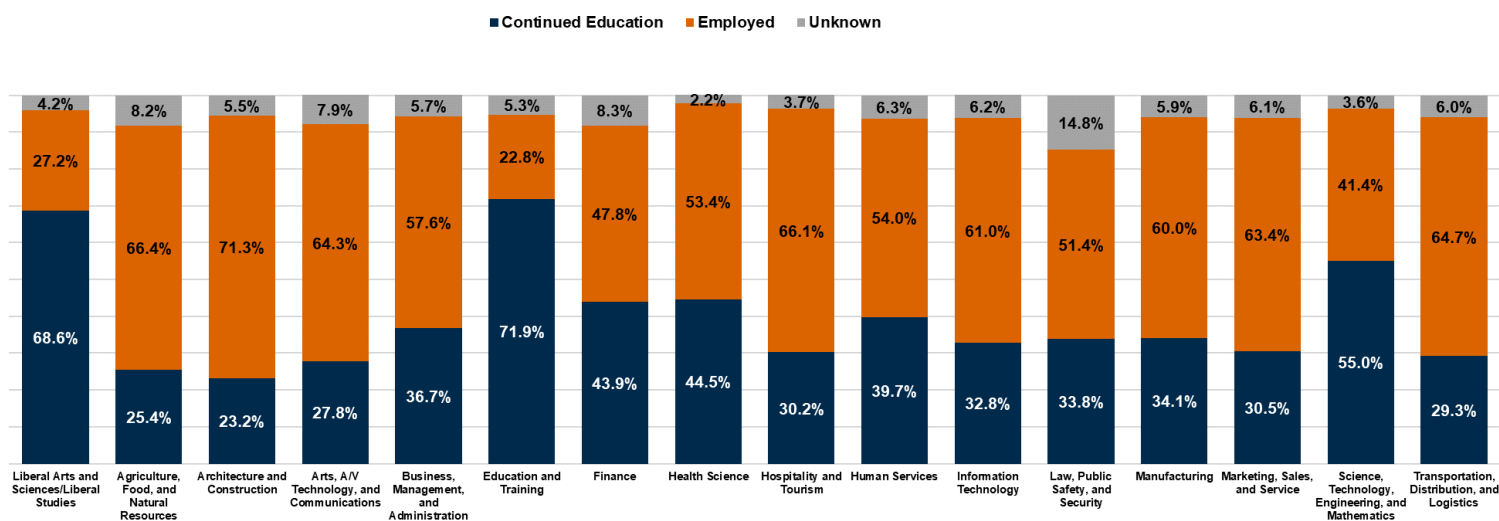
By analyzing and charting each career cluster based on the percentage of students who continued their education versus those who became employed, it is evident which clusters are targeted toward direct employment.

Figure 17 illustrates that within the first year following award completion, 53.4 percent of health science graduates became employed, 44.5 percent continued their education and a small percentage of completers (8.3 percent) could not be found in either the NSC or the UI wage records. These award completers are denoted as “Unknown” in Figure 17.

In contrast, the liberal arts and sciences cluster, which is designed for transfer to a four-year institution, had one of the highest rates of graduates continuing their education (68.6 percent). Naturally, this is accompanied by a lower rate of graduates entering employment after graduation (27.2 percent).

Similar data were analyzed for other cohorts by community college, and are available by accessing the link found in Appendix A.

FIGURE 17. ENROLLMENT AND EMPLOYMENT STATUS BY CAREER CLUSTER, FIRST YEAR FOLLOWING AWARD (2022), AY 2021 COHORT



Transition into the Workforce

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

Figure 18 provides a visualization used to relate these two variables. Circos software, which uses polar coordinate mapping to illustrate data relationships, maps the career clusters to the primary industry of employment for each graduate in this study.

The colored bars on the left side of the circle represent 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 19 shows the relationship between career clusters and industry sectors for AY 2017 through AY 2021 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. Bars/ribbons representing data that were suppressed due to low numbers were removed from Figure 19, resulting in fewer colored and gray bars.

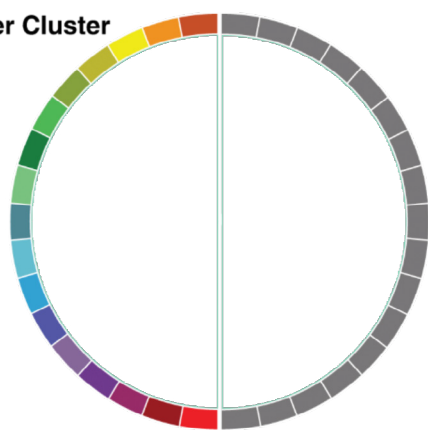
It is important to note the data show the industry sectors in which completers are primarily employed, not their actual occupations. For instance, health science graduates may be pharmaceutical technicians employed by a pharmacy at a large retail store. While they are doing work related to the health care field, they are reported as employed in the retail trade sector. This distinction between occupation and industry sector is worthwhile to note when analyzing the flow from education to industry as illustrated in Figures 19 and 20 on the following pages.

FIGURE 18. CIRCOS VISUALIZATIONS

Career Cluster

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

Career Cluster



Industrial Sector

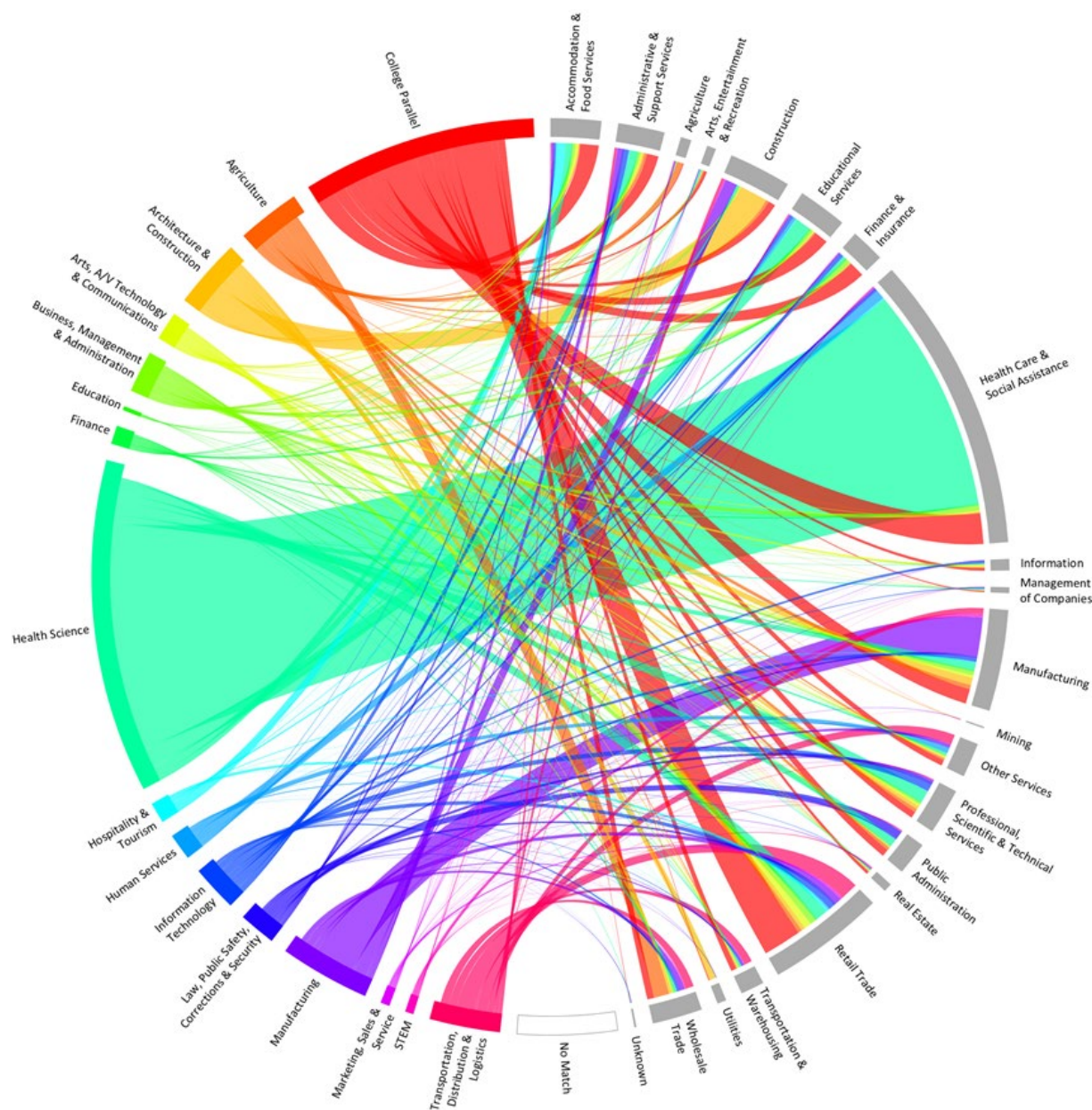
Industry Cluster

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

Cluster to Industry

As previously mentioned, students who chose the college parallel/liberal arts program of study and the health science career cluster represent the largest portion of AY 2017 to AY 2021 graduates, which explains why the red (top left) and green (mid left) sectors cover the most area in Figure 19. 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.

FIGURE 19. CLUSTER TO INDUSTRY MAPPING FOR AY 2017 TO AY 2021 COMMUNITY COLLEGE GRADUATES (2022 EMPLOYMENT)



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 UI wage database or SWIS network of state UI wage databases (see Appendix A for a description and the limitations of UI wages).
- Both the actual wage earned (“Unadjusted Median Wage”) and the wage adjusted for inflation (“Adjusted Median Wage”) are included in all tables. Wages were adjusted for inflation to AY 2020 (October 2019 - September 2020) levels (CPI-u = 266.6158) 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 CPIbase is the CPI value of the base time period (AY 2018), 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. 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 the UI wage database (i.e. the median wages only include those who had wages covered by UI tax during that year).
- All wage estimates in the report include ALL wages in the UI wage database for that person in that year. Each individual is associated with just one industry sector and state in each year, and that assignment is based on the industry sector/state of the employer they earned the most wages with in that year. So, for example, if Lincoln earned \$20,000 in the manufacturing industry sector and \$8,000 in the retail trade industry sector in 2018, Lincoln would be included in the overall employment and wages table with a gross wage of \$28,000. In the employment and wages by industry sector table, he would be included under the manufacturing industry sector with a gross wage of \$28,000 (he would not be counted in retail trade, but the wages he earned in that sector would still be counted).
- Median wages are used in this report, rather than average wages, to mitigate the effect of outliers. Wage distributions are typically right-skewed, and so the median is a better measure of center than the mean, which is pulled in the direction of the skew (and is more affected by outliers, particularly with small sample sizes).
- To protect individual identities, some cells in this report are suppressed due to small cell size 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

- Institute of Educational Sciences, National Center for Education Statistics, Classification of Instructional Programs. Retrieved from <http://nces.ed.gov/>.
- Krzywinski, M. I., Schein, J.E., Birol, I., Connors, J., Gascoyne, R., Horsman, D., Jones, S.J., and Marra, M.A. (2009). Circos: an Information Aesthetic for Comparative Genomics. Retrieved from <http://www.circos.ca/>.

Appendix A

Below is a list of the detailed data tables used for this report. They can be found in the Excel workbook linked below. Within the workbook, there is one spreadsheet containing data for each cohort (AY 2017, AY 2018, AY 2019, AY 2020 and AY 2021), as well as all five combined. The workbook contains statewide data and broken out by each community college. It can be accessed at:

<https://www.educateiowa.gov/iowa-community-college-program-outcomes>.

Methodology

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 - Employment and Wages by Gender

Table 5 - Employment and Wages by Gender by State of Employment

Table 6 - Employment and Wages by Gender by Industry Sector of Employment

Table 7 - Employment and Wages by Gender by Age

Table 8 - Employment and Wages by Age

Table 9 - Employment and Wages by Age by State of Employment

Table 10 - Employment and Wages by Age by Industry Sector of Employment

Table 11 - Employment and Wages by Race/Ethnicity

Table 12 - Employment and Wages by Race/Ethnicity by State of Employment

Table 13 - Employment and Wages by Race/Ethnicity by Industry Sector of Employment

Table 14 - Employment and Wages by Race/Ethnicity by Age

Table 15 - Employment and Wages by Award Type (Aggregated)

Table 16 - Employment and Wages by Award Type (Aggregated) by State of Employment

Table 17 - Employment and Wages by Award Type (Aggregated) by Industry Sector of Employment

Table 18 - Employment and Wages by Award Type

Table 19 - Employment and Wages by Award Type by State of Employment

Table 20 - Employment and Wages by Award Type by Industry Sector of Employment

Table 21 - Employment and Wages by Program by Award Type

Table 22 - Employment and Wages by Program by Award Type by State of Employment

Table 23 - Employment and Wages by Program by Award Type by Industry Sector of Employment

Table 24 - Employment and Wages by Career Cluster

Table 25 - Employment and Wages by Career Cluster by State of Employment

Table 26 - Employment and Wages by Career Cluster by Industry Sector of Employment

Table 27 - Employment and Wages by Career Cluster by Gender

Appendix B - Unemployment Insurance (UI) Records Description and Limitations

