

IOWA COMMUNITY COLLEGES EMPLOYMENT OUTCOMES

Noncredit Career and Technical Education (CTE) Programs

MAY 2019



ACADEMIC YEAR
2016-2017



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

**IOWA DEPARTMENT
OF EDUCATION**



Grimes State Office Building

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 and
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
Lead Consultant, Bureau of
Community Colleges
515-418-8273
paula.nissen2@iowa.gov

Vlad Bassis
Lead Consultant, Bureau of
Community Colleges
515-281-3671
vladimir.bassis@iowa.gov

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**State of Iowa
Department of Education**
Grimes State Office Building
400 E. 14th Street
Des Moines, IA 50319-0146

State Board of Education

Brooke Axiotis, Des Moines
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**Division of Community Colleges
and Workforce Preparation**

Jeremy Varner, Division Administrator

Bureau of Community Colleges

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Paula Nissen, Lead Education Program Consultant
Vlad Bassis, Lead Education Program Consultant

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Iowa Community Colleges Employment Outcomes: Noncredit Career and Technical Education (CTE) Programs

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

Prepared by

**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
Division Administrator
515-281-8260
jeremy.varner@iowa.gov

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Chief, Bureau of
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515-281-0319
barbara.burrows@iowa.gov

Paula Nissen
Consultant, Bureau of
Community Colleges
515-418-8273
paula.nissen2@iowa.gov

Vladimir Bassis
Consultant, Bureau of
Community Colleges
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

Ryan West
Deputy Director
515-725-3896
ryan.west@iwd.iowa.gov

Ryan Murphy
Chief, Labor Market Information Division
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



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Letter from the Director

Dear Education Stakeholders,

One of the critical functions of the Iowa Department of Education is to provide and interpret educational data. We do this to support accountability, transparency, and the ongoing improvement of our educational institutions. Staff in the Division of Community Colleges and Workforce Preparation continue to refine and improve the methods in which we collect, analyze, and report data to ensure that it is both meaningful and easily understood. We trust the reader will find that to be the case in this, the second edition of *Iowa's Community Colleges: Noncredit Career and Technical Education (CTE) Employment Outcomes Report*.



The Department has published numerous education outcomes reports for credit-bearing CTE programs, but we continue to break new ground nationally with this study of noncredit programs designed to improve Iowa's talent pipeline to meet future employment demands. These programs often lead to state licensure, industry certification, or further postsecondary training in related credit programs. In all such cases, they help Iowa achieve Governor Kim Reynolds' Future Ready Iowa goal of having 70 percent of Iowans in the workforce with postsecondary education or training by 2025.

In this report, you will find information about noncredit CTE program enrollment, completion, continuation into further education and training, employment, wages, and in- and out-of-state migration. It also provides a mapping from each of the 16 CTE career clusters to the industry of employment for those students enrolled in noncredit training programs in Academic Year (AY) 2016-2017.

Thank you for taking the time to review this report and for your ongoing support of CTE in Iowa. I look forward to working with you on statewide collaborative efforts to provide quality education and training programs designed to equip Iowans with the skills and knowledge to meet their career and educational goals. Only through the success of our students will Iowa's workforce be ready for future jobs and economic prosperity.

Sincerely,

A handwritten signature in black ink that reads "Ryan M. Wise". The signature is written in a cursive, slightly slanted style.

Ryan M. Wise, Ed.L.D.

Director

Iowa Department of Education



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Programs Benefit Individuals, Employers, and the State

The noncredit career and technical education (CTE) programs offered by Iowa's 15 community colleges provide targeted pathways that expedite the attainment of marketplace skills that benefit individuals, employers, and the state.

These market-driven programs are highly responsive to regional workforce needs. They provide a starting point for individuals to acquire skills needed for high-demand job opportunities as well as satisfy continuing education units (CEUs) required of certain occupations. These programs also offer continuing education for individuals to stay current in their jobs, meet local employer needs with custom job training designed for workplace preparation, and provide a pathway to further postsecondary education.

Student Demographics

As compared to credit-bearing students, noncredit CTE students at Iowa community colleges tend to be male, older, and more racially diverse.



55.3% of noncredit students were male compared to **56.0%** of credit students.



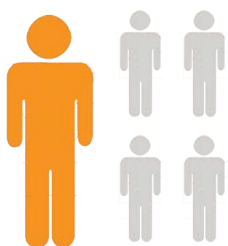
61.3% of noncredit students were 25 years or older compared to **20.4%** of credit students.



22.7% of noncredit students were of a racial or ethnic minority group compared to **21.0%** of credit students.

Continue Education

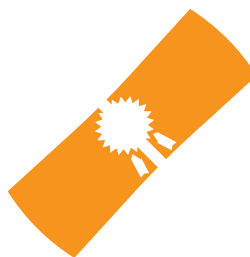
Noncredit CTE programs often lead to enrollment in credit programs, support credit students on their educational journeys, and help degree holders build and enhance current marketplace skills.



21.7% of noncredit students continue into credit-bearing programs.



Of those who continue into credit programs, **83.6%** did so at an Iowa college or university.



10.9% of noncredit students hold previously earned postsecondary degrees.

Top 10 Noncredit Programs

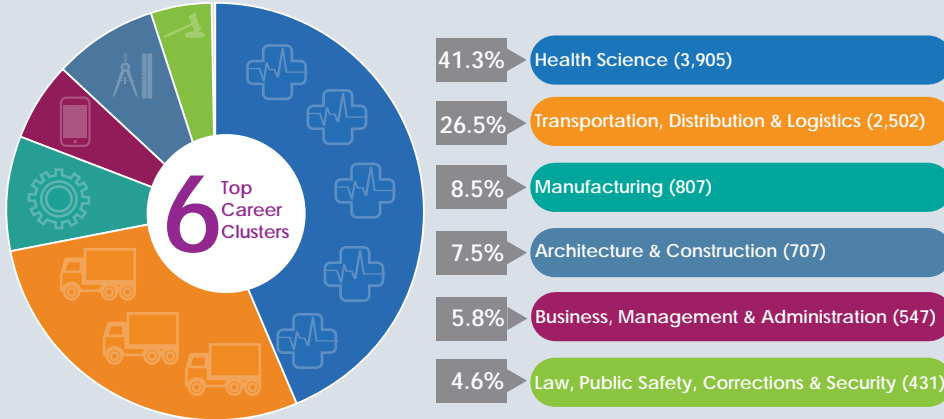


Transportation and Health Care programs comprise the highest noncredit CTE enrollments at Iowa community colleges.

2,226	Nursing Assistant/Aide
2,248	Commercial Vehicle Operator
600	EMT Paramedic
526	Medication Aide
391	Engineering Technology
357	Fire Science
310	Welding Technology
267	Office Technology
159	Industrial Mechanics
137	OSHA Technology

Top Career Clusters

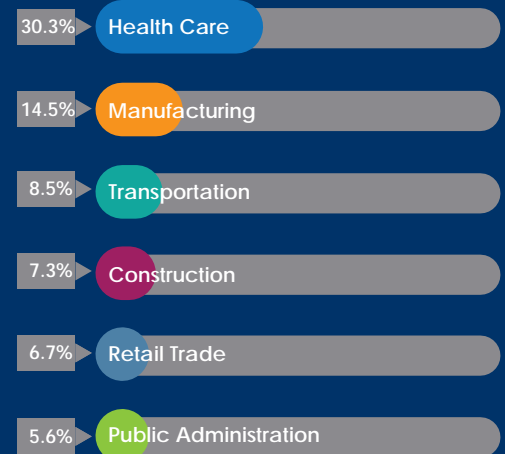
The National Career Clusters Framework organizes CTE programs into 16 career clusters. The top career clusters by noncredit enrollment are health science and transportation, distribution, and logistics.



Top Industries for Employment



Of the noncredit students employed the year following program exit, over 70 percent work in the following top six industries:

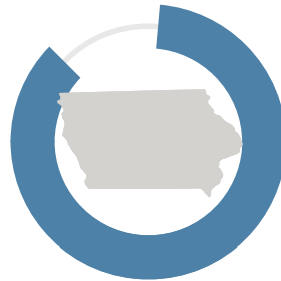


Employment

The majority of students in noncredit CTE programs stay in Iowa and are employed the first year following exit from their programs.



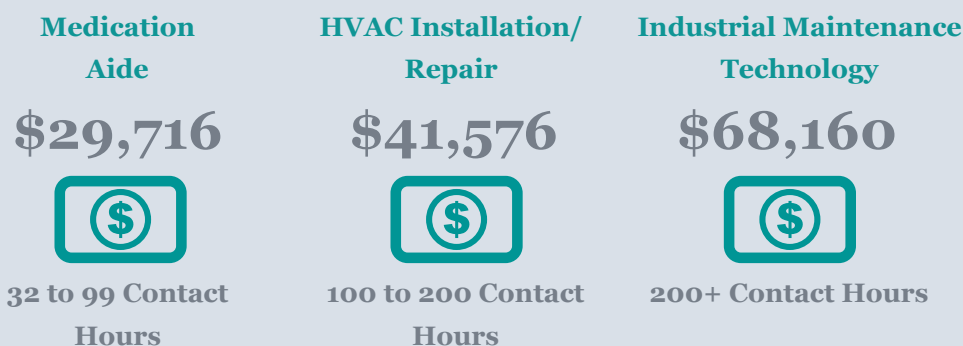
91.0% of noncredit students were employed in the first year following exit from their programs.



83.3% of noncredit students were employed in the state of Iowa.

Earnings

Earnings in the first year following program completion vary based on a variety of factors, including the number of contact hours required by the program, employer demand, and whether or not the programs were for continuing education credits. The following examples provide median annual wages for in-demand occupations by number of required contact hours.



Read the full report:

Iowa Community Colleges Employment Outcomes: Noncredit Career and Technical Education Programs



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Introduction

Iowa's Community Colleges: Noncredit Career and Technical Education (CTE) Employment Outcomes Report (second edition), is a statewide attempt to analyze data and report on the outcomes of students enrolled in community college noncredit programs and provide institutional data for college administrators and policymakers as they engage in planning and program approval. According to the Community College Research Center (CCRC):

"Substantive information is needed on outcomes to assess fully the contributions of noncredit workforce education to students, employers, and the community...it is crucial to document the value of noncredit workforce education for individuals and to determine which recorded outcomes have the most value for individuals in different occupations, industries, and labor markets,"[1] (pg. 4, CCRC, 2008).

In this report, employment and wages are analyzed to illustrate the important impact that the noncredit education and training provided by Iowa's community colleges have on the state's economy. Following students on the individual level is the preferred method of reporting education outcomes by program. Confidentiality laws, however, restrict the ability to link individual student records to employment and wages for most researchers. In addition, educational records and employment records are held in two different state agencies, the Iowa Department of Education (Department) and the Iowa Workforce Development (IWD).

The Department and IWD have overcome this hurdle by forming a partnership dedicated to evaluating and reporting education outcomes (i.e., continued education, employment, and wages) for community college credit certificate, diploma, and associate degree awards, as well as noncredit programs through strict data sharing agreements and confidentiality agreements.

[1] Van Noy, M., Jacobs, J., Korey, S., Bailey, T. & Hughes, K. L. (2008, March). *The Landscape of Noncredit Workforce Education: State Policies and Community College Practices*, CCRC Brief Number 38. NY, NY: Community College Research Center.

NONCREDIT CTE PROGRAMS

Noncredit CTE programs offered by Iowa's 15 community colleges are market-driven programs that are highly responsive to regional workforce needs. These programs expedite the attainment of marketplace skills, equipping individuals to enter the labor market and secure gainful employment.



DATA ANALYSIS

Noncredit CTE programs were analyzed separately, by Classification of Instructional Program (CIP), in order to assess the benefits of each. To ensure a uniform approach to research, only programs consisting of 32 or more contact hours were analyzed, which is comparable to two credit hours and is the equivalent of the shortest credit certificate program in Iowa that has proven labor market value.

AGENCY PARTNERSHIP

The Iowa Department of Education and Iowa Workforce Development partnered to evaluate and report education, employment, and wage outcomes for individuals in noncredit CTE community college programs. This partnership has allowed for data sharing through agreements that adhere to all Unemployment Insurance (UI) and the Family Educational Rights and Privacy Act (FERPA) regulations and rules. Research objectives are clearly stated in the agreements and limited staff have access. In addition, staff from both agencies signed confidentiality agreements pertaining to the reporting and use of student records.

Future Ready Iowa

“Future Ready Iowa” is Governor Kim Reynolds’ initiative designed to build Iowa’s talent pipeline for the careers of tomorrow. The initiative was created after Iowa received a National Governors’ Association grant in 2014 to develop strategies to improve the educational and training attainment of its citizens and to align degree and credential programs with employer demand.

Education and training beyond high school have 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 are projected to require at least some postsecondary education or training [2]. Iowa’s economy reflects this national trend and has seen a steady increase in the demand for postsecondary education and training in the industries that form the mainstay of the economy.

To address the demand for a more skilled workforce, Future Ready Iowa set a goal for 70 percent of Iowa’s workforce to have education or training beyond high school by 2025. In 2016, a Future Ready Alliance was formed to develop a strategic plan for meeting this goal. After meeting over the course of a year, the alliance of business, education, and community leaders, released its recommendations in 2017.

In 2018, the Future Ready Iowa Act, which addresses the Alliance’s recommendations, was signed by Governor Reynolds via House File 2458. This act is designed to strengthen Iowa’s talent pipeline by establishing a registered apprenticeship development program, a volunteer mentoring program, summer youth internships, summer postsecondary courses for high school students aligned with high-demand career pathways, an employer innovation fund, and skilled workforce scholarship and grant programs.

[2] Carnevale, A.P., Smith, N., Gulish, A., and Hanson, A.R. (2015). *Iowa: Education and Workforce Trends through 2015*. Washington D.C. Georgetown University Center on Education and the Workforce.

FUTURE READY IOWA GOAL

The goal of Future Ready Iowa is for 70 percent of Iowa’s workforce to have education or training beyond high school by 2025



The Future Ready Iowa initiative:

- » builds Iowa’s talent pipeline to ensure the state has a workforce ready to fill the high-quality, well-paying jobs of today and tomorrow;
- » aligns Iowa’s education, workforce, and economic developmental efforts to overcome skills gaps; and
- » assesses workforce demands and aligns programming to ensure Iowans have the skills necessary to obtain employment in high-demand occupations.



A Collaborative Approach

Future Ready Iowa is not an isolated program, but rather a collaborative approach to highlighting best practices, nurturing high-quality partnerships, and ensuring taxpayer dollars are focused on those areas that will maximize progress toward our shared goal.

Iowa's CTE Programs

A study published by the American Association of Community Colleges (AACC) [3] indicates that the following overarching issues affect community college noncredit workforce education:

1. the extent to which noncredit workforce education and state policies play a role in workforce development, provide disadvantaged groups with access to higher education, and generate revenue for colleges;
2. how colleges organize their noncredit workforce programs to balance the tradeoffs between the desired flexibility of noncredit education and the integration of credit and noncredit programs; and
3. the extent to which noncredit workforce education provides recorded outcomes for students, such as transcripts or industry certifications, and the extent to which outcome data are available.

Iowa community colleges offer both credit-bearing and noncredit CTE programs throughout the state. Programs vary based on the demand for particular skill sets identified through sector boards, employer relationships, and local labor market data. In some portions of the state, noncredit enrollment represents the highest percentage of all CTE enrollment. Figure 1, on the following page, illustrates the percentage of noncredit enrollments (including those less than 32 contact hours) as it relates to total credit and noncredit CTE enrollment by college. For example, the number of total credit and noncredit CTE enrollments during AY 2016-2017, for Kirkwood Community College (KCC), was 7,742 students, and noncredit CTE enrollments represented 15.9 percent of that total



RESEARCH HIGHLIGHT

Noncredit CTE Enrollment

Of the 214,817 noncredit program enrollments at Iowa's community colleges during AY 2016-2017, nearly half (48.0 percent), or 103,013, were in noncredit career and technical education programs.

whereas the noncredit enrollments for North Iowa Area Community College (NIACC) represented 54.7 percent of the total CTE enrollments.

Such high percentages may relate directly to the rural versus urban setting. Des Moines Area Community College (DMACC), located in the Des Moines metropolitan statistical area (MSA), and Kirkwood Community College (KCC), in the Iowa City/Cedar Rapids MSA, have a higher number of CTE enrollments overall, but have fewer noncredit CTE enrollments as a percentage, than the more rural areas of the state served by NIACC and Northeast Iowa Community College (NICC).

In summation, more populated areas of the state may have more educational choices than less populated areas. In less populated areas, where there are fewer choices related to training options, the responsive development of noncredit programs to address the needs of local employers seems to have a greater impact on CTE enrollment.

[3] Van Noy, M., Jacobs, J., Korey, S., Bailey, T. & Hughes, K. L. (2008). *Noncredit Enrollment in Workforce Education: State Policies and Community College Practices*.

**FIGURE 1. PERCENTAGE OF NONCREDIT CTE ENROLLMENT TO TOTAL CTE ENROLLMENT
(TOTAL OF ALL CREDIT AND NONCREDIT AY 2016-2017)**

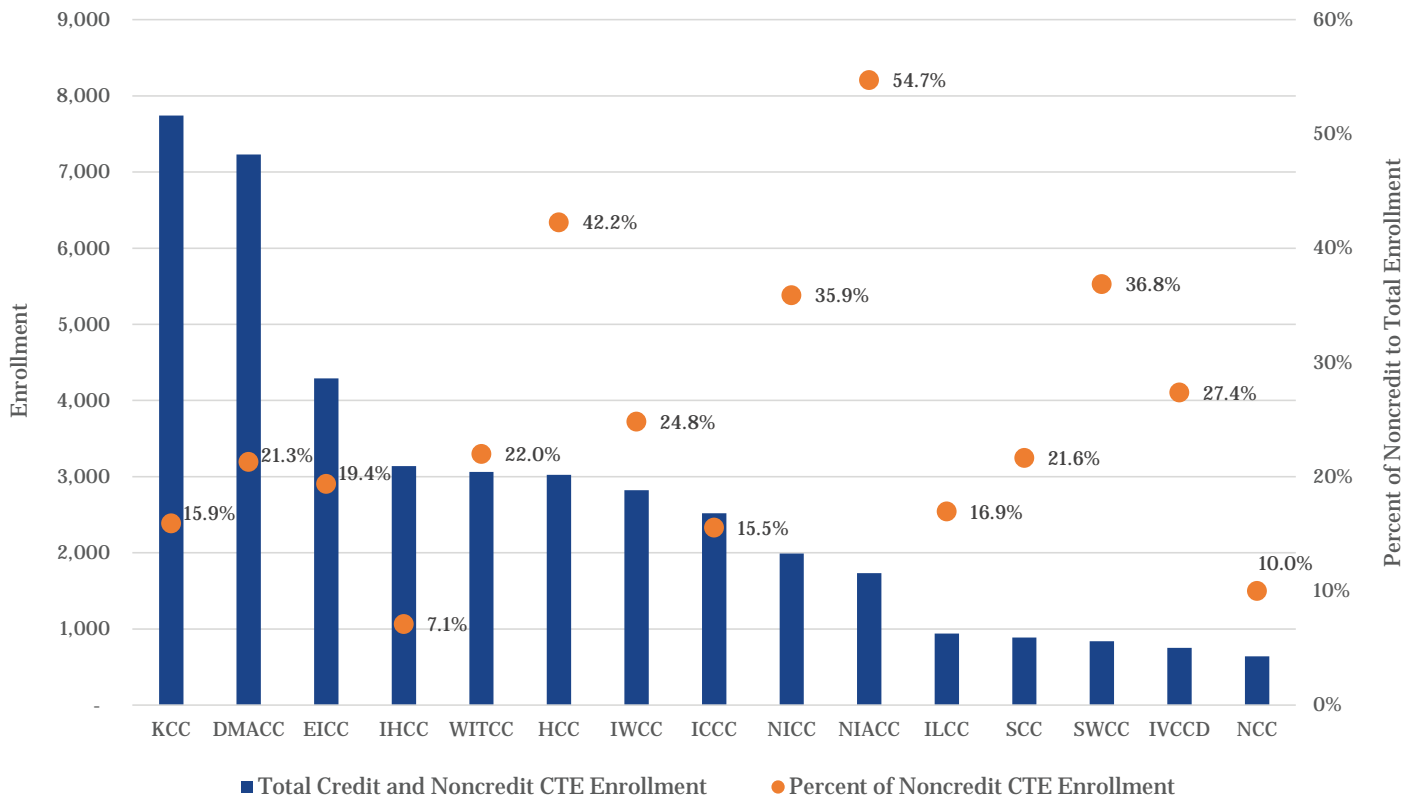


Figure 1 Abbreviation Key:

- KCC - Kirkwood Community College
- DMACC - Des Moines Area Community College
- EICC - Eastern Iowa Community Colleges
- HCC - Hawkeye Community College
- IWCC - Iowa Western Community College
- IHCC - Indian Hills Community College
- WITCC - Western Iowa Tech Community College
- NICC - Northeast Iowa Community College
- ICC - Iowa Central Community College
- NIACC - North Iowa Area Community College
- ILCC - Iowa Lakes Community College
- SCC - Southeastern Community College
- SWCC - Southwestern Community College
- IVCCD - Iowa Valley Community College District
- NCC - Northwest Community College

Overview of the Research

Noncredit coursework/programs are in high demand in Iowa, yielding 214,817 enrollments in the 2016-2017 academic year (AY 2016-2017). Of those, there were 103,013 noncredit career and technical education (CTE) enrollments (48.0 percent).

For data consistency, criteria were established, as in the previous initial study, to define noncredit programs [4]. Thirty-two (32) contact hours was determined to be comparable to two credits, which is the equivalent of the shortest credit certificate program in Iowa with proven labor market value. Additionally, programs were grouped by those containing 32 to 99, 100 to 200, and more than 200 contact hours to further distinguish among programs and their impact on the workforce. All data were extracted from the Management Information System (MIS) based on this criteria.

Compared to credit enrollment, noncredit students are more likely to enroll in multiple programs and less likely to provide personal identification such as social security number (SSN), race/ethnicity, or date of birth. Therefore, prior to following the students into the workforce and further education, students without SSNs and/or birthdates were excluded from the analysis due to matching restrictions. SSNs are needed to match to Unemployment Insurance (UI) wage records and birthdates are needed to match to the National Student Clearinghouse (NSC). This process limited the analysis to 9,409 out of the 9,454 students enrolled in noncredit CTE programs with at least 32 contact hours in AY 2016-2017.

Once extracted, data were sent to the NSC to identify students who enrolled in credit-bearing programs after their noncredit CTE programs at the community

colleges. These individuals may have transferred from one community college to another, continued education at their current locations, or transferred to four-year institutions. 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).

Next, data were sent via secure file transfer to IWD to match to the UI wage records for employment, wage, and industry data by quarter 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

Both the AY 2015-2016 and AY 2016-2017 cohorts were analyzed over three periods of time in this report:

- » Year Prior to Enrollment in Noncredit - The four full quarters prior to the quarter in which the individual started his or her earliest noncredit course.
- » During Enrollment in Noncredit - All quarters, including and between the quarter in which the individual started his or her earliest noncredit course and exited his or her latest noncredit course.
- » Year Following Enrollment in Noncredit - The four full quarters following the quarter in which the individual exited his or her last noncredit course.

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 was strictly followed. Additionally, data-sharing agreements have gone through comprehensive legal review.

[4] Iowa Department of Education, Division of Community Colleges and Workforce Preparation, Methodology and Research Limitations, Data Field Formation, Program of Study (POS).

Demographics of Noncredit CTE Students

This second annual report, in part, contains two cohorts of data to longitudinally study students from AY 2015-2016 forward. Of the 20,005 noncredit CTE students in aggregate studied, 55.3 percent were male (N=10,795) and 44.7 percent were female (N=8,734). Additionally, there was a small number of students who did not indicate gender (N=476).

The students were divided into two age groups, under 25 years of age and 25 years or older. Nearly two-thirds (61.3 percent) of noncredit students were age 25 years or older (N=12,262) and over one-third (38.7 percent) were under the age of 25 (N=7,743).

While race/ethnicity was also identified, a significant number of students (N=7,685) did not report race/ethnicity. Of the 12,320 who did report, 77.3 percent were white/non-Hispanic (N=9,519), and 22.7 percent were minority students (N=2,801).

FIGURE 2. AGE GROUPS BY GENDER

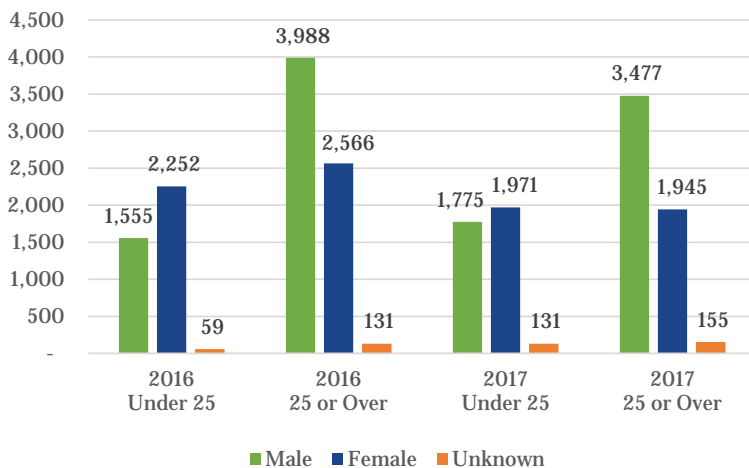
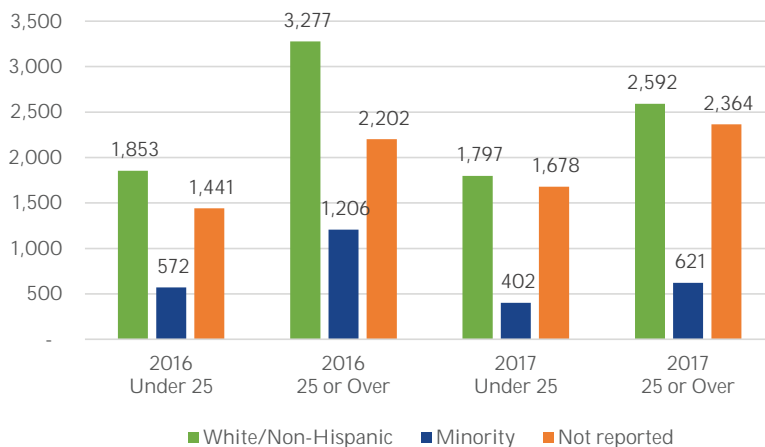


FIGURE 3. AGE GROUPS BY RACE/ETHNICITY



DEMOGRAPHICS

Overall, the majority of community college noncredit CTE students were 25 years of age and older, white/non-Hispanic, and male.



AGE

- » 61.3 percent of students were 25 years of age and older.
- » 65.2 percent of all students studied who self-identified as being a minority were 25 years of age and older.



GENDER

- » 55.3 percent of students who indicated their gender were male.



RACE/ETHNICITY

- » 22.7 percent of students who indicated their race/ethnicity identified themselves as being minorities.

Noncredit CTE Programs by Gender and Age

Classification of Instructional Program (CIP) codes reported through the MIS are six digits in length and used to categorize programs. These codes, for purposes of simplicity, have been aggregated to the first two digits (series), which represents the overarching program title.

Figure 4 illustrates the noncredit CTE programs by two-digit CIP, with the number of students in each, reported by gender and age. The largest program by enrollment encompasses training in the Health Professions and Related (N=8,543), followed by Transportation and Materials Moving (N=4,422).



RESEARCH HIGHLIGHT

High Program Enrollment

Of the 20,005 students (AY 2015-2016 and 2016-2017) who were matched through the National Student Clearinghouse, 42.7 percent were enrolled in health-related noncredit CTE programs, followed by 22.1 percent in noncredit CTE transportation and materials moving programs.

FIGURE 4. NONCREDIT CTE PROGRAMS BY 2-DIGIT CIP, GENDER, & AGE

CIP Description	Under Age 25			Age 25 and Older			Total
	Male	Female	Unknown	Male	Female	Unknown	
Health Professions and Related	730	3,872	149	788	2,864	140	8,543
Transportation and Materials Moving	1,274	81	9	2,677	354	27	4,422
Business Management, Marketing, and Related	97	85	7	680	715	26	1,610
Mechanics and Repairers, General	274	15	1	862	31	12	1,195
Engineering Technologies and Engineering Related	185	24	1	841	122	19	1,192
Precision Production Trades	291	35	9	665	106	18	1,124
Homeland Security, Law Enforcement, Firefighting, and Related Protective Services	311	38	11	521	51	21	953
Construction Trades	100	9	-	182	13	7	311
Family and Consumer Sciences/Human Sciences	7	21	-	27	95	7	157
Computer and Information Sciences and Support Services	16	5	-	88	44	-	153
Education	3	16	2	33	53	1	108
Agriculture	16	3	1	43	9	8	80
Communications Technologies/Technicians and Support Services	8	10	-	19	16	-	53
Personal and Culinary Services	10	4	-	22	1	-	37
Foreign Languages, Literatures, and Linguistics	-	3	-	8	22	-	33
Visual and Performing Arts	7	-	-	8	1	-	16
Communication, Journalism, and Related Programs	1	1	-	1	9	-	12
Parks, Recreation, Leisure, and Fitness Studies	-	1	-	-	5	-	6
Engineering	-	-	-	-	-	-	-
Total	3,330	4,223	190	7,465	4,511	286	20,005

Females dominate enrollment in the health profession programs (78.8 percent), whereas males represent 90.2 percent in the transportation-related CIPs. Interestingly, enrollment quadruples for females entering transportation programs when looking at the age group of those who are 25 years of age or over (N=81 to N=354).

An additional point that is noteworthy is the difference in number of enrollments by program for the younger students versus older students. Higher numbers of students 25 or older enrolled in business management and engineering technology programs, and more students under 25 enrolled in a variety of high-demand occupational training programs, such as precision trades, transportation, mechanics, and law enforcement.



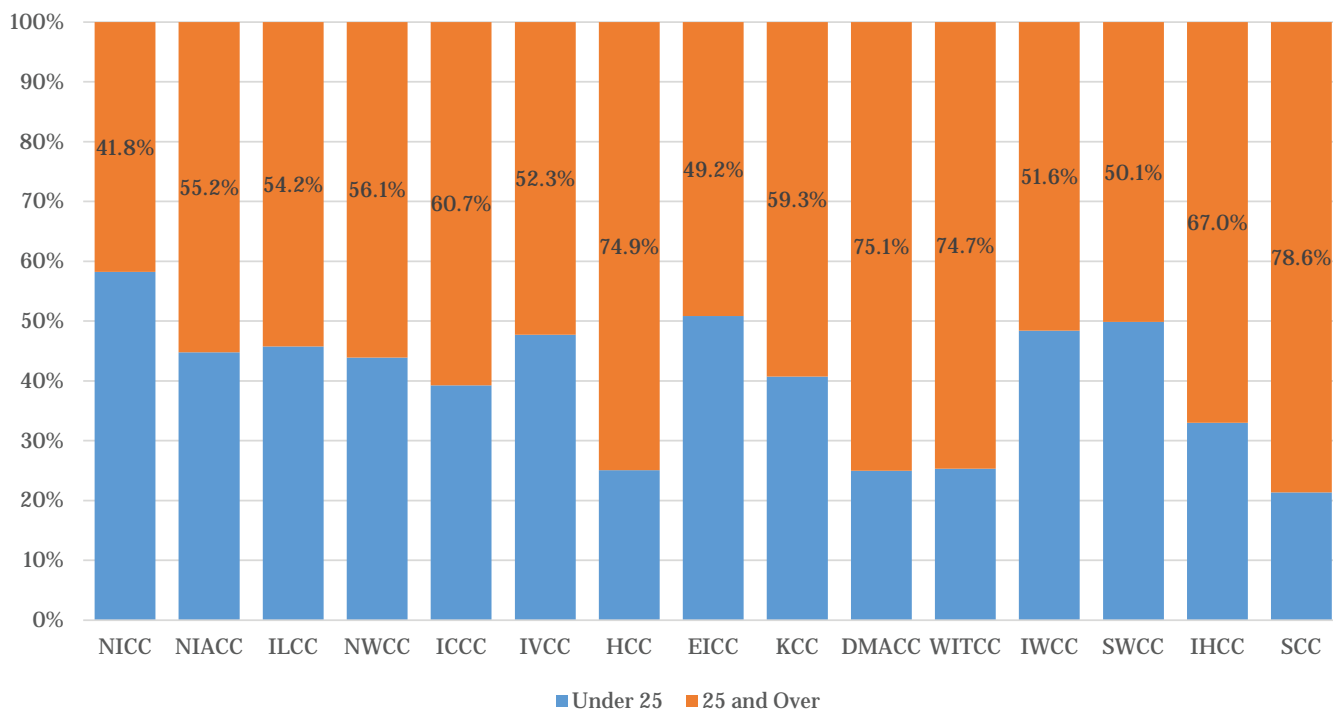
RESEARCH HIGHLIGHT

Number of Contact Hours

The majority of students, 63.1 percent, enroll in noncredit CTE programs that require between 32 to 99 hours to complete.

Figure 5 illustrates the proportion of noncredit students by age group for each college. In four colleges, over 70 percent of the students enrolled in noncredit programs were age 25 years or older. The distribution of age does not seem to be contingent on geography as there are both urban and rural colleges that enrolled high proportions of noncredit students over the age of 25.

FIGURE 5: PROPORTION OF NONCREDIT STUDENTS BY AGE GROUP AND BY COLLEGE



Note: College abbreviations are defined under Figure 1, Page 4.

Additional analysis was conducted to determine whether age played a role in relation to the length of the program in which the noncredit students enrolled. There was little difference in the percentage of enrollees when cross-tabulated by age (Figure 6). Two-thirds (65.1 percent) of those under the age of 25 were enrolled in programs with 32 to 99 contact hours, 25.0 percent in 100 to 200 contact hours, and 9.9 percent in programs that were over 200 contact hours. Similarly, 61.9 percent of those 25 years of age or older enrolled in programs that were 32 to 99 contact hours, 23.9 percent enrolled in 100 to 200 contact hours, and 14.2 percent in programs that were over 200 contact hours in length.



FIGURE 6. CONTACT HOURS BY AGE GROUP

Student Age Group	32 to 99 Contact Hours		100 to 200 Contact Hours		Over 200 Contact Hours	
	#	%	#	%	#	%
Under 25 Years of Age	5,042	65.1	1,937	25.0	764	9.9
25 Years of Age and Older	7,588	61.9	2,930	23.9	1,744	14.2
Total	12,630	63.1	4,867	24.3	2,508	12.5

Pursuing Credit-Bearing Education

Using the NSC database, the Department was able to identify whether noncredit students transferred to or continued at postsecondary institutions that were in- or out-of-state, two- or four-year, or private or public. Figure 7 illustrates the distribution of students from the AY 2016-2017 cohort who enrolled in credit programs the first year following exit from their noncredit program (N=2,059). This distribution includes students who were enrolled in credit programs previously, during, and following their noncredit program enrollment.

The majority of students (72.4 percent) who continued their education were under age 25. Most of this group (85.7 percent) went on to credit-bearing programs at an in-state institution, while only 14.3 percent of students continued their education at out-of-state institutions.

Of those under age 25 who continued their education in-state, 872 (58.5 percent) continued their education at a two-year public college and 15.4 percent transferred to public four-year institutions.



RESEARCH HIGHLIGHT

Credit-Bearing Programs

More than one-fifth (21.7 percent) of AY 2016-2017 noncredit CTE students continued their education in credit-bearing programs.

**FIGURE 7. FURTHER CREDIT EDUCATION, FIRST YEAR FOLLOWING NONCREDIT EXIT:
AY 2016-2017 COHORT**

Year Following Noncredit Program at Community College	Characteristics of Institution		Continued Education In-State		Continued Education Out-of-State	
	2yr/4yr	Public/Private	#	%	#	%
<i>Under 25 Years of Age</i>						
2018	2 yr	Private	0	0.0%	0	0.0%
		Public	872	58.5%	86	5.8%
	4 yr	Private	176	11.8%	38	2.5%
		Public	230	15.4%	89	6.0%
Total 2017 Cohort Under 25			1,278	85.7%	213	14.3%
<i>25 Years of Age and Older</i>						
2018	2 yr	Private	0	0.0%	0	0.0%
		Public	374	65.8%	66	11.6%
	4 yr	Private	36	6.3%	27	4.8%
		Public	33	5.8%	32	5.6%
Total 2017 Cohort 25 and Older			443	78.0%	125	22.0%

The out-of-state enrollment of students, age 25 and over, is greater than that of students under age 25, with 22.0 percent of students continuing their education at out-of-state institutions in aggregate. However, when analyzing the in-state data for students 25 years of age or older, 374 (65.8 percent) continued their education at one of Iowa’s community colleges, and only 5.8 percent transferred to a public four-year institution.

Overall, the majority of noncredit students (83.6 percent) who continued their education in credit-bearing programs, did so in Iowa.

Noncredit students fall into multiple categories when it comes to engagement with educational opportunities at Iowa’s community colleges. There are those who were enrolled in a credit program prior to enrollment in the noncredit program, those who enrolled in noncredit while in credit programs (concurrently), and those who continued their education by entering a credit program following their experience with a noncredit program.

There are many reasons for the variety of enrollment patterns when it comes to noncredit CTE. Some students attend a noncredit program for continuing education credits or to gain additional skills during enrollment in a credit program, while others enroll to prepare for employment in a specific field.

Figure 8 shows that in AY 2016-2017 there were 2,137 students enrolled in a credit program compared to AY 2015-2016 which had 2,470 students enrolled in a credit program the year prior to enrolling in their noncredit program. Additionally, there were fewer students enrolled during their noncredit program in AY 2016-2017 (2,130 compared to 2,443), and the same decline in those who enrolled the year following the completion of their noncredit program (2,059 compared to 2,273). There were 1,257 students enrolled in credit programs both preceding and following their noncredit enrollment in AY 2016-2017 and an additional 340 were neither enrolled in credit programs before nor during their noncredit experience yet enrolled in a credit program following completion.

FIGURE 8. NUMBER OF NONCREDIT CTE STUDENTS ENROLLED IN CREDIT PROGRAMS

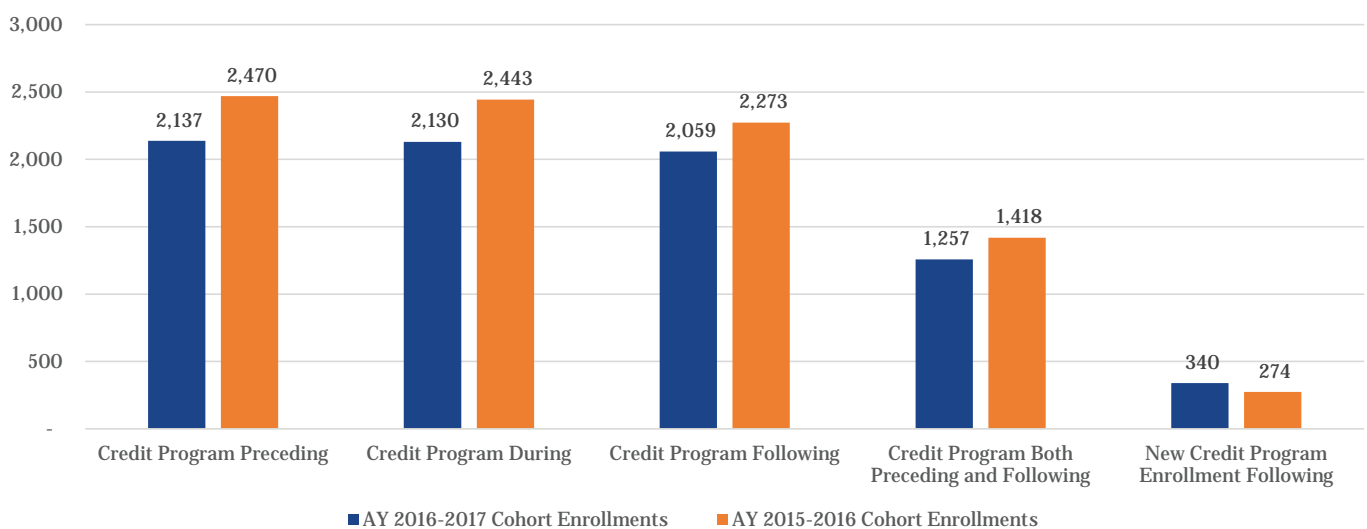


Figure 9 shows the top 15 noncredit programs that this group of students completed before continuing with their credit-bearing program. The plurality (N=218) of noncredit students were enrolled in health profession-related programs, with 156 of them in the nursing assistant/aide program, and another 30 in the medication aide program.

Supplementary data were collected regarding previous credit-bearing education completed by noncredit students. Overall, there were 1,023 students in the AY

2016-2017 cohort who had previous awards/degrees. Of those students who had degrees, there were 411 (40.2 percent) who had a bachelor's degree and 612 (59.8 percent) had a two-year degree, certificate, or diploma. More information regarding students who had prior degrees is available in Appendix A (data tables) and can be accessed through the Department's website at: <https://www.educateiowa.gov/iowa-community-college-program-outcomes>.

FIGURE 9. TOP 10 NONCREDIT PROGRAMS COMPLETED BY THOSE WHO CONTINUED CREDIT-BEARING PROGRAMS, NOT PREVIOUSLY ENROLLED

Program Description	Frequency	Percent
Nursing Assistant/Aide and Patient Care Assistant/Aide	156	45.9%
Medication Aide	30	8.8%
Truck and Bus Driver/Commercial Vehicle Operator and Instructor	23	6.8%
Emergency Medical Technology/Technician (EMT Paramedic)	21	6.2%
Civil Engineering Technology/Technician	11	3.2%
Business/Office Automation/Technology/Data Entry	9	2.6%
Fire Science/Fire-Fighting.	8	2.4%
Practical Nursing, Vocational Nursing and Nursing Assistants, Other	7	2.1%
Welding Technology/Welder	6	1.8%
Administrative Assistant and Secretarial Science, General	5	1.5%
Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician	5	1.5%
Machine Tool Technology/Machinist	5	1.5%
Business Administration and Management, General	4	1.2%
Electrical/Electronics Equipment Installation and Repair, General	4	1.2%
Health and Medical Administrative Services, Other	4	1.2%

Education Retention and Migration

Figure 10 represents aggregate numbers for those who continued their education either in- or out-of-state one year after exit (AY 2016-2017 only).

The vast majority (83.6 percent) of noncredit students who enrolled in a credit-bearing program after exiting their noncredit program remained in Iowa (N=1,716). Of those students who continued their education at an institution outside of Iowa, most enrolled in one of Iowa’s contiguous states such as Illinois (N=81), Nebraska (N=77), or Minnesota (N=30). For those who ventured farther away, the highest concentrations of migrating students enrolled at institutions in Arizona (N=11), California (N=7), or Colorado (N=7) within one year after exiting their noncredit program.

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 (16.7 and 16.9 percent respectively). Those employed are studied in subsequent sections of this report.

Note: *If students were enrolled in different colleges at the same time, they were reported based on hierarchy with preference to four-year institutions.*

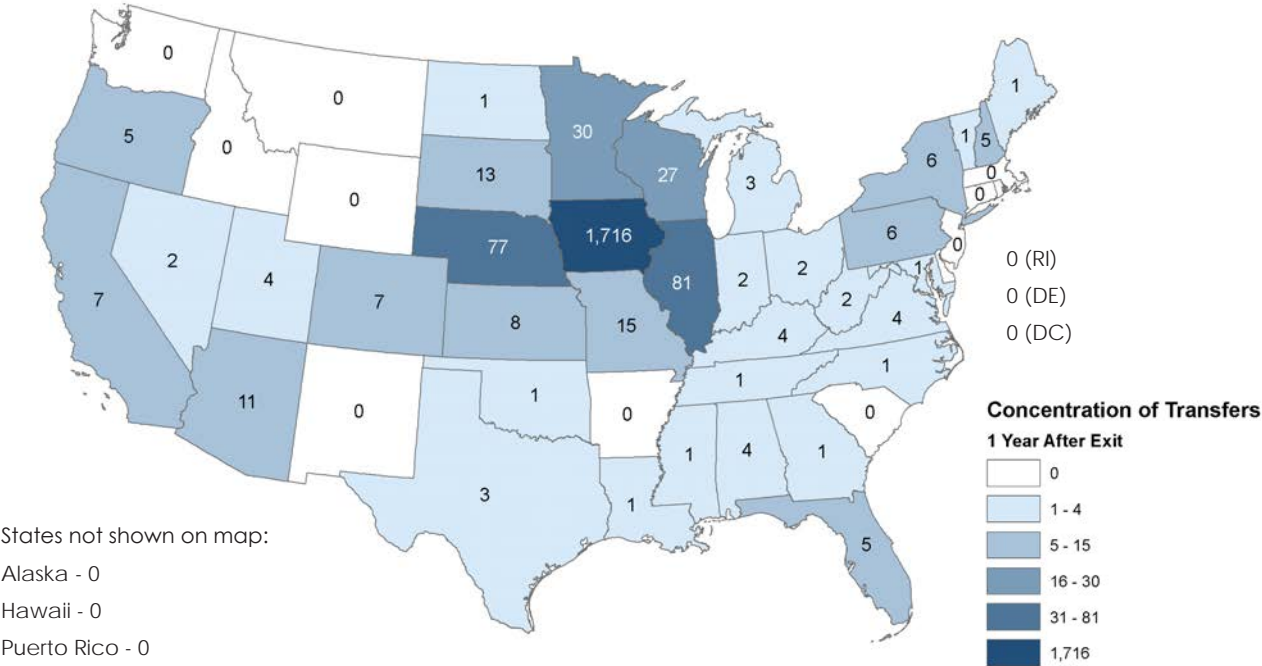


RESEARCH HIGHLIGHT

Continue Education in Iowa

Of the 2,059 noncredit students who continued into a credit-bearing program, 83.6 percent enrolled at an Iowa college or university.

FIGURE 10. AY 2016-2017 COHORT EDUCATIONAL MIGRATION,



Workforce Cohort

When analyzing wage and employment data, it is important to note the restrictions and limitations of the Iowa UI and Wage Record Interchange System (WRIS) data, as explained in the Methodology and Research Limitations 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.

Both in- and out-of-state employment data were gathered using the UI database and the WRIS. Unfortunately, out-of-state wage data were not available prior to the first quarter of 2016 (January-March 2016) for the initial AY 2015-2016 cohort due to the timing of the study. Data were available for all quarters pertaining to the AY 2016-2017 cohort.

Iowa UI records were available to identify in-state employment for all periods of time. However, WRIS records, used to measure out-of-state employment, are only available for up to two years. The unmatched records from both data sources encompass graduates employed by employers that do not pay UI tax or those who were unemployed for the described periods of time.

Some noncredit students were employed prior to, during, or after enrolling in their programs. In order to measure the increase of employment percentage and overall wages, Figures 11 and 12 were created to illustrate the overall impact of noncredit training. Since students enter and complete noncredit programs at different times throughout the academic year, their wages were captured based on their college

start and exit date independently, then aggregated relative to those dates.

The AY 2015-2016 cohort has a total of 10,551 students, but 90 of those students were enrolled while incarcerated and in AY 2016-2017 there were an additional 45 students. Therefore, all 135 were removed for employment and wage calculations based on their inability to be employed during incarceration.

Using the adjusted total of 9,409 students in the AY 2016-2017 cohort, a total of 7,530 (80.0 percent) matched employment in the year prior to enrollment in noncredit programs while 8,564 students (91.0 percent) matched employment in the year following exit. This represents a 13.7 percent (or 11.0 percentage point) increase in employment. Figure 11 illustrates these percentages of students who matched employment prior to, during, and following enrollment in noncredit programs. This current (AY 2016-2017) data and the wage and employment data for the AY 2015-2016 cohort can be accessed on the Iowa Department of Education's website: <https://www.educateiowa.gov/iowa-community-college-program-outcomes>.



RESEARCH HIGHLIGHT

Employment and Wages

In the year following exit from a noncredit program, the percent of individuals who were employed increased by 11.0 percentage points and wages increased 13.1 percent from the year prior to entry.

In order to compare and aggregate wages across the quarters being analyzed, a cost of living adjustment was applied to quarterly median wages and documented as the Adjusted Median Wage in Figure 12 (a detailed explanation is contained in the Methodology and Research Limitations section of this report). This adjustment is used to standardize wages in order to determine whether “real” wages have increased over the study period. The primary reason for utilizing the median quarterly wage for analysis (rather than mean) is that it mitigates the effects of outliers to provide a more accurate representation of the typical employee’s wages.

Figure 12 provides wage data from the first year following completion of the cohort. The adjusted median quarterly wage increased from \$6,622 in the year prior to enrollment in noncredit CTE programs to \$7,495 in the year following exit for the AY 2016-2017 cohort, which represents a 13.2 percent increase in median wages. This data is reflective of the cohort in its entirety and will vary based on the program completed, which is studied further in the following pages.

FIGURE 11. OVERALL PERCENT MATCHED TO EMPLOYMENT: AY 2016-2017 COHORT

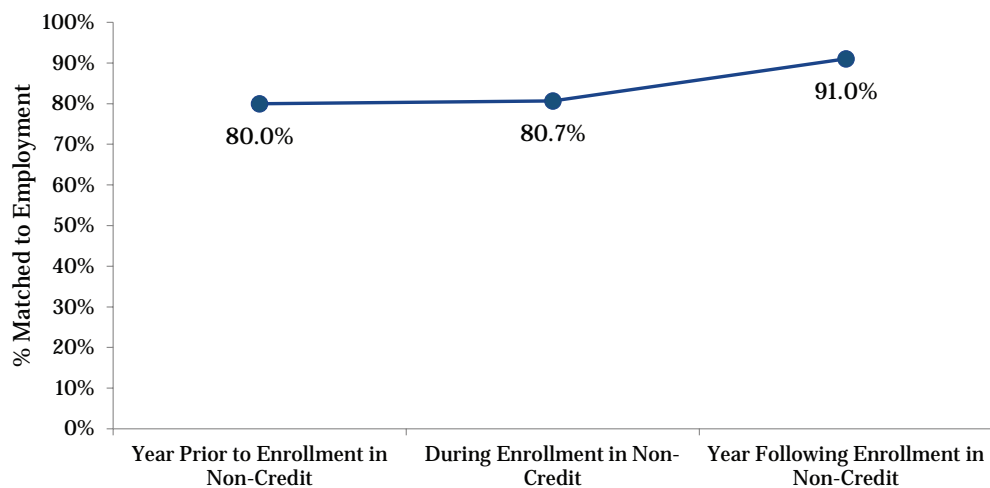
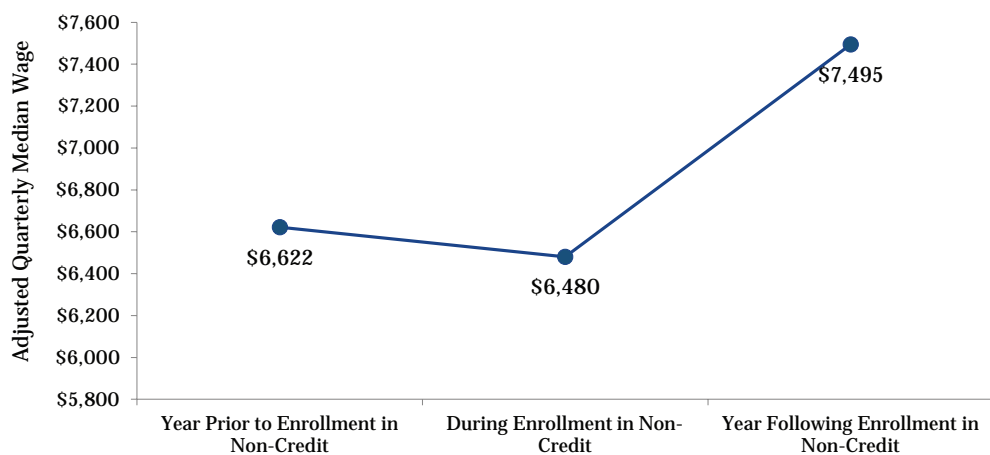


FIGURE 12. OVERALL ADJUSTED QUARTERLY MEDIAN WAGES: AY 2016-2017 COHORT



Employment and Wages by State

The WRIS was used to identify individuals who were employed out-of-state the year following exit from their noncredit program 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 13 illustrates that the majority of those who exited a noncredit CTE program in AY 2016-2017 and matched to employment data in the first year following exit, remained in Iowa (83.1 percent). Similar to those who continued their education, most graduates who were employed outside of Iowa were employed in bordering states, such as Nebraska and Illinois.

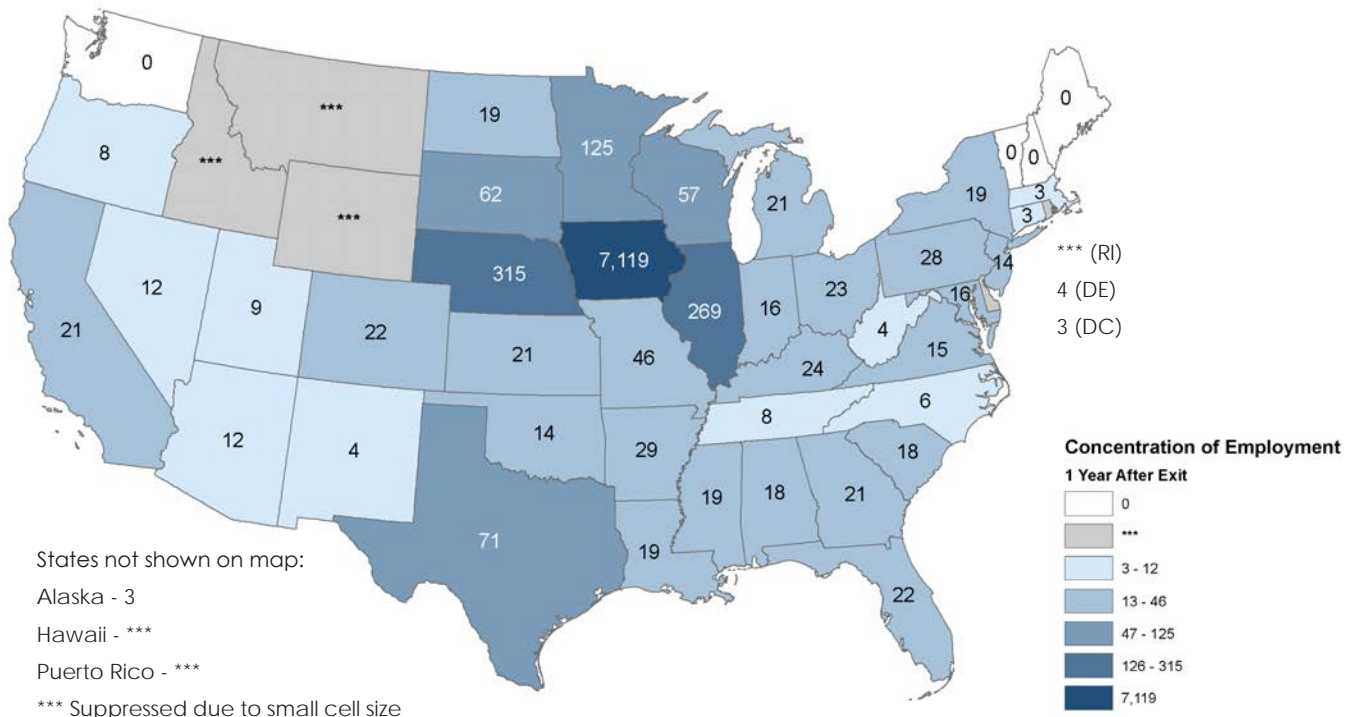
RESEARCH HIGHLIGHT

Employment in Iowa

83.1 percent of individuals matched to employment records in the first year following exit from a noncredit program were employed in Iowa.

There were, however, notable numbers of students who were employed in Texas (N=71), Arkansas (N=29), and Pennsylvania (N=28) the first year following exit.

**FIGURE 13. PRIMARY EMPLOYMENT BY STATE, FIRST YEAR FOLLOWING COMPLETION:
AY 2016-2017 COHORT**



Employment and Wages by Age and Gender

Previously reported, there were more males enrolled in noncredit programs in Iowa community colleges than females. Similarly, of the students eligible for employment analysis that reported their gender in the AY 2016-2017 cohort, 57.1 percent identified themselves as male (Figure 14).

Figure 15 provides the employment and wages of AY 2016-2017 exiters by age group and gender. Females under 25 years of age matched employment at a higher rate (95.4 percent) than males in the same age group (90.6 percent), but their adjusted quarterly median wage was much lower than that of the males, (\$4,182 to \$8,117, respectively). Also noted in Figure 15, 22.6 percent of males under 25 years of age held a previously earned degree.

When analyzing the gender disparity for the 25 years and older group who had previous degrees (N=426, 9 unknown gender), a smaller proportion of males held previous degrees (6.3 percent) than females (10.2 percent). However, the wage disparity between

females and males still exists, with women earning \$4,118 per quarter less than males.

To do a more in-depth analysis of the gender wage gap among recent Iowa community college noncredit exiters, other factors would need to be controlled, such as program and industry type. Industry of employment by gender data is available in Appendix A (data tables) and can be accessed through the Department’s website at: <https://www.educateiowa.gov/iowa-community-college-program-outcomes>.

FIGURE 14. PERCENT OF STUDENTS BY GENDER: AY 2016-2017 COHORT

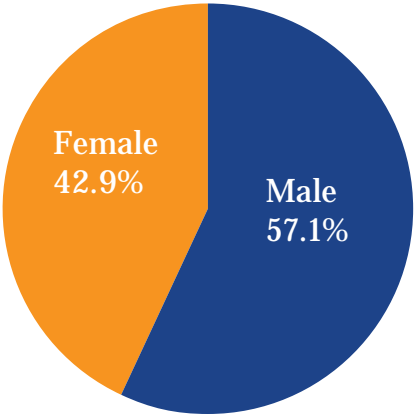


FIGURE 15. EMPLOYMENT AND WAGES BY AGE & GENDER, FIRST YEAR FOLLOWING EXIT: AY 2016-2017 COHORT

Age	Gender	Number in Cohort	Previous Degree		Matched to Employment		Adjusted Quarterly Median Wage
			#	%	#	%	
Under 25	Female	1,971	187	9.5%	1,880	95.4%	\$4,182
Under 25	Male	1,760	397	22.6%	1,594	90.6%	\$8,117
Under 25	Unknown/Not Reported	131	13	9.9%	118	90.1%	\$3,778
25 and Over	Female	1,945	199	10.2%	1,756	90.3%	\$7,113
25 and Over	Male	3,447	218	6.3%	3,077	89.3%	\$11,231
25 and Over	Unknown/Not Reported	155	9	5.8%	139	89.7%	\$7,542

Note: 2017 wages defined as October 1, 2017, through September 30, 2018.

Employment and Wages by Age and Race/Ethnicity

Figure 16 shows the breakdown of those who identified their race/ethnicity for the AY 2016-2017 cohorts. Over four-fifths (81.2 percent) of the noncredit students identified themselves as white/non-Hispanic, while 18.8 percent identified themselves in a racial/ethnic minority category. There were 4,041 students who did not report this data element and were excluded from Figure 16.

Figure 17 probes into the data further by breaking out the employment and wages associated with these groups by age. As illustrated below, wages vary substantially for those students over the age of 25 when the race/ethnicity cross-tabulation is applied. The white/non-Hispanic group earned an adjusted quarterly median wage of \$10,167, whereas the racial/ethnic minority group had an adjusted quarterly median wage of \$7,104 per quarter (30.1 percent less). The disparity is smaller for the under 25 age group, but the white/non-Hispanic group (\$5,885) still has a higher quarterly median wage than those in the racial/ethnic minority group (\$5,221).

Previous degrees held, for both age groups, were higher for white/non-Hispanic students than the racial/ethnic minority students, which could account for a portion of the wage disparity.

FIGURE 16. PERCENT OF ENROLLMENTS BY RACE/ETHNICITY: AY 2016-2017 COHORT

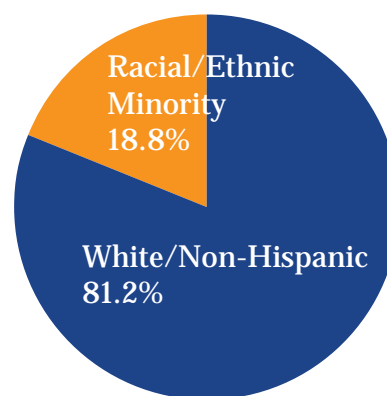


FIGURE 17. EMPLOYMENT AND WAGES BY AGE AND RACE/ETHNICITY, FIRST YEAR FOLLOWING EXIT: AY 2016-2017 COHORT

Age	Race/Ethnicity	Number in Cohort	Previous Degree		Matched to Employment		Adjusted Quarterly Median Wage
			#	%	#	%	\$
Under 25	Racial/Ethnic Minority	395	48	12.2%	377	95.4%	\$5,221
Under 25	White/Non-Hispanic	1,789	335	18.7%	1,682	94.0%	\$5,885
Under 25	Unknown/Not Reported	1,678	214	12.8%	1,533	91.4%	\$4,814
25 and Over	Racial/Ethnic Minority	613	37	6.0%	557	90.9%	\$7,104
25 and Over	White/Non-Hispanic	2,571	235	9.1%	2,333	90.7%	\$10,167
25 and Over	Unknown/Not Reported	2,363	154	6.5%	2,082	88.1%	\$9,031

Employment and Wages by Industry Sector

Figure 18 shows the number of students, percentage of employment, and quarterly median wages by industry sector for the AY 2016-2017 cohort in the first year prior to entry and the first year after completion of a noncredit CTE program. 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). Occupational data are not included in the UI wage records, so there is no way to determine whether a student actually acquired or transferred to a job which matched her or his training, but assumptions can be made by industry staffing patterns and wages. The shaded boxes in Figure 18 represent the highest increase (blue) and decrease (orange) of employment in each industry in the year following noncredit enrollment.

**FIGURE 18. MEDIAN WAGES BY INDUSTRY, YEAR PRIOR TO ENROLLMENT AND FOLLOWING EXIT:
AY 2016-2017 COHORT (TOP TEN INDUSTRIES BY EMPLOYMENT)**

Industry Sector of Employment	Year Prior to Noncredit Enrollment			Year Following Noncredit Enrollment		
	Matched to Employment		Adjusted Quarterly Median Wage	Matched to Employment		Adjusted Quarterly Median Wage
	#	%	\$	#	%	\$
Health Care and Social Assistance	1,659	22.0%	\$5,894	2,591	30.3%	\$5,789
Manufacturing	1,269	16.9%	\$11,617	1,246	14.5%	\$12,841
Transportation and Warehousing	183	2.4%	\$6,631	729	8.5%	\$6,320
Construction	573	7.6%	\$8,943	629	7.3%	\$10,508
Retail Trade	880	11.7%	\$3,062	571	6.7%	\$5,327
Public Administration	398	5.3%	\$11,599	477	5.6%	\$12,655
Administrative and Support Services	526	7.0%	\$3,780	476	5.6%	\$4,712
Wholesale Trade	379	5.0%	\$9,410	434	5.1%	\$10,881
Accommodation and Food Services	553	7.3%	\$1,964	308	3.6%	\$2,904
Educational Services	256	3.4%	\$6,134	281	3.3%	\$6,858
Professional, Scientific, and Technical Services	153	2.0%	\$9,918	148	1.7%	\$11,386
Finance and Insurance	117	1.6%	\$9,217	120	1.4%	\$8,709
Other Services	122	1.6%	\$5,442	120	1.4%	\$4,829
Agriculture, Forestry, Fishing, and Hunting	136	1.8%	\$5,505	115	1.3%	\$7,606
Mining	58	0.8%	\$13,241	67	0.8%	\$13,340
Information	90	1.2%	\$6,798	50	0.6%	\$8,595
Arts, Entertainment and Recreation	76	1.0%	\$1,759	44	0.5%	\$2,381
Utilities	37	0.5%	\$18,578	44	0.5%	\$17,623
Management of Companies and Enterprises	23	0.3%	\$3,747	42	0.5%	\$10,414
Unknown	5	0.1%	\$1,791	37	0.4%	\$5,735
Real Estate, Rental, and Leasing	37	0.5%	\$6,035	35	0.4%	\$6,488

The industry sector that employed the largest number of the noncredit students in the AY 2016-2017 cohort was the Health Care and Social Assistance industry. Health Care and Social Assistance showed a gain in the number of employees (1,659 to 2,591), followed by Transportation and Warehousing (183 to 729). Conversely, the Retail Trade and Accommodation and Food Services industries show the largest loss of employees (880 employed to 571 in retail and 553 employed to 308 in food service).

The industries with the highest quarterly median wages in the year following completion with more than 100 employed were Manufacturing (\$12,841),

Public Administration (\$12,655), and Professional, Scientific, and Technical Services (\$11,386).

Some of the quarterly median wages show a slight decrease following the completion of the program. However, this is most likely explained by new employment and starting wages, which are less than wages of experienced workers. This is especially true when the number of those with new employment is dramatically larger (i.e., Transportation and Warehousing).

A link to complete industry employment and wage data can be found in Appendix A.

Employment and Wages by Contact Hours and CIP

Figure 19 reflects the employment and wages, by number of contact hours for those in the AY 2016-2017 cohort who were employed in the year following graduation. For example, of the 5,937 students who enrolled in 32 to 99 contact hours of noncredit courses and exited in AY 2016-2017, 91.2 percent matched employment records within the year following exit and earned a quarterly median wage of \$7,879.

Additionally, 11.0 percent had previously earned a degree prior to enrolling in the noncredit program. Those with 100 to 200 contact hours matched employment at a rate of 91.7 percent, which was the second highest of the categories listed. However, this group had the lowest quarterly median wage.

FIGURE 19. EMPLOYMENT, WAGES, AND PREVIOUS DEGREE EARNED BY CONTACT HOUR, FIRST YEAR FOLLOWING COMPLETION: AY 2016-2017 COHORT

Size of Award	Number in Cohort	Previous Degree		Matched to Employment		Adjusted Quarterly Median Wage
		#	%	#	%	\$
32 to 100 Contact Hours	5,937	654	11.0%	5,416	91.2%	\$7,879
100 to 200 Contact Hours	2,219	229	10.3%	2,034	91.7%	\$5,970
Over 200 Contact Hours	1,253	140	11.2%	1,114	88.9%	\$8,886

Figure 20 illustrates the employment and wages by CIP for the ten largest programs (by enrollment) consisting of 32 to 99 contact hours.

The bar in the figure represents the percentage of those who matched employment within the first year following program exit and the dot illustrates the quarterly median wage.

The highest percentage of employment (99.1) was for those who exited from the civil engineering technology/technician noncredit program (CIP 150201). This group earned a quarterly median wage of \$14,525. The highest quarterly median wage (\$16,305) was earned by students who exited from the occupational safety and health technology/technician program (CIP 150701). This group had an employment match rate of 96.3 percent the first year following exit.



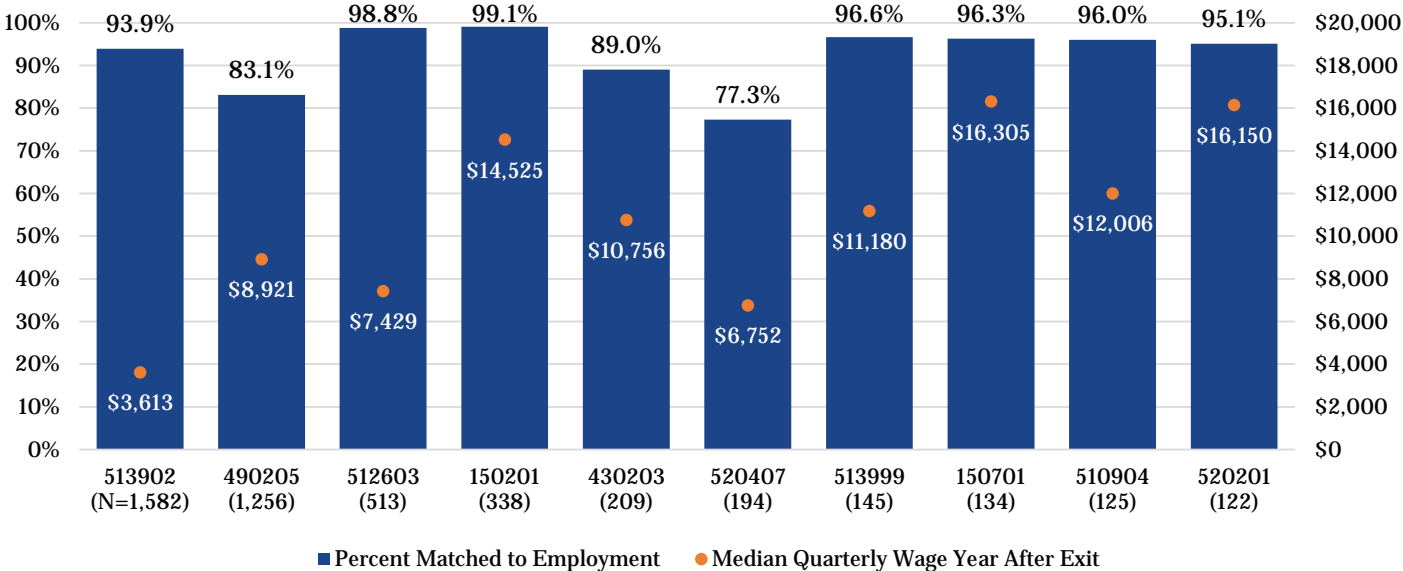
RESEARCH HIGHLIGHT

Employment First Year Following Exit

More than 95 percent of individuals in the following noncredit programs, requiring between 32 and 99 contact hours, were employed the year following program completion:

- Civil Engineering Technology/Technician
- Medication Aide
- Practical Nursing, Vocational Nursing, and Nursing Assistant, Other
- Occupational Safety and Health Technology/Technician
- EMT/Paramedic
- Business Administration and Management, General

FIGURE 20. EMPLOYMENT AND WAGES BY PROGRAM BETWEEN 32 AND 99 CONTACT HOURS, FIRST YEAR FOLLOWING EXIT: AY 2016-2017 COHORT



Program Legend:

- | | |
|----------------------------------------------------------------|----------------------------------------------------------------------|
| 513902: Nursing Assistant/Aide and Patient Care Assistant/Aide | 520407: Business/Office Automation/Technology/Data Entry |
| 490205: Truck and Bus Driver/Comm. Vehicle Operator/Instructor | 513999: Practical Nursing, Vocat. Nursing and Nursing Assist., Other |
| 512603: Medication Aide | 150701: Occupational Safety and Health Technology/Technician |
| 150201: Civil Engineering Technology/Technician | 510904: Emergency Medical Technology/Technician (EMT Paramedic) |
| 430203: Fire Science/Fire-Fighting | 520201: Business Administration and Management, General |

Figure 21 shows the outcomes by CIP for the 10 largest programs (by enrollment) consisting of 100 to 200 contact hours. The employment percentages ranged from 75.6 percent (business/office automation/technology program - CIP 520407), to 94.2 percent (emergency medical technology/technician [EMT paramedic] program - CIP 510904) and engineering technology (CIP 150201).

A complete listing of programs containing wage and employment data can be found in Appendix A.



RESEARCH HIGHLIGHT

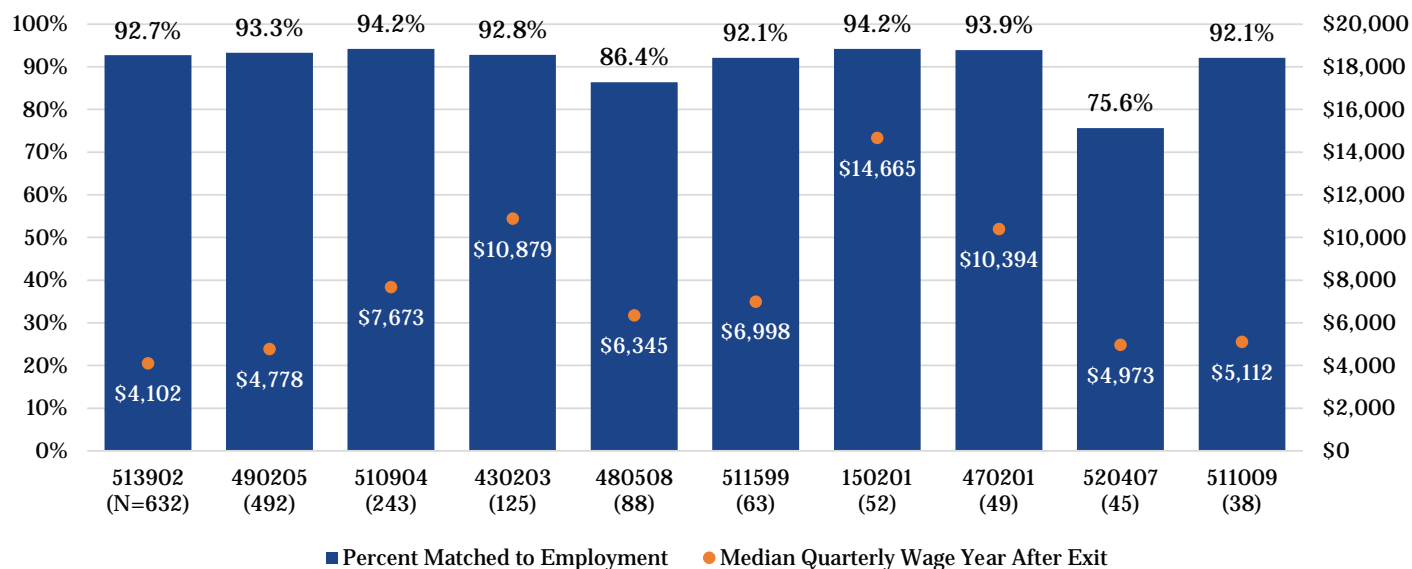
Employment First Year Following Exit

More than 94 percent of individuals in the following noncredit programs, requiring between 100 and 200 contact hours, were employed the year following program completion:

- *Emergency Medical Technology/Technician (EMT Paramedic)*
- *Civil Engineering Technology/Technician*

Note: Some of the noncredit programs have enrollment primarily from established professionals in need of continuing education credits which may skew median wages.

FIGURE 21. EMPLOYMENT AND WAGES BY PROGRAM BETWEEN 100 AND 200 CONTACT HOURS, FIRST YEAR FOLLOWING EXIT: AY 2016-2017 COHORT



Program Legend:

513902: Nursing Assistant/Aide and Patient Care Assistant/Aide
 490205: Truck and Bus Driver/Comm. Vehicle Operator/Instructor
 510904: Emergency Medical Technology/Technician (EMT Paramedic)
 430203: Fire Science/Fire-fighting
 480508: Welding Technology/Welder

511599: Mental/Social Health Services and Allied Professions, Other
 150201: Civil Engineering Technology/Technician
 470201: HVAC/R Maintenance Technology/Technician
 520407: Business/Office Automation/Technology/Data Entry
 511009: Phlebotomy Technician/Phlebotomist

The programs consisting of 200 or more contact hours are illustrated in Figure 22. The employment percentage for those who exited from the electrical/electronic equipment installation/repair program (CIP 470101), the pharmacy technician/assistant program (510805), and the fire science/fire-fighting program (430203) was the highest at 100.0 percent. The highest quarterly median wage of \$17,040 was earned by those who exited from the industrial mechanic and maintenance technology program (CIP 470303), which had 94.9 percent employment in the first year following exit.



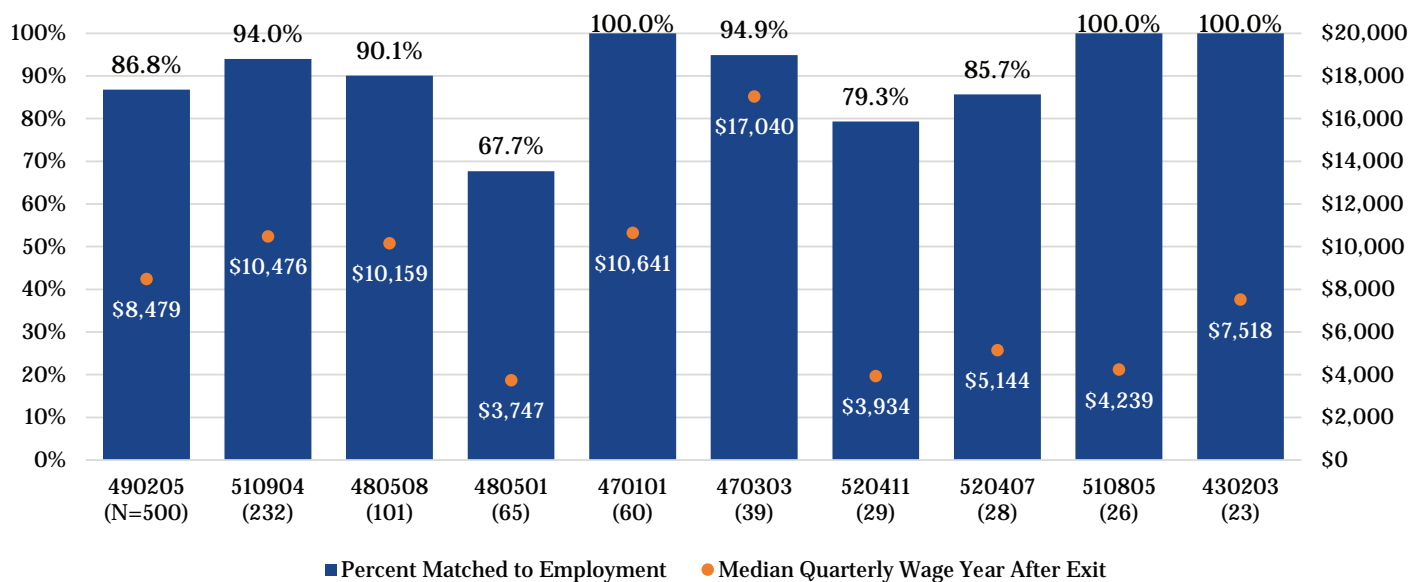
RESEARCH HIGHLIGHT

Employment First Year Following Exit

More than 95 percent of individuals in the following noncredit programs, requiring 200 or more contact hours, were employed the year following program completion:

- *Electrical/Electronics Equipment Installation/Repair, General*
- *Pharmacy Technician/Assistant*
- *Fire Science/Fire-Fighting*

FIGURE 22. EMPLOYMENT AND WAGES BY PROGRAM MORE THAN 200 CONTACT HOURS, FIRST YEAR FOLLOWING EXIT: AY 2016-2017 COHORT



Program Legend:

- | | |
|-----------------------------------------------------------------------|--------------------------------------------------------------------|
| 490205: Truck and Bus Driver/Comm. Vehicle Operator/Instructor | 470303: Industrial Mechanics and Maintenance Technology |
| 510904: Emergency Medical Technology/Technician (EMT Paramedic) | 520411: Customer Service Support/Call Center/Teleservice Operation |
| 480508: Welding Technology/Welder | 520407: Business/Office Automation/Technology/Data Entry |
| 480501: Machine Tool Technology/Machinist | 510805: Pharmacy Technician/Assistant |
| 470101: Electrical/Electronics Equipment Installation/Repair, General | 430203: Fire Science/Fire-Fighting |

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 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, 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.

Enrollment by Career Cluster

Career clusters represent groupings of occupational programs designed to prepare students for success in the workforce by developing particular skill sets required of the trade or profession. However, when researching career clusters, it is important to note that each cluster represents multiple industries and a variety of occupations within those industries.

Another challenge of researching outcomes based on career clusters is that when a student continues his or her education into a credit-bearing program after completing a noncredit program, there is not always a clear or direct path. Additionally, many of

the noncredit programs are designed to enhance skills for reemployment opportunities, not necessarily for transfer to credit-bearing programs.

Figure 23 below, illustrates the number of students in noncredit programs by career cluster (indicated by number) in both the AY 2015-2016 and AY 2016-2017 cohorts in aggregate, and the subsequent enrollment in credit-bearing programs the year following completion. For example, the majority of students who continued education in credit programs were in the noncredit health science cluster (N=1,888). However, only 974 (51.6 percent) of these remained in the health science cluster upon enrolling in a credit program. The remaining were sprinkled across other credit

FIGURE 23. NONCREDIT ENROLLMENT BY CAREER CLUSTER AND CREDIT PROGRAM CAREER CLUSTERS FOR THOSE WHO CONTINUED EDUCATION

Noncredit Cluster AY 2015-2016 and AY 2016-2017	Credit Cluster																Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
1 - Agriculture, Food and Natural Resources	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	3
2 - Architecture and Construction	2	5	1	2	17	0	1	1	0	1	5	1	7	0	13	2	58
3 - Arts, Audio/Video Technology and Communications	0	0	3	1	4	0	0	0	0	0	0	0	0	1	3	0	12
4 - Business Management and Administration	1	0	1	21	35	8	0	12	1	5	6	0	2	2	2	3	99
5 - Education and Training	0	0	0	2	9	0	0	2	0	0	0	0	0	0	0	0	13
6 - Finance	0	0	0	2	3	1	0	0	0	1	0	0	0	0	0	0	7
7 - Government and Public Administration	0	0	0	2	2	0	3	0	0	0	0	2	0	0	0	1	10
8 - Health Science	4	5	14	42	546	14	4	974	2	79	9	22	2	3	163	5	1,888
9 - Hospitality and Tourism	0	0	0	3	3	0	0	1	0	0	0	0	1	0	0	0	8
10 - Human Services	0	0	0	1	10	0	0	12	0	4	1	0	0	0	0	0	28
11 - Information Technology	0	0	0	1	3	1	0	1	0	0	5	1	0	0	2	0	14
12 - Law, Public Safety, Corrections and Security	4	0	0	6	22	1	1	29	0	0	2	37	4	0	3	5	114
13 - Manufacturing	3	2	1	11	25	1	0	2	2	4	1	0	35	0	40	3	130
14 - Marketing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 - STEM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 - Transportation, Distribution and Logistics	77	11	2	36	49	2	1	5	2	2	6	7	14	1	12	19	246
Total	91	23	22	130	730	28	10	1,039	7	96	35	70	65	7	239	38	2,630

clusters such as education and training (N=546), STEM (N=163), or human services (N=79).

One notable limitation to identifying the path to a credit program is that there are a number of colleges that do not report the credit program CIP code in the NSC system. Though the institution name, type, and state are contained in the data, the CIP code, and/or program title variables are often left empty, therefore unknown. Of the 4,332 students who were enrolled

in credit-bearing programs following completion of the noncredit program, 1,702 did not have a record that contained CIP data for the credit program and are not included in this table.

Note: *The national career cluster system identifies liberal arts programs as a part of the education and training career cluster.*

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 exiters within each career cluster to the industry sectors in which they secured employment.

Figure 24 provides a visualization used to relate these two variables. Circos, software that uses polar coordinate mapping to illustrate data relationships, maps the career clusters to primary industry employment information for each graduate in the study.

The colored bars on the left side of the circle represent the career clusters for the noncredit program in the study. Each colored bar corresponds to one of the 16 career clusters listed on the left. The gray bars on the right side represent the industry sectors in which the exiters secured employment. Each gray bar corresponds to one of the 20 industry sectors listed on the right.

Figure 25 illustrates the relationship between career clusters and industry sectors for the AY 2016-2017 cohort via hundreds of ribbons connecting the career cluster exiters (left bars) to their industry sector of employment (right bars). The width of the bars on each side depicts the overall number of exiters in each cluster and those employed within each sector. When the number of students was too low for reporting, the ribbons associated with them were removed from Figure 25, resulting in fewer ribbons.

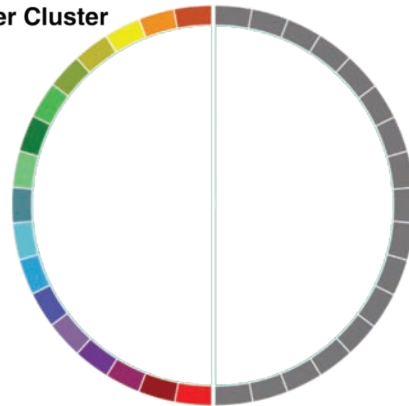
Another significant limitation to consider is that this data show the industry sectors in which exiters were primarily employed, not their actual occupations. For instance, a health science exiter may be a pharmaceutical technician employed by a pharmacy within a large retail store. While they are doing work related to health care, 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 24 and 25.

FIGURE 24. CIRCOS VISUALIZATIONS

Career Cluster

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

Career Cluster

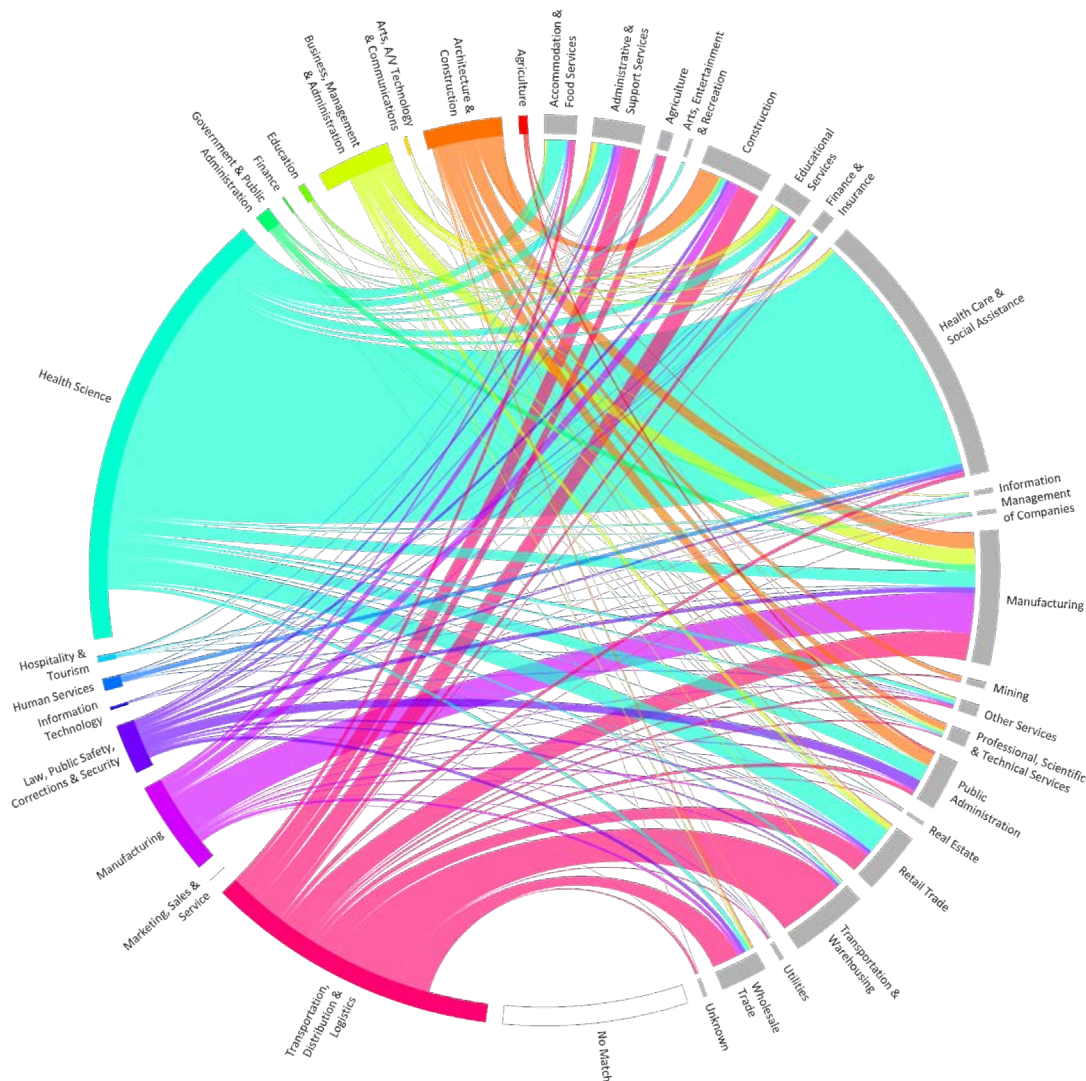


Industrial Sector

Industry Cluster

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

FIGURE 25. CLUSTER TO INDUSTRY MAPPING FOR AY 2016-2017 NONCREDIT EXITERS



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

Cluster to Industry

As mentioned previously, students enrolled in the health science career cluster represent the largest portion of the AY 2016-2017 cohort, which explains why the aqua (mid left) sector of Figure 25 is so wide. All exiters are graphically represented in this figure, with the “No Match” (mid-bottom) section corresponding to those exiters who did not match UI wage records.

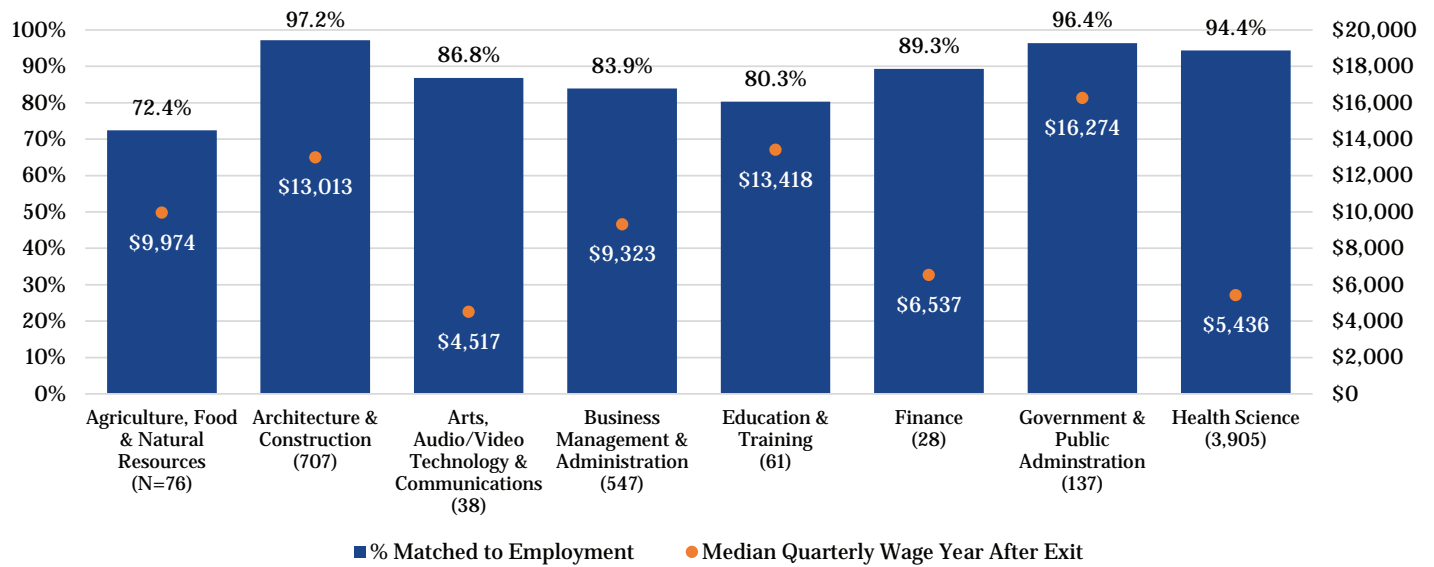
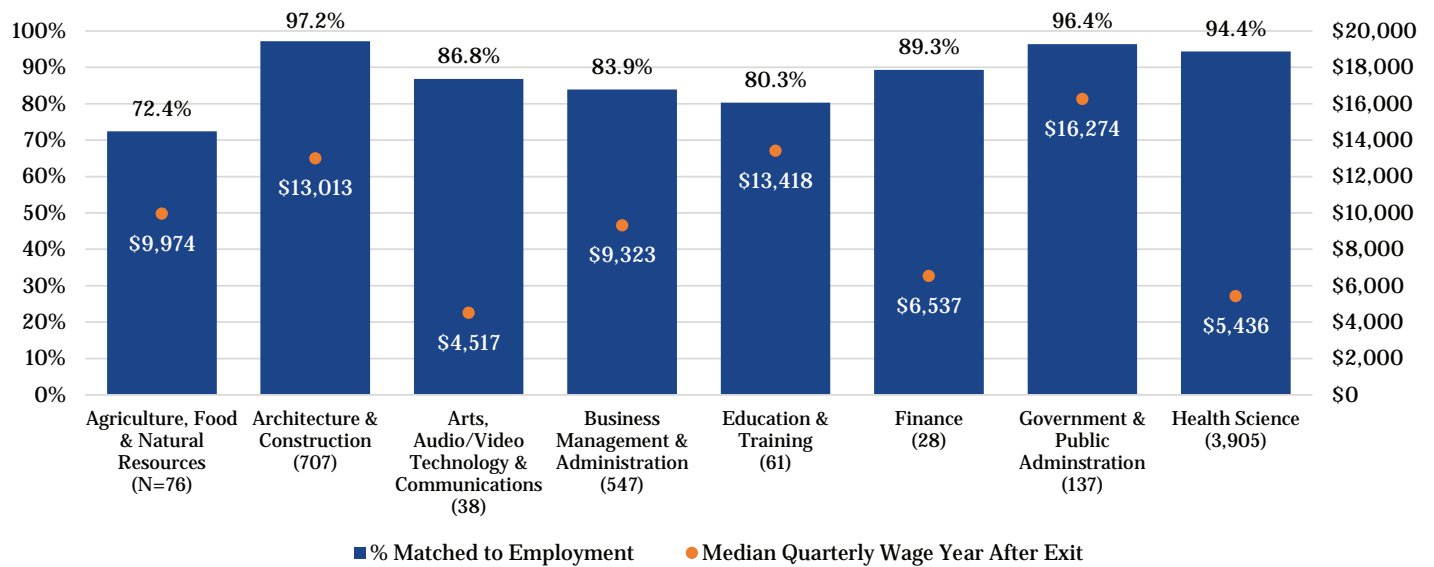
This diagram illustrates that the majority of health science exiters obtained employment within the health care and social assistance industry; however, this career cluster provided workers in nearly every industry. The transportation and logistics completers were largely disbursed as well, with their largest industry sectors of employment being transportation and warehousing, wholesale trade, and manufacturing.

Employment by Career Cluster

Figure 26 illustrates the employment and wage outcomes of the AY 2016-2017 noncredit students by career cluster in the first year following exit. The 707 exiters in the architecture and construction cluster had the highest employment match rate with 97.2 percent and earned a median quarterly wage of \$13,013. The next highest employment percentage was achieved by the 137 students in the government and public administration career cluster (96.4 percent) who earned a median quarterly wage of \$16,274. In the most popular health science cluster, 94.4 percent of the 3,905 exiters matched employment and earned a quarterly median wage of \$5,436, which is less than half of those in the construction and government clusters.

One of the lowest rates of matching employment was for students from the agriculture, food, and natural resources cluster (72.4 percent). For this cluster, it is important to keep the limitations of the UI wage data in mind, as most family farming operations do not pay UI tax and therefore are not included. More specifics on the UI wage records can be found in methodology section of this report.

**FIGURE 26. EMPLOYMENT AND WAGES BY CAREER CLUSTER, FIRST YEAR FOLLOWING EXIT:
AY 2016-2017 COHORT**



Methodology and Research Limitations

Noncredit Cohort Formation

1. Starting Cohort: Iowa Community College Management Information Systems (MIS) data base of Noncredit Enrollments for AY 2016-2017 - The latest available data that allows for at least 12 months past enrollment for tracking students into further education and/or employment one year after finishing cohort formation year was used.
2. Exclude students without valid SSNs, first and last names, and dates of birth (DOB) - Research was limited to students with valid SSNs, first and last names, and DOBs, since tracking students into the workforce involves SSNs and tracking students to further education involves names and DOBs as required data elements.
3. Identify Career and Technical Education (CTE) enrollees - CTE enrollees were identified utilizing data codes for Career/Vocational Training and Upgrading and Economic Development programs with National Center for Educational Statistics (NCES) Classification of Instructional Program codes (CIP) listed under Advance CTE 16 National Career Clusters®.
4. Establish CTE enrollees with sizable CTE education, resulting in labor market value credential/experience - The minimum acceptable noncredit educational level is established at 32 CTE contact hours. This threshold is established to match the minimum existing CTE credit credential approved for Iowa community colleges. This threshold allows for justified comparability of the value of noncredit CTE education to corresponding credit CTE education, thus providing comparable material for measuring educational and employment outcomes. The same logic is being used in the MIS data reporting manual and, subsequently, for data reporting to third parties (e.g., Voluntary Framework of Accountability).

Data Fields Formation (for calculated fields)

Some data fields are reported at face value, as they were reported to us in the MIS (e.g., gender, race/ethnicity), and some data fields contain imputed values. Below is the description of calculation methods for such fields:

1. Program of Study (POS) - POS is established based on students' enrollment CIP codes. If a student has been reported under more than one CIP code during the cohort formation year, his or her POS determination is based on the POS with the majority of contact hours. In cases of multiple CIP codes of enrollments obtained from external sources (e.g., National Student Clearinghouse [NSC], for previous, concurrent, or subsequent credit enrollments), a method of random CIP number selection has been applied.
2. Age - The categories of "under 25" and "25 and older" were used based on each student's age as of the middle of the AY 2015-2016 (January 1, 2016) year.
3. Correctional Facilities - MIS data codes were used to establish whether a noncredit student was enrolled while in a correctional facility.
4. Previously Received Credit Award - A five-year timeframe and NSC data were utilized to establish if a student has been enrolled in noncredit education with an existing postsecondary credit award.
5. POS Length - As the length of POS in noncredit enrollments vary from a couple of weeks to a full year, we explored preceding and consecutive credit and noncredit enrollments based on a full preceding or following academic year, regardless of the length of noncredit enrollments within cohort year.

Employment and Wage Records

- » 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 (see Appendix B for a description and the limitations of UI wages).
- » There are three periods of time being analyzed in this report (defined below). For each of these time periods, the ‘% Matched to Employment’ is counting the percentage of the cohort that matched to UI wages in any of the quarters being analyzed. The ‘Quarterly Median Wage’ is the median of each individual’s median gross wages across the quarters being analyzed.
 - » Year Prior to Enrollment in Noncredit - The four full quarters prior to the quarter in which the individual started his or her earliest noncredit course.
 - » During Enrollment in Noncredit - All quarters including and between the quarter in which the individual started his or her earliest noncredit course and exited his or her latest noncredit course.
 - » Year Following Enrollment in Noncredit - The four full quarters following the quarter in which the individual exited his or her last noncredit course.
- » 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 2018Q4 (July 2018 - September 2018) levels (CPI-u = 252.197) 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 (2018Q3), 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 the UI wage database (i.e., the median wages only include those who had wages covered by UI tax during that period of time). 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 at a college or university as part of a financial aid package.
- » 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 time period, and that assignment is based on the industry sector/state of the employer they earned the most wages within that period. So, for example, if Lincoln earned \$5,000 in the manufacturing industry sector and \$2,000 in the retail trade industry sector per quarter following enrollment, Lincoln would be included in the overall employment and wages table with a gross wage of \$7,000 per quarter. In the employment and wages by industry sector table, he would be included under the manufacturing industry sector with a gross wage of \$7,000 per quarter (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:
 - » Suppress the cell if number of employed in cell is less than three.
 - » 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).
- » Individuals who were identified as being in a correctional facility while taking noncredit courses are excluded from analysis due to a lack of information on when they exited the facility.
- » Out-of-state wage data is not available prior to 2016Q1.

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Appendix A—Contents

Below is a list of the detailed data tables for this report which can be accessed at:

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

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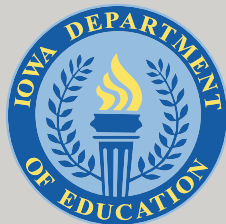
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Table 28 - Employment and Wages by Program by State of Employment

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Table 30 - Employment and Wages by Program by Industry Sector of Employment

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



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.